DREXEL UNIVERSITY
College of
Arts and Sciences

CATALOG
2013-2014

UNDERGRADUATE & GRADUATE

catalog.drexel.edu

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About the College

Mission Statement

By pursuing excellence in research and scholarship, we educate our students to become ethical professionals and citizens with knowledge of and appreciation for the fundamental interactions among the humanities, social sciences and the sciences in a fast-changing, challenging, and diverse world.

About the College of Arts and Sciences

The College of Arts and Sciences (http://drexel.edu/coas) was established in 1990. The educational objectives encompass a wide range of goals: to provide interdisciplinary study in the arts and sciences for our Bachelor of Science and Bachelor of Arts majors; to offer Master of Science and Doctoral programs in selected areas of faculty and research strength; to promote research, scholarship, and creative activities which expand disciplinary boundaries and enhance faculty expertise and the quality of the University's instruction; to provide general educational courses for the University's undergraduates; and to improve the quality of life for the University's community through co-curricular programming in the arts and sciences.

Each major combines interdisciplinary study with hands-on, experiential learning to prepare students for a variety of careers, as well as graduate or professional school. All undergraduate majors in the College offer co-operative education program options, with special opportunities relating academic study to work experience, or internships. Additionally, students across the College are encouraged to work alongside faculty in research projects that related to their academic and professional goals.

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About the Curriculum

The College of Arts and Sciences is committed to providing high-quality education in the humanities, social sciences and sciences.

Bachelor of Arts Degree Programs

The Bachelor of Arts degree provides a broad-based liberal education while allowing students the option to apply their studies through Drexel's well-established co-operative education program are available, though it is recommended that students take advantage of the experience provided by co-op.

The BA degree continues the Drexel focus on critical reasoning, a strong grounding in arts and sciences, and effective development of communication skills. The degree is intended to provide a solid liberal arts background for graduate study as well as for professional degrees in such areas as law, public policy, international relations, education, psychology, social work, public health, and medicine.

While the BA degree requires more liberal arts courses than the Bachelor of Science degree, it also allows more varied choices in the fulfillment of math and science requirements and requires study of a foreign language. The BA degree prepares students for an ever-changing and culturally diverse world, and provides them with the tools needed to be leaders in industry, arts, government, and human services.

Bachelor of Science Degree Programs

The College offers Bachelor of Science degrees in many of its majors. The BS degree is similar to the Bachelor of Arts degree, but requires more focused coursework in the sciences than the BA.

In several majors, both a BS and a BA are available. Both degrees provide the same foundation in the discipline. The BS is a more structured approach, while the BA allows for greater flexibility. Drexel's strong advising program helps students learn more about the degree options and which option matches each student's long-term goals.

Science and Mathematics Curriculum

All Students in biology, environmental science, geoscience, chemistry, mathematics, and physics study similar subjects during the freshman year. This recognizes the fundamental knowledge common to those disciplines; it also allows for transfer between majors at the end of the freshman year without loss of time. Upper-class students in those disciplines are given the opportunity to take related electives in liberal, scientific, and technical fields.

The flexibility available in the elective programs, and the opportunity to complete an academic minor, permit students to prepare for continuing studies in graduate or professional school, for work in government or industry, or for a change in educational goals.

Generally the basic requirements in each major are completed prior to the senior year. Thus, for science and mathematics majors, the technical electives in the last year may be selected in some advanced specialty within the specific major, and free electives may be used for enrichment or to prepare for a change of field. Each student's elective program must be approved by an advisor from his or her major department.

Humanities and Social Science Curriculum

Students majoring in the humanities and social sciences complete similar sets of courses in the first two years. Some of these courses may be identical (the freshmen year English sequence) while others will vary by discipline, such as the math and science requirements in the BA and BS options.

Students in the communication major will take at least one course in their proposed concentration of public relations, global journalism, or technical communication during the freshman year. More intensive work in the concentration begins in the sophomore year, as do elective options.

All humanities and social science students have a significant degree of flexibility, allowing them to complete disciplinary requirements, and, through free electives, to take a minor or perhaps another major to prepare for entry into graduate or professional school.

Secondary and Elementary Teacher Certification

The School of Education offers innovative curricula that combine academic majors with appropriate coursework to satisfy state requirements for certification in English, and sciences— including biology, chemistry, earth and space sciences, physics—as well as mathematics and elementary education. Students interested in the teacher education programs should contact the School of Education (http://www.drexel.edu/grad/programs/edu).

Accelerated Degree Program

The Accelerated Degree Program in the College of Arts and Sciences provides opportunities for highly talented and strongly motivated students to complete both an undergraduate degree and a master's degree in five years. Students generally enroll in a five year co-op program, but replace the third co-op with courses to complete the graduate degree requirements. Students may be offered preliminary admission to such a program when they start at Drexel or can apply when they have completed 90 credits. In both instances, admission to the dual program must be approved before students complete 120 credits.

Accelerated Preprofessional Degree

The College accepts highly qualified and motivated students into accelerated BS/BA +MD and BS/BA +JD degrees. Students must apply to be admitted into these programs before starting at Drexel. For more information, students should contact the Office of Undergraduate Admissions (http://www.drexel.edu/undergrad).

Preprofessional Programs

Students wishing to prepare for admission to professional schools of medicine, veterinary medicine, dentistry, or public health, may obtain preprofessional counseling and application assistance (http://www.drexel.edu/scdc/careerservices/pre-professional-advising) at the Steinbright Career Development Center. For health profession application assistance, students may call 215.895.2437. For law school admission assistance, students may call 215.895.1632.

Degree Requirements

Certification for graduation is provided by the individual department or program according to the requirements for each major, which are set forth in subsequent pages. The minimum number of credits required for the degrees of Bachelor of Arts and Bachelor of Science varies from one department and program to another but in no case does it exceed 192 credits of academic work with two to six terms of co-operative experience.

Writing-Intensive Course Requirements

In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid "clustering" these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List (http://drexel.edu/engphil/about/drexelwritingcenter/wicourses/course_list) on the Drexel University Writing Center (http://drexel.edu/writingcenter) page. Students scheduling their courses in Banner/DrexelOne can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

The Drexel Writing Center

The Drexel Writing Center (DWC) is dedicated to helping students, faculty, and staff, at all levels of experience and across all disciplines, in their development as writers.

- The DWC works with writers at all stages in the writing process, from brainstorming ideas to polishing final drafts.
- The DWC focus is on individual, one-on-one sessions that feature a conversational, collaborative relationship between the reader and the writer they work with.
- Interaction with the DWC will help writers develop not just writing but critical thinking and reading skills.
- While DWC readers do not perform copy-editing services, they will help students learn strategies for proofreading and editing their documents.
- The DWC also offers workshops on specific writing topics: Sentence Level Clarity; Effective Revision (for Large and Small Writing Projects), Writing the Literature Review, and others.

The DWC is located at 0032 MacAlister Hall and can be reached at 215.895.6633. Further information can be found at the Drexel Writing Center (http://drexel.edu/writingcenter) website.

Anthropology

Bachelor of Arts: 182.0 quarter credits

About the Program

Students majoring in anthropology broaden their understanding of the diversity of cultures and ways of life in the global environment through theoretical courses, content area courses, and specialized courses in field techniques and methodology.

The anthropology major is a small, highly specialized program that provides students with an exceptional background in theory, methodology, and field experience for the workplace or graduate training.

The bachelor of arts degree is a four year program, with a single six month internship in the junior year. The core of the major is an internship program and corresponding seminar taken each year for a total of 12.0 credits. The seminar requires presentation of research and facilitates the transformation of field experiences into ethnographic writing, films and other products. The class is restricted to anthropology majors and has been designed to provide students with the opportunity to be mentored by faculty and to establish peer-mentoring relationships with other students both within and outside of formal classes. This seminar is a place where fieldwork can be planned and issues of participant observation that come up in other courses can be discussed and analyzed.

Additional Information

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Building 47-118
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For more information specific to the field of anthropology, contact:

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Professor of Anthropology
Culture and Communcation
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For more details about the Anthropology major, visit the Culture and Communication department's Anthropology (http://www.drexel.edu/culturecomm/academics/undergraduate/anthropology) web site.

Degree Requirements

General Requirements		
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
UNIV H101	The Drexel Experience	2.0
Two Mathematics Courses		6.0-8.0
Two Science Courses		6.0-8.0
Foreign Language Courses		
A minimum of two consecutive language courses *		8.0
Humanities and Fine Arts		
LING 102	Language and Society	3.0
COM 150	Mass Media and Society	3.0
Two Humanities and Fine Arts Courses		6.0
Social and Behavioral Sciences		
ANTH 110	Human Past: Anthropology and Prehistoric Archeology	3.0
ANTH 330	Media Anthropology	3.0
COM 355	Ethnography of Communication	3.0
SOC 101	Introduction to Sociology	3.0
International Studies		
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	3.0
International Studies Elective		3.0
Studies in Diversity		
ANTH 101	Introduction to Cultural Diversity	3.0
ANTH 215	Anthropology of Gender	3.0

Anthropology Requirements		
Community Research		
SOC 270	Theory of Applied and Community Sociology	3.0
ANTH 370	Ethnographic Methods	3.0
ANTH 390	Seminar in Ethnography (3-credit course taken 4 terms)	12.0
Methods Sequence		
COM 220	Qualitative Research Methods	3.0
SOC 250	Research Methods I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
Theory Sequence		
COM 210	Theory and Models of Communication	3.0
SOC 260 [WI]	Classical Social Theory (WI)	3.0
ANTH 410	Cultural Theory	3.0
Anthropology Program Requirements		
Select ten of the following:		30.0
ANTH 120	Biblical Archaeology: The Archaeology of Israel and Jordan	
ANTH 210 [WI]	Worldview: Science, Religion and Magic	
ANTH 212	Topics in World Ethnography	
ANTH 220	Aging In Cross-Cultural Perspective	
ANTH 240	Urban Anthropology	
ANTH 255	Psychological Anthropology	
ANTH 312	Approaches to Intercultural Behavior	
ANTH 355	Anthropology of Cyberspace	
ANTH 360	Culture and the Environment	
ANTH 365	Family and Kinship	
ANTH 380	Special Topics in Anthropology	
COM 345	Intercultural Communication	
COM 360	International Communication	
SOC 125	Sociology of Aging	
SOC 210	Race and Ethnic Relations	
SOC 220	Wealth and Power	
SOC 335	Sociology of Education I	
Electives		
Free Electives		49.0
Total Credits		182.0-186.0

* At least one foreign language course must be at the 200-level.

Sample Plan of Study

Term 1		Credits
ANTH 101	Introduction to Cultural Diversity	3.0
ENGL 101	Expository Writing and Reading	3.0
UNIV H101	The Drexel Experience	1.0
Math Elective		3.0-4.0
Foreign Language Course		4.0
	Term Credits	**14.0-15.0**

Term 2		
ANTH 110	Human Past: Anthropology and Prehistoric Archeology	3.0
ENGL 102	Persuasive Writing and Reading	3.0
UNIV H101	The Drexel Experience	1.0
Math Elective		3.0-4.0
Foreign Language Course		4.0
	Term Credits	**14.0-15.0**
Term 3		
ANTH 390	Seminar in Ethnography	3.0
ENGL 103	Analytical Writing and Reading	3.0
SOC 101	Introduction to Sociology	3.0
SOC 260 [WI]	Classical Social Theory	3.0
SOC 270	Theory of Applied and Community Sociology	3.0
	Term Credits	**15.0**
Term 4		
ANTH 215	Anthropology of Gender	3.0
COM 150	Mass Media and Society	3.0
COM 220	Qualitative Research Methods	3.0
Lab Science Elective		3.0
Humanities/Fine Arts Elective		3.0
	Term Credits	**15.0**
Term 5		
ANTH 370	Ethnographic Methods	3.0
COM 210	Theory and Models of Communication	3.0
SOC 250	Research Methods I	3.0
Lab Science Elective		3.0
Humanities/Fine Arts Elective		3.0
	Term Credits	**15.0**
Term 6		
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	3.0
ANTH 390	Seminar in Ethnography	3.0
LING 102	Language and Society	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
Anthropology Program Requirement*		3.0
	Term Credits	**15.0**
Term 7		
ANTH 330	Media Anthropology	3.0
Free Electives		12.0
	Term Credits	**15.0**
Term 8		
ANTH 390	Seminar in Ethnography	3.0
Free Elective		4.0
Anthropology Program Requirements*		6.0
	Term Credits	**13.0**
Term 9		
Anthropology Program Requirements*		6.0
Free Electives		6.0
	Term Credits	**12.0**
Term 10		
ANTH 410	Cultural Theory	3.0
COM 355	Ethnography of Communication	3.0

Anthropology Program Requirements*		6.0
Free Electives		6.0
	Term Credits	**18.0**
Term 11		
Anthropology Program Requirements*		6.0
Social and Behavioral Sciences Elective		3.0-4.0
Free Electives		12.0
	Term Credits	**21.0-22.0**
Term 12		
ANTH 390	Seminar in Ethnography	3.0
Anthropology Program Requirement*		3.0
Free Electives		9.0
	Term Credits	**15.0**

Total Credit: 182.0-185.0

* See degree requirements (p. 6).

Internship/Career Opportunities

Internships

Internships can take place in metropolitan areas or in remote international settings more traditional for anthropological work. Metropolitan internships can range from working with non-profit organizations that use ethnography to understand community needs, to working with marketing firms that use ethnographic methods to study the patterns of consumer behavior. Additional opportunities may include working with school districts, corporations, and other organizations that use ethnographic research to understand the intimate forms of interaction among members of various social groups. Internships in these settings allow students to participate in the development of anthropological research to understand corporate structure and leadership patterns, consumer behavior, and the role of community service programs in larger urban areas.

International internship opportunities can include governmental organizations as well as non-governmental organizations (NGOs) using ethnographic research in order to investigate how people think about issues and the problems with which they are faced. Some of the kinds of internship work students may undertake throughout the world can include environmental efforts, healthcare initiatives, economic development programs and social change projects.

All internships will be offered in the fall/winter cycle. Students complete their internships in the junior year, allowing them to produce final products (e.g. portfolios, research papers, anthropological videos or other appropriate products) out of their field research in their senior year.

Post-Graduate Opportunities

Many corporations, schools and health-care institutions are using ethnographic field techniques and qualitative methods in order to understand their markets and clientele, or for that matter, their own organizational structure. The Anthropology major prepares students for employment in these areas, as well as for further graduate work in anthropology, public policy, law and other social and behavioral sciences.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on post-graduate opportunities.

Minor in Anthropology

The anthropology minor provides students in other fields with a cross-cultural awareness that will enable them to interact with a variety of people in a wide range of situations. By giving students a respect for and understanding of the basis of cultural variation, the minor can facilitate working in international settings. Even for students working within the United States, anthropology offers increased sensitivity to ethnic and population diversity. Medicine, law, counseling, nursing, and nutrition are only a few of the fields in which clients and professionals may come from different parts of our heterogeneous society.

Required (Core) Courses

ANTH 101	Introduction to Cultural Diversity	3.0
ANTH 110	Human Past: Anthropology and Prehistoric Archeology	3.0
ANTH 210 [WI]	Worldview: Science, Religion and Magic	3.0
ANTH 370	Ethnographic Methods	3.0
ANTH 410	Cultural Theory	3.0
Select three of the following:		9.0
ANTH 215	Anthropology of Gender	
ANTH 330	Media Anthropology	
ANTH 120	Biblical Archaeology: The Archaeology of Israel and Jordan	
ANTH 212	Topics in World Ethnography	
ANTH 220	Aging In Cross-Cultural Perspective	
ANTH 240	Urban Anthropology	
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	
ANTH 312	Approaches to Intercultural Behavior	
ANTH 355	Anthropology of Cyberspace	
ANTH 360	Culture and the Environment	
ANTH 365	Family and Kinship	
ANTH 380	Special Topics in Anthropology	
Total Credits		24.0

Biological Sciences

Bachelor of Science: 181.0 quarter credits

About the Program

The curricular choices are designed to provide a sound basis for careers in the private sector, government and research laboratories, and for advanced study in graduate and professional programs in medicine, other health related areas, or in teaching.

The biological sciences encompass many areas of study. Biologists study the structure and functions of living organisms from the individual cell to the full organism, and collectively to the community level. Discoveries in the biological sciences influence many aspects of our daily lives and have become the foundation of most new developments of the new century. In the past two decades, advances in molecular biology and genetics have been rapid, opening many new, exciting career opportunities in the fields of biotechnology and genetic engineering. Biologists can pursue a variety of options including careers in medicine, dentistry, veterinary medicine or other health-related areas; in research or commercial laboratories; in

various private and government agencies; and in teaching. In fact, more than 100 different occupations have been listed for biologists.

The biological science major resides in the Department of Biology (http://www.drexel.edu/bioscience). Students earn a bachelor's degree in the biological sciences and are prepared for technical careers in research or commercial laboratories, or for professional schools or graduate study. Graduates in the biological sciences are in demand and enjoy a high placement rate with competitive salaries. Graduates with a degree in the biological sciences work for pharmaceutical companies, medical research laboratories, or biotechnology companies, or in government laboratories. The course requirements identifies required support courses in chemistry, physics, mathematics, humanities, and science and human affairs. With proper selection of electives, students can meet teacher certification requirements or complete a minor in another field. Students are encouraged to consult frequently with their academic adviser for curriculum planning.
In addition to the core requirements, students select one of five concentrations in a field of interest:

- Cell/Molecular Biology/Genetics/Biochemistry
- Organismal Biology/Physiology
- Ecology/Evolutionary Biology/Paleobiology
- Pathobiology
- General Biology

Program Options

Co-op/internship employment is an option for biological science students. The major offers three distinct plans:

Five-year option with co-op/internship experience

This option allows for the greatest amount of employment experience, with three distinct six-month periods of employment included with studies. After the start of the sophomore year, students study or work through all terms, including summer.

Four-year option with one co-op/internship experience

The degree includes just one six-month period of full-time employment. After the start of sophomore year, students study or work through all terms, including summer.

Four-year option without co-op experience

The degree can be completed in four years without co-op/internship employment. Students are not required to pursue studies during any of the summer terms.

Degree Requirements

The Biological Sciences curriculum is designed to provide students with both depth and flexibility within the field of biology. In addition to the core requirements, students select one of five concentrations in a field of interest.

- Cell/Molecular Biology/Genetics/Biochemistry
- Organismal Biology/Physiology
- Ecology/Evolutionary Biology/Paleobiology
- Pathobiology
- General Biology

Concentration requirements and elective options are outlined below. Within each concentration, students are able to further specialize in a focus area by taking recommended electives.

Requirements		
Humanities and Social Sciences		
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
COM 230	Techniques of Speaking	3.0
COM 310 [WI]	Technical Communication	3.0
PHIL 251	Ethics	3.0
UNIV H101	The Drexel Experience	3.0
Humanities and Social Science Electives		9.0
Science, Technology, and Human Affairs Elective (See List Below)		3.0
Mathematics and Statistics		
Select one of the following sequences:		12.0
Intro to Analysis		
MATH 101	Introduction to Analysis I	
MATH 102	Introduction to Analysis II	
MATH 239	Mathematics for the Life Sciences	
Calculus		
MATH 121	Calculus I	
MATH 122	Calculus II	
MATH 123	Calculus III	
MATH 410	Scientific Data Analysis I	3.0
MATH 411	Scientific Data Analysis II	3.0
Physical Sciences		
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
CHEM 103	General Chemistry III	5.0
CHEM 241	Organic Chemistry I	4.0
CHEM 242	Organic Chemistry II	4.0
CHEM 243	Organic Chemistry III	3.0
CHEM 244	Organic Chemistry Laboratory I	3.0
CHEM 245	Organic Chemistry Laboratory II	3.0
PHYS 152	Introductory Physics I	4.0
PHYS 153	Introductory Physics II	4.0
PHYS 154	Introductory Physics III	4.0
Core Biology Courses		
BIO 122	Cells and Genetics	4.5
BIO 124	Evolution & Organismal Diversity	4.5
BIO 126	Physiology and Ecology	4.5
BIO 217	Evolution	4.0
BIO 218	Principles of Molecular Biology	4.0
BIO 219 [WI]	Techniques in Molecular Biology	2.5
BIO 224	Form, Function & Evolution of Vertebrates	4.0
BIO 225	Vertebrate Biology and Evolution Laboratory	2.0
BIO 471	Seminar in Biological Sciences	2.0
BIO 472	Seminar in Biological Sciences	2.0
BIO 473 [WI]	Seminar in Biological Sciences	2.0
Free Electives		24.0-26.0
Concentration Courses		28.0-30.0
Total Credits		181.0

Science, Technology, and Human Affairs Electives

ANTH 210 [WI]	Worldview: Science, Religion and Magic	3.0
BIO 212	Biotechnology	3.0
CJ 378	Science of Forensic Science	3.0
HIST 280	History of Science: Ancient to Medieval	3.0
HIST 281	History of Science: Enlightenment to Modernity	3.0
HIST 285	Technology in Historical Perspective	3.0
HIST 286	Exploration in Technology and Gender	3.0
HIST 290	Technology and the World Community	3.0
HIST 292	Technology in American Life	3.0
ENGL 300 [WI]	Literature & Science	3.0
ENGL 302	Environmental Literature	3.0
NFS 446	Perspectives in World Nutrition	3.0
PHIL 341	Philosophy of the Environment	3.0
PHIL 351	Philosophy of Technology	3.0
PHIL 361	Philosophy of Science	3.0
PSCI 371	Science, Technology, & Public Policy	3.0
SOC 235	Sociology of Health	3.0

Students select one of five concentration and fulfill the requirements, as outlined below.

1. The Cell/Molecular/Genetics/Biochemistry (CMGB) Concentration

This concentration provides exposure to several vital disciplines within Biology, and will prepare students for a diversity of careers in research, medicine, and industry. Students interested in tailoring their studies more specifically may follow the suggested "focus areas" when selecting their two CMGB Concentration electives.

Cell/Molecular/Genetics/Biochemistry (CMGB) Concentration Requirements		
BIO 214	Principles of Cell Biology	3.0
BIO 244	Genetics I	3.0
or BIO 444	Human Genetics	
BIO 270	Development Biology	3.0
BIO 311	Biochemistry	4.0
Cell/Molecular/Genetics/Biochemistry (CMGB) Concentration Electives (See Lists Below)		
Two Cell/Molecular/Genetics/Biochemistry (CMGB) Electives (see list below)		6.0
Organismal/Physiology Elective (see list below)		3.0
Evolutionary Bio/Ecology Elective (see list below)		3.0
Concentration Laboratory Courses		
Two Laboratory Electives (see list below)		4.0
Focus Areas		6.0-7.0
Select one of the following focuses:		
Neurobiology		
BIO 421	Biomembranes	
BIO 462	Biology of Neuron Function	
Pharmaceutics		
BIO 314	Pharmacology	
BIO 404	Structure and Function of Biomolecules	
Cell Biology		
BIO 433	Advanced Cell Biology	
Select one of the following:		
BIO 318	Biology of Cancer	
BIO 346	Stem Cell Research	
BIO 430	Cell Biology of Disease	
BIO 421	Biomembranes	
Molecular Biology *		
BIO 447	Advanced Genetics and Molecular Biology	
Select one of the following:		
BIO 314	Pharmacology	
BIO 318	Biology of Cancer	
BIO 331	Bioinformatics I	
BIO 404	Structure and Function of Biomolecules	
BIO 413	Genomics	
BIO 415	Proteins	
Biochemistry		
BIO 404	Structure and Function of Biomolecules	
Select one of the following:		
BIO 404	Structure and Function of Biomolecules	
BIO 314	Pharmacology	
BIO 318	Biology of Cancer	
BIO 415	Proteins	
BIO 421	Biomembranes	
Total Credits		35.0-36.0

* Students in this concentration interested in *Molecular Biology* should select the Concentration requirement of BIO 244 Genetics rather than BIO 444 Human Genetics.

Cell/Molecular/Genetics/Biochemistry (CMGB) Electives

BIO 231	Cell Physiology	3.0
BIO 314	Pharmacology	3.0
BIO 318	Biology of Cancer	3.0
BIO 331	Bioinformatics I	3.0
BIO 332	Bioinformatics II	3.0
BIO 346	Stem Cell Research	3.0
BIO 404	Structure and Function of Biomolecules	4.0
BIO 413	Genomics	3.0
BIO 421	Biomembranes	3.0
BIO 430	Cell Biology of Disease	3.0
BIO 433	Advanced Cell Biology	3.0
BIO 444	Human Genetics	3.0
BIO 445	Microbial Genetics	3.0
BIO 447	Advanced Genetics and Molecular Biology	3.0
BIO 451	Genetic Reg Development	3.0
BIO 463	Molecular Mechanisms of Neurodegeneration	3.0
BIO 465	Neurobiology of Disease	3.0
BIO 498	Independent Study	0.5-12.0

Organismal/Physiology Electives		
BIO 201	Human Physiology I	4.0
BIO 221	Microbiology	3.0
BIO 223	Parasitology	3.0
BIO 256	Vertebrate Morphology and Physiology	5.0
BIO 260	Plant Biology I	4.0
BIO 284	Biology of Stress	3.0
BIO 310	Comparative Physiology	3.0
BIO 322	Mycology	4.5
BIO 368	Embryology	4.0
BIO 370	Teratology	3.0
BIO 412	Biology of Aging	3.0
BIO 420	Virology	3.0
BIO 426	Immunology	3.0
ENVS 392	Ichthyology and Herpetology	3.0
Evolutionary Bio/Ecology Electives		
ENVS 230	General Ecology	3.0
ENVS 270	History of Life on Earth	4.0
ENVS 271	Dinosaurs and Their World	3.0
ENVS 284 [WI]	Physiological and Population Ecology	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
ENVS 322	Tropical Ecology	3.0
ENVS 323	Tropical Field Studies	3.0
ENVS 330	Aquatic Ecology	3.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 360	Evolutionary Developmental Biology	3.0
ENVS 364	Animal Behavior	3.0
ENVS 375	Invertebrate Paleontology	4.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 388	Marine Field Methods	4.0
ENVS 390	Marine Ecology	3.0
ENVS 441 [WI]	Issues in Global Change I: Seminar	2.0
ENVS 476	Paleobotany	3.0
ENVS 477	Vertebrate Paleontology	3.0
ENVS 520	Field Methods of Paleoecology	3.0
Laboratory Electives		
BIO 202	Human Physiology Laboratory	2.0
BIO 215 [WI]	Techniques in Cell Biology	2.5
BIO 222	Microbiology Laboratory	2.0
BIO 255	Invertebrate Morphology and Physiology Laboratory	2.0
BIO 256	Vertebrate Morphology and Physiology	5.0
BIO 271	Developmental Biology Laboratory	2.0
BIO 306	Biochemistry Laboratory	2.0
BIO 313	Comparative Physiology Laboratory	2.0
BIO 387	Gross Anatomy Laboratory	2.0
BIO 406	Computational Biochemistry Laboratory	2.0
BIO 427	Immunology Laboratory	2.0
ENVS 285	Population Ecology Laboratory	2.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 365	Animal Behavior Laboratory	2.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 388	Marine Field Methods	4.0
BIO 497	Research	0.5-12.0

2. The Organismal Biology/Physiology Concentration

This concentration combines courses in organismal biology and physiology with an opportunity to focus on human physiology. The concentration is designed to appeal to students interested in health and medicine, but also accommodates students seeking a wider breadth of knowledge in organismal diversity. Students can focus their electives in human physiology or can choose courses that study non-human organisms.

Organismal Biology/Physiology Concentration Requirements		
BIO 214	Principles of Cell Biology	3.0
or BIO 311	Biochemistry	
BIO 201	Human Physiology I	4.0
or BIO 254	Invertebrate Morphology and Physiology	
BIO 203	Human Physiology II	4.0
or BIO 256	Vertebrate Morphology and Physiology	
Select one of the following:		
BIO 221	Microbiology	
BIO 223	Parasitology	
BIO 260	Plant Biology I	
BIO 322	Mycology	
BIO 420	Virology	
Organismal Biology/Physiology Concentration Concentration Electives (See List Below)		
Cell/Molecular/Genetics/Biochemistry (CMGB) Elective		3.0
Two Organismal/Physiology Electives		6.0
Evolutionary Bio/Ecology Elective		3.0
Concentration Laboratory Courses		
Two Laboratory Electives		4.0
Focus Areas		
Human Physiology *		
Select two of the following:		
BIO 311	Biochemistry	
BIO 201	Human Physiology I	
BIO 203	Human Physiology II	
BIO 221	Microbiology	
BIO 223	Parasitology	
BIO 264	Ethnobotany	
BIO 284	Biology of Stress	
BIO 320	Microbial Pathogenesis	
BIO 368	Embryology	
BIO 370	Teratology	
BIO 386	Gross Anatomy **	
BIO 412	Biology of Aging	
BIO 420	Virology	
BIO 424	Microbial Physiology	
BIO 426	Immunology **	

BIO 435	Immunobiology of Disease
BIO 466	Endocrinology
ENVS 321	Environmental Health
ENVS 436	Principles of Toxicology I
ENVS 437	Principles of Toxicology II

Organismal Biology ***

Select two of the following:

BIO 386	Gross Anatomy
BIO 426	Immunology
BIO 214	Principles of Cell Biology
BIO 214	Principles of Cell Biology
BIO 254	Invertebrate Morphology and Physiology
BIO 256	Vertebrate Morphology and Physiology
BIO 221	Microbiology
BIO 223	Parasitology
BIO 260	Plant Biology I
BIO 262	Plant Biology II
BIO 284	Biology of Stress
BIO 310	Comparative Physiology
BIO 320	Microbial Pathogenesis
BIO 322	Mycology
BIO 368	Embryology
BIO 370	Teratology
BIO 386	Gross Anatomy
BIO 412	Biology of Aging
BIO 420	Virology
BIO 424	Microbial Physiology
BIO 426	Immunology
BIO 435	Immunobiology of Disease
BIO 466	Endocrinology
ENVS 321	Environmental Health
ENVS 392	Ichthyology and Herpetology
ENVS 436	Principles of Toxicology I

*Cell/Molecular/Genetics/Biochemistry (CMGB) electives

BIO 214	Principles of Cell Biology	3.0
BIO 244	Genetics I	3.0
BIO 270	Development Biology	3.0
BIO 311	Biochemistry	4.0
BIO 314	Pharmacology	3.0
BIO 318	Biology of Cancer	3.0
BIO 346	Stem Cell Research	3.0
BIO 404	Structure and Function of Biomolecules	4.0
BIO 413	Genomics	3.0
BIO 430	Cell Biology of Disease	3.0
BIO 444	Human Genetics	3.0
BIO 449	Recombinant DNA Laboratory	5.0
BIO 498	Independent Study (by permission of the department)	0.5-12.0

**Organismal/Physiology electives

BIO 201	Human Physiology I	4.0
BIO 203	Human Physiology II	4.0
BIO 221	Microbiology	3.0
BIO 223	Parasitology	3.0
BIO 254	Invertebrate Morphology and Physiology	3.0
BIO 256	Vertebrate Morphology and Physiology	5.0
BIO 262	Plant Biology II	4.0
BIO 264	Ethnobotany	3.0
BIO 284	Biology of Stress	3.0
BIO 310	Comparative Physiology	3.0
BIO 320	Microbial Pathogenesis	3.0
BIO 322	Mycology	4.5
BIO 368	Embryology	4.0
BIO 370	Teratology	3.0
BIO 412	Biology of Aging	3.0
BIO 420	Virology	3.0
BIO 424	Microbial Physiology	3.0
BIO 426	Immunology	3.0
BIO 435	Immunobiology of Disease	3.0
BIO 466	Endocrinology	4.0
ENVS 321	Environmental Health	3.0
ENVS 392	Ichthyology and Herpetology	3.0
ENVS 436	Principles of Toxicology I	3.0
ENVS 437	Principles of Toxicology II	3.0

*** Evolutionary Bio/Ecology electives

ENVS 230	General Ecology	3.0
ENVS 270	History of Life on Earth	4.0
ENVS 271	Dinosaurs and Their World	3.0
ENVS 284 [WI]	Physiological and Population Ecology	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
ENVS 322	Tropical Ecology	3.0
ENVS 323	Tropical Field Studies	3.0
ENVS 330	Aquatic Ecology	3.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 364	Animal Behavior	3.0
ENVS 375	Invertebrate Paleontology	4.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 388	Marine Field Methods	4.0
ENVS 390	Marine Ecology	3.0
ENVS 441 [WI]	Issues in Global Change I: Seminar	2.0
ENVS 476	Paleobotany	3.0
ENVS 477	Vertebrate Paleontology	3.0
ENVS 520	Field Methods of Paleoecology	3.0

+Laboratory electives

BIO 202	Human Physiology Laboratory	2.0
BIO 215 [WI]	Techniques in Cell Biology	2.5
BIO 222	Microbiology Laboratory	2.0

BIO 255	Invertebrate Morphology and Physiology Laboratory	2.0
BIO 256	Vertebrate Morphology and Physiology	5.0
BIO 271	Developmental Biology Laboratory	2.0
BIO 306	Biochemistry Laboratory	2.0
BIO 313	Comparative Physiology Laboratory	2.0
BIO 387	Gross Anatomy Laboratory	2.0
BIO 406	Computational Biochemistry Laboratory	2.0
BIO 427	Immunology Laboratory	2.0
BIO 449	Recombinant DNA Laboratory	5.0
ENVS 285	Population Ecology Laboratory	2.0
ENVS 287	Community Ecology Laboratory	2.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 365	Animal Behavior Laboratory	2.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 388	Marine Field Methods	4.0
ENVS 388	Marine Field Methods (by permission of the department)	4.0

3. The Ecology/Evolutionary Biology/ Paleobiology Concentration

This concentration focuses on ecological and evolutionary aspects of biology for biology majors who also have specific interests in ecology, evolution or paleobiology. This concentration is designed to maintain a breadth of knowledge in biology, but also allows students to tailor their course work more specifically to reflect their specific area of interest.

Ecology/Evolutionary Biology/Paleobiology Concentration requirements

ENVS 270	History of Life on Earth	4.0
Select three of the following:		9.0-12.0
ENVS 230	General Ecology	
ENVS 272	Physical Geology	
ENVS 284 [WI]	Physiological and Population Ecology	
ENVS 286	Community and Ecosystem Ecology	
ENVS 326	Molecular Ecology	
ENVS 360	Evolutionary Developmental Biology	
ENVS 375	Invertebrate Paleontology	
ENVS 477	Vertebrate Paleontology	
Ecology/Evolutionary Biology/Paleobiology concentration electives		
Select one Cell/Molecular/Genetics/Biochemistry (CMGB) elective (see list below)		3.0
Select one Organismal/Physiology elective (see list below)		3.0
Select two Evolutionary Bio/Ecology electives (see list below)		
Concentration Laboratory Courses		
Select two Laboratory electives (see list below)		6.0

Cell/Molecular/Genetics/Biochemistry (CMGB) electives

BIO 214	Principles of Cell Biology	3.0
BIO 244	Genetics I	3.0
BIO 311	Biochemistry	4.0
BIO 331	Bioinformatics I	3.0
BIO 346	Stem Cell Research	3.0
BIO 404	Structure and Function of Biomolecules	4.0
BIO 413	Genomics	3.0
BIO 430	Cell Biology of Disease	3.0
BIO 444	Human Genetics	3.0
BIO 449	Recombinant DNA Laboratory	5.0
ENVS 326	Molecular Ecology	3.0
BIO 498	Independent Study (by permission of the department)	0.5-12.0

Organismal/Physiology electives

BIO 201	Human Physiology I	4.0
BIO 221	Microbiology	3.0
BIO 223	Parasitology	3.0
BIO 254	Invertebrate Morphology and Physiology	3.0
BIO 256	Vertebrate Morphology and Physiology	5.0
BIO 260	Plant Biology I	4.0
BIO 284	Biology of Stress	3.0
BIO 310	Comparative Physiology	3.0
BIO 322	Mycology	4.5
BIO 368	Embryology	4.0
BIO 386	Gross Anatomy	3.0
BIO 412	Biology of Aging	3.0
BIO 420	Virology	3.0
BIO 426	Immunology	3.0
ENVS 392	Ichthyology and Herpetology	3.0

Evolutionary Bio/Ecology electives

ENVS 230	General Ecology	3.0
ENVS 271	Dinosaurs and Their World	3.0
ENVS 272	Physical Geology	4.0
ENVS 284 [WI]	Physiological and Population Ecology	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
ENVS 322	Tropical Ecology	3.0
ENVS 330	Aquatic Ecology	3.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 360	Evolutionary Developmental Biology	3.0
ENVS 364	Animal Behavior	3.0
ENVS 374	Sedimentary Environments	3.0
ENVS 375	Invertebrate Paleontology	4.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 390	Marine Ecology	3.0
ENVS 410	Physiological Ecology	3.0
ENVS 412	Biophysical Ecology	3.0
ENVS 413	Advanced Population Ecology	3.0
ENVS 414	Advanced Community Ecology	3.0
ENVS 476	Paleobotany	3.0
ENVS 477	Vertebrate Paleontology	3.0
ENVS 520	Field Methods of Paleoecology	3.0

Laboratory electives

BIO 202	Human Physiology Laboratory	2.0
BIO 215 [WI]	Techniques in Cell Biology	2.5
BIO 222	Microbiology Laboratory	2.0
BIO 255	Invertebrate Morphology and Physiology Laboratory	2.0
BIO 256	Vertebrate Morphology and Physiology	5.0
BIO 306	Biochemistry Laboratory	2.0
BIO 313	Comparative Physiology Laboratory	2.0
BIO 333	Bioinformatics Laboratory	2.0
BIO 387	Gross Anatomy Laboratory	2.0
BIO 406	Computational Biochemistry Laboratory	2.0
BIO 427	Immunology Laboratory	2.0
BIO 449	Recombinant DNA Laboratory	5.0
ENVS 285	Population Ecology Laboratory	2.0
ENVS 287	Community Ecology Laboratory	2.0
ENVS 327	Molecular Ecology Laboratory	2.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 365	Animal Behavior Laboratory	2.0
BIO 497	Research (by permission of the department)	0.5-12.0

Focus Areas

Students interested in Ecology should take ENVS 230 General Ecology, ENVS 284 Physiological and Population Ecology [WI] and ENVS 286 Community and Ecosystem Ecology from the above options. Students should also select 2 of the following electives:

ENVS 322	Tropical Ecology	3.0
ENVS 324	Microbial Ecology	3.0
ENVS 330	Aquatic Ecology	3.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 364	Animal Behavior	3.0
ENVS 390	Marine Ecology	3.0
ENVS 410	Physiological Ecology	3.0
ENVS 412	Biophysical Ecology	3.0
ENVS 413	Advanced Population Ecology	3.0
ENVS 414	Advanced Community Ecology	3.0
ENVS 520	Field Methods of Paleoecology	3.0

Students interested in Paleobiologyy should take ENVS 272 Physical Geology, ENVS 272 Physical Geology, and ENVS 477 Vertebrate Paleontology from the above options. Students should also select 2 of the following electives:

ENVS 230	General Ecology	3.0
ENVS 271	Dinosaurs and Their World	3.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 360	Evolutionary Developmental Biology	3.0
ENVS 374	Sedimentary Environments	3.0
ENVS 390	Marine Ecology	3.0
ENVS 364	Animal Behavior	3.0
ENVS 390	Marine Ecology	3.0
ENVS 476	Paleobotany	3.0
ENVS 520	Field Methods of Paleoecology	3.0

4. The Pathobiology Concentration

The Pathobiology concentration focuses on pathogenesis, and provides a unique option for students that differs from the more traditional disciplines in cell/molecular/genetics/biochemistry. This concentration is designed to appeal to students with an interest in pursuing careers in areas of public and allied health.

BIO 214	Principles of Cell Biology	3.0
BIO 221	Microbiology	3.0
BIO 320	Microbial Pathogenesis	3.0
BIO 426	Immunology	3.0
Select one Cell/Molecular/Genetics/Biochemistry (CMGB) elective (see list below)		3.0
Select two Organismal/Physiology electives (see list below)		6.0
Select one Evolutionary Bio/Ecology elective (see list below)		3.0
Concentration Laboratory Courses		
Two Laboratory electives (see list below)		6.0

Cell/Molecular/Genetics/Biochemistry (CMGB) electives:

BIO 244	Genetics I	3.0
BIO 311	Biochemistry	4.0
BIO 314	Pharmacology	3.0
BIO 318	Biology of Cancer	3.0
BIO 346	Stem Cell Research	3.0
BIO 404	Structure and Function of Biomolecules	4.0
BIO 430	Cell Biology of Disease	3.0
BIO 444	Human Genetics	3.0
BIO 449	Recombinant DNA Laboratory	5.0
BIO 498	Independent Study (by permission of the department)	0.5-12.0

Organismal/Physiology electives

BIO 201	Human Physiology I	4.0
BIO 221	Microbiology	3.0
BIO 223	Parasitology	3.0
BIO 284	Biology of Stress	3.0
BIO 322	Mycology	4.5
BIO 368	Embryology	4.0
BIO 370	Teratology	3.0
BIO 386	Gross Anatomy	3.0
BIO 412	Biology of Aging	3.0
BIO 420	Virology	3.0
BIO 424	Microbial Physiology	3.0
BIO 435	Immunobiology of Disease	3.0
BIO 466	Endocrinology	4.0
ENVS 321	Environmental Health	3.0
ENVS 436	Principles of Toxicology I	3.0
ENVS 437	Principles of Toxicology II	3.0

Evolutionary Bio/Ecology electives

ENVS 230	General Ecology	3.0
ENVS 270	History of Life on Earth	4.0
ENVS 271	Dinosaurs and Their World	3.0

ENVS 284 [WI]	Physiological and Population Ecology	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
ENVS 322	Tropical Ecology	3.0
ENVS 323	Tropical Field Studies	3.0
ENVS 330	Aquatic Ecology	3.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 364	Animal Behavior	3.0
ENVS 375	Invertebrate Paleontology	4.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 388	Marine Field Methods	4.0
ENVS 390	Marine Ecology	3.0
ENVS 441 [WI]	Issues in Global Change I: Seminar	2.0
ENVS 476	Paleobotany	3.0
ENVS 477	Vertebrate Paleontology	3.0
ENVS 520	Field Methods of Paleoecology	3.0

Laboratory electives

BIO 202	Human Physiology Laboratory	2.0
BIO 215 [WI]	Techniques in Cell Biology	2.5
BIO 222	Microbiology Laboratory	2.0
BIO 306	Biochemistry Laboratory	2.0
BIO 387	Gross Anatomy Laboratory	2.0
BIO 406	Computational Biochemistry Laboratory	2.0
BIO 427	Immunology Laboratory	2.0
BIO 449	Recombinant DNA Laboratory	5.0
ENVS 285	Population Ecology Laboratory	2.0
ENVS 287	Community Ecology Laboratory	2.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 365	Animal Behavior Laboratory	2.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 388	Marine Field Methods	4.0
BIO 497	Research (by permission of the department)	0.5-12.0

5. The General Biology Concentration

This concentration will allow maximum flexibility for students who want to develop their own unique plan of study. The concentration is designed for students who may not have one specific area of interest, but who are looking to be well-rounded in the biological sciences. Students pursuing careers in education, where a wider breadth of knowledge in biology is desirable, may choose to select this concentration.

General Biology Concentration Electives	
2 or 3 Cell/Molecular/Genetics/Biochemistry (CMGB) electives (see list below)	
2 or 3 Organismal/Physiology electives (see list below)	
2 or 3 Evolutionary Bio/Ecology electives (see list below)	
Concentration Laboratory Courses	
Two Laboratory electives (see list below)	4.0

Cell/Molecular/Genetics/Biochemistry (CMGB) electives

BIO 214	Principles of Cell Biology	3.0
BIO 231	Cell Physiology	3.0
BIO 244	Genetics I	3.0
BIO 270	Development Biology	3.0
BIO 311	Biochemistry	4.0
BIO 314	Pharmacology	3.0
BIO 318	Biology of Cancer	3.0
BIO 331	Bioinformatics I	3.0
BIO 332	Bioinformatics II	3.0
BIO 346	Stem Cell Research	3.0
BIO 404	Structure and Function of Biomolecules	4.0
BIO 413	Genomics	3.0
BIO 415	Proteins	3.0
BIO 421	Biomembranes	3.0
BIO 430	Cell Biology of Disease	3.0
BIO 433	Advanced Cell Biology	3.0
BIO 444	Human Genetics	3.0
BIO 445	Microbial Genetics	3.0
BIO 447	Advanced Genetics and Molecular Biology	3.0
BIO 449	Recombinant DNA Laboratory	5.0
BIO 451	Genetic Reg Development	3.0
BIO 462	Biology of Neuron Function	3.0
BIO 465	Neurobiology of Disease	3.0
ENVS 326	Molecular Ecology	3.0
BIO 498	Independent Study (by permission of the department)	0.5-12.0

Organismal/Physiology electives

BIO 201	Human Physiology I	4.0
BIO 203	Human Physiology II	4.0
BIO 221	Microbiology	3.0
BIO 223	Parasitology	3.0
BIO 254	Invertebrate Morphology and Physiology	3.0
BIO 256	Vertebrate Morphology and Physiology	5.0
BIO 260	Plant Biology I	4.0
BIO 262	Plant Biology II	4.0
BIO 264	Ethnobotany	3.0
BIO 284	Biology of Stress	3.0
BIO 310	Comparative Physiology	3.0
BIO 320	Microbial Pathogenesis	3.0
BIO 322	Mycology	4.5
BIO 368	Embryology	4.0
BIO 370	Teratology	3.0
BIO 412	Biology of Aging	3.0
BIO 420	Virology	3.0
BIO 424	Microbial Physiology	3.0
BIO 426	Immunology	3.0
BIO 435	Immunobiology of Disease	3.0
BIO 466	Endocrinology	4.0
ENVS 321	Environmental Health	3.0

ENVS 392	Ichthyology and Herpetology	3.0
ENVS 436	Principles of Toxicology I	3.0
ENVS 437	Principles of Toxicology II	3.0

Evolutionary Bio/Ecology electives

ENVS 230	General Ecology	3.0
ENVS 270	History of Life on Earth	4.0
ENVS 271	Dinosaurs and Their World	3.0
ENVS 272	Physical Geology	4.0
ENVS 284 [WI]	Physiological and Population Ecology	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
ENVS 322	Tropical Ecology	3.0
ENVS 323	Tropical Field Studies	3.0
ENVS 324	Microbial Ecology	3.0
ENVS 330	Aquatic Ecology	3.0
ENVS 336	Terrestrial Ecology	5.0
ENVS 360	Evolutionary Developmental Biology	3.0
ENVS 364	Animal Behavior	3.0
ENVS 375	Invertebrate Paleontology	4.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 388	Marine Field Methods	4.0
ENVS 390	Marine Ecology	3.0
ENVS 410	Physiological Ecology	3.0
ENVS 412	Biophysical Ecology	3.0
ENVS 413	Advanced Population Ecology	3.0
ENVS 414	Advanced Community Ecology	3.0
ENVS 441 [WI]	Issues in Global Change I: Seminar	2.0
ENVS 442	Issues in Global Change II: Research	2.0
ENVS 476	Paleobotany	3.0
ENVS 477	Vertebrate Paleontology	3.0
ENVS 520	Field Methods of Paleoecology	3.0

Laboratory electives

BIO 202	Human Physiology Laboratory	2.0
BIO 215 [WI]	Techniques in Cell Biology	2.5
BIO 222	Microbiology Laboratory	2.0
BIO 255	Invertebrate Morphology and Physiology Laboratory	2.0
BIO 256	Vertebrate Morphology and Physiology	5.0
BIO 271	Developmental Biology Laboratory	2.0
BIO 306	Biochemistry Laboratory	2.0
BIO 313	Comparative Physiology Laboratory	2.0
BIO 333	Bioinformatics Laboratory	2.0
BIO 387	Gross Anatomy Laboratory	2.0
BIO 406	Computational Biochemistry Laboratory	2.0
BIO 427	Immunology Laboratory	2.0
BIO 449	Recombinant DNA Laboratory	5.0
ENVS 285	Population Ecology Laboratory	2.0
ENVS 287	Community Ecology Laboratory	2.0
ENVS 327	Molecular Ecology Laboratory	2.0
ENVS 365	Animal Behavior Laboratory	2.0
ENVS 382	Field Botany of the New Jersey Pine Barrens	4.0
ENVS 383	Ecology of the New Jersey Pine Barrens	4.0
ENVS 388	Marine Field Methods	4.0
BIO 497	Research (by permission of the department)	0.5-12.0

Note about laboratory credits: BIO 256, BIO 449, ENVS 336, ENVS 382 and ENVS 388 have both a lecture and laboratory component.

Sample Plans of Study

Biological Sciences Major: Four-year Co-op

(Additional sample plans for other co-op options can be viewed below.)

Term 1		**Credits**
BIO 122	Cells and Genetics	4.5
CHEM 101	General Chemistry I	3.5
ENGL 101	Expository Writing and Reading	3.0
MATH 121 or 101	Calculus I Introduction to Analysis I	4.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**16.0**
Term 2		
BIO 124	Evolution & Organismal Diversity	4.5
CHEM 102	General Chemistry II	4.5
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122 or 102	Calculus II Introduction to Analysis II	4.0
UNIV H101	The Drexel Experience	2.0
	Term Credits	**18.0**
Term 3		
BIO 126	Physiology and Ecology	4.5
CHEM 103	General Chemistry III	5.0
COOP 101	Career Management and Professional Development	0.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 239 or 123	Mathematics for the Life Sciences Calculus III	4.0
	Term Credits	**16.5**
Term 4		
BIO 217	Evolution	4.0
BIO 219 [WI]	Techniques in Molecular Biology	2.5
CHEM 241	Organic Chemistry I	4.0
PHYS 152	Introductory Physics I	4.0
	Term Credits	**14.5**
Term 5		
BIO 218	Principles of Molecular Biology	4.0
CHEM 242	Organic Chemistry II	4.0
CHEM 244	Organic Chemistry Laboratory I	3.0
PHYS 153	Introductory Physics II	4.0
	Term Credits	**15.0**
Term 6		
BIO 224	Form, Function & Evolution of Vertebrates	4.0
BIO 225	Vertebrate Biology and Evolution Laboratory	2.0
CHEM 243	Organic Chemistry III	3.0

CHEM 245	Organic Chemistry Laboratory II	3.0
PHYS 154	Introductory Physics III	4.0
	Term Credits	**16.0**
Term 7		
PHIL 251	Ethics	3.0
Free Elective		3.0
Science, Technology and Human Affairs Elective*		3.0
BIO/ENVS Elective		3.0
Biology Laboratory Requirement Course*		2.0
	Term Credits	**14.0**
Term 8		
COM 230	Techniques of Speaking	3.0
MATH 410	Scientific Data Analysis I	3.0
Biology Laboratory Requirement Course*		2.0
BIO/ENVS Elective		3.0
Free Elective		3.0
	Term Credits	**14.0**
Term 9		
COM 310 [WI]	Technical Communication	3.0
MATH 411	Scientific Data Analysis II	3.0
Humanities/Social Science Elective		3.0
BIO/ENVS Elective		3.0
Free Elective		3.0
	Term Credits	**15.0**
Term 10		
BIO 471	Seminar in Biological Sciences	2.0
BIO/ENVS Electives		6.0
Free Electives		6.0
	Term Credits	**14.0**
Term 11		
BIO 472	Seminar in Biological Sciences	2.0
Free Elective		3.0
Humanities/Social Science Elective		3.0
BIO/ENVS Electives		6.0
	Term Credits	**14.0**
Term 12		
BIO 473 [WI]	Seminar in Biological Sciences	2.0
Free Electives		6.0
Humanities/Social Science Elective		3.0
BIO/ENVS Elective		3.0
	Term Credits	**14.0**

Total Credit: 181.0

* See degree requirements (p. 9).

Biological Sciences Major: Five-year Co-op

Term 1		**Credits**
BIO 122	Cells and Genetics	4.5
CHEM 101	General Chemistry I	3.5
ENGL 101	Expository Writing and Reading	3.0
MATH 121 or 101	Calculus I Introduction to Analysis I	4.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**16.0**
Term 2		
BIO 124	Evolution & Organismal Diversity	4.5
CHEM 102	General Chemistry II	4.5
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122 or 102	Calculus II Introduction to Analysis II	4.0
UNIV H101	The Drexel Experience	2.0
	Term Credits	**18.0**
Term 3		
BIO 126	Physiology and Ecology	4.5
CHEM 103	General Chemistry III	5.0
COOP 101	Career Management and Professional Development	0.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 239 or 123	Mathematics for the Life Sciences Calculus III	4.0
	Term Credits	**16.5**
Term 4		
BIO 217	Evolution	4.0
BIO 219 [WI]	Techniques in Molecular Biology	2.5
CHEM 241	Organic Chemistry I	4.0
PHYS 152	Introductory Physics I	4.0
	Term Credits	**14.5**
Term 5		
BIO 218	Principles of Molecular Biology	4.0
CHEM 242	Organic Chemistry II	4.0
CHEM 244	Organic Chemistry Laboratory I	3.0
PHYS 153	Introductory Physics II	4.0
	Term Credits	**15.0**
Term 6		
CHEM 243	Organic Chemistry III	3.0
CHEM 245	Organic Chemistry Laboratory II	3.0
PHYS 154	Introductory Physics III	4.0
Science, Technology and Human Affairs Elective*		3.0
BIO/ENVS Elective		3.0
	Term Credits	**16.0**
Term 7		
BIO 224	Form, Function & Evolution of Vertebrates	4.0
BIO 225	Vertebrate Biology and Evolution Laboratory	2.0
PHIL 251	Ethics	3.0
Free Elective		3.0
Humanities/Social Science Elective		3.0
	Term Credits	**15.0**
Term 8		
COM 230	Techniques of Speaking	3.0
MATH 410	Scientific Data Analysis I	3.0
BIO/ENVS Elective		3.0
Biology Laboratory Requirement Course*		2.0

Free Elective		3.0
	Term Credits	**14.0**
Term 9		
COM 310 [WI]	Technical Communication	3.0
MATH 411	Scientific Data Analysis II	3.0
Biology Laboratory Requirement Course*		2.0
BIO/ENVS Elective		3.0
Free Elective		3.0
	Term Credits	**14.0**
Term 10		
BIO 471	Seminar in Biological Sciences	2.0
BIO/ENVS Electives		6.0
Free Electives		6.0
	Term Credits	**14.0**
Term 11		
BIO 472	Seminar in Biological Sciences	2.0
Free Elective		3.0
Humanities/Social Science Elective		3.0
BIO/ENVS Electives		6.0
	Term Credits	**14.0**
Term 12		
BIO 473 [WI]	Seminar in Biological Sciences	2.0
Free Electives		6.0
Humanities/Social Science Elective		3.0
BIO/ENVS Elective		3.0
	Term Credits	**14.0**

Total Credit: 181.0

* See degree requirements (p. 9).

Biological Sciences Major: Four-year Non-co-op

Term 1		**Credits**
BIO 122	Cells and Genetics	4.5
CHEM 101	General Chemistry I	3.5
ENGL 101	Expository Writing and Reading	3.0
MATH 121 or 101	Calculus I Introduction to Analysis I	4.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**16.0**
Term 2		
BIO 124	Evolution & Organismal Diversity	4.5
ENGL 102	Persuasive Writing and Reading	3.0
CHEM 102	General Chemistry II	4.5
MATH 122 or 102	Calculus II Introduction to Analysis II	4.0
UNIV H101	The Drexel Experience	2.0
	Term Credits	**18.0**
Term 3		
BIO 126	Physiology and Ecology	4.5
CHEM 103	General Chemistry III	5.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 239 or 123	Mathematics for the Life Sciences Calculus III	4.0
	Term Credits	**16.5**
Term 4		
BIO 217	Evolution	4.0
BIO 219 [WI]	Techniques in Molecular Biology	2.5
CHEM 241	Organic Chemistry I	4.0
PHYS 152	Introductory Physics I	4.0
	Term Credits	**14.5**
Term 5		
BIO 218	Principles of Molecular Biology	4.0
CHEM 242	Organic Chemistry II	4.0
CHEM 244	Organic Chemistry Laboratory I	3.0
PHYS 153	Introductory Physics II	4.0
	Term Credits	**15.0**
Term 6		
BIO 224	Form, Function & Evolution of Vertebrates	4.0
BIO 225	Vertebrate Biology and Evolution Laboratory	2.0
CHEM 243	Organic Chemistry III	3.0
CHEM 245	Organic Chemistry Laboratory II	3.0
PHYS 154	Introductory Physics III	4.0
	Term Credits	**16.0**
Term 7		
COM 230	Techniques of Speaking	3.0
MATH 410	Scientific Data Analysis I	3.0
Science, Technology and Human Affairs Elective		3.0
Free Elective		3.0
BIO/ENVS Elective		3.0
	Term Credits	**15.0**
Term 8		
COM 310 [WI]	Technical Communication	3.0
MATH 411	Scientific Data Analysis II	3.0
Free Elective		3.0
BIO/ENVS Elective		3.0
Biology Laboratory Requirement Course*		2.0
	Term Credits	**14.0**
Term 9		
PHIL 251	Ethics	3.0
Biology Laboratory Requirement Course*		2.0
Humanities/Social Science Elective		3.0
BIO/ENVS Elective		3.0
Free Elective		3.0
	Term Credits	**14.0**
Term 10		
BIO 471	Seminar in Biological Sciences	2.0
BIO/ENVS Electives		6.0
Free Electives		6.0
	Term Credits	**14.0**
Term 11		
BIO 472	Seminar in Biological Sciences	2.0

Free Elective	3.0
Humanities/Social Science Elective	3.0
BIO/ENVS Electives	6.0
Term Credits	**14.0**
Term 12	
BIO 473 [WI] Seminar in Biological Sciences	2.0
Free Electives	6.0
Humanities/Social Science Elective	3.0
BIO/ENVS Elective	3.0
Term Credits	**14.0**

Total Credit: 181.0

* See degree requirements (p. 9).

Co-op/Career Opportunities

Opportunities

Students earn a bachelor's degree in the biological sciences and are prepared for technical careers in research or commercial laboratories or for professional schools.

Graduates typically work for pharmaceutical companies, medical research laboratories, biotechnology companies, or in government laboratories. Many graduates also choose to pursue an advanced degree in the field.

Co-op Opportunitiess

Past co-op employers of biosciences majors have included:

- GlaxoSmithKline
- AstraZeneca Pharmaceuticals
- Wistar Institute
- Moss Rehab
- ViroPharma, Inc.
- NovaFlora, Inc.
- Wyeth

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on co-op and post-graduate opportunities.

Dual/Accelerated Degree

Combined Bachelors/Masters Degree

Qualified students can take graduate courses in their junior and senior years for undergraduate or graduate credit. They can also complete a combined BS /MS degree in five years. Further questions about the BS / MS degree program should be directed to the departmental graduate advisor:
Susan Cole
Graduate Advisor
Department of Biology
215.895.2905
coless@drexel.edu

Minor in Biological Sciences

The minor in biological sciences is designed for students who wish to become acquainted with the life sciences while pursuing a major in another area. This option should be particularly useful for students majoring in areas such as chemistry, engineering, physics, or psychology who are interested in admission to medical schools or graduate programs. Students interested in the minor should consult with an academic adviser in the department for help with course selections.

Required Courses

BIO 122	Cells and Genetics	4.5
BIO 124	Evolution & Organismal Diversity	4.5
BIO 126	Physiology and Ecology	4.5
BIO 217	Evolution	4.0
BIO 218	Principles of Molecular Biology	4.0
BIO 224	Form, Function & Evolution of Vertebrates	4.0
Total Credits		25.5

* Note: The department also offers a minor in Bioinformatics (http://www.drexel.edu/catalog/minors/bioinformatics.htm) specifically designed for students majoring in biomedical engineering, biological science, computer science, information systems, or mathematics.

Facilities

The Department of Biology has well-equipped teaching laboratories with networked computers and advanced digital image analysis capability. Both teaching and research laboratories contain a range of modern equipment including microscopes, centrifuges, chromatographs, spectrophotometers, scintillation counters, culture chambers, and densitometers.
Visit the Bioscience Research Assets (http://www.drexel.edu/coas/bioscience/research.html) page for more information.

Chemistry

Bachelor of Arts Degree: 184.5 quarter credits
Bachelor of Science Degree: 190.5 quarter credits

About the Program

Drexel's Department of Chemistry offers both a BA and a BS degree in chemistry. The BA is offered as a 4-year non-co-op program for those interested in following their undergraduate education in chemistry with professional school, such as law or medicine. The BS degree, offered in three formats (a 5-year three co-op, 4-year one co-op and a 4-year non-co-op), is certified by the American Chemical Society. In addition, a minor in chemistry is available for students in other majors who desire a strong physical science background.

Each student plans a course of study and selects electives in consultation with an advisor in the Chemistry Department (http://www.drexel.edu/chemistry). Students who show initiative and laboratory ability are encouraged to participate in undergraduate research by selecting a research problem in collaboration with one of the departmental faculty members. Students in the BS program are required to participate in undergraduate research through the Senior Research courses.

Most graduate courses in chemistry are open to qualified seniors. Prerequisites and descriptions of available graduate courses appear in the graduate catalog.

About the Accelerated Bachelors/Masters Dual Degree Program in Chemistry

The Bachelor's/Master's (BS/MS) dual degree program is an accelerated program providing the academically qualified student with an opportunity to earn both a BS and an MS degree (two diplomas are awarded) in five years, the time normally required to finish the co-op option BS degree alone.

This is an academically demanding program, but there are several allowances built in to enable the program to be completed in the time allotted. For instance, only 180 rather than 192 undergraduate quarter credits are required. The co-op experience may be adjusted; the student may take two rather than three coop cycles, enabling two additional quarters of on-campus study. If needed, the student may also take evening courses while on co-op.

Eligibility

Exceptional students with a cumulative grade point average of at least 3.0 and who are enrolled in the five-year co-op option program are eligible for the BS/MS program. Students formally apply to the program after they have completed 90 credits but before they have completed 120 credits. Students are strongly encouraged to begin planning for the program as early as their freshman year. Students who have more than 120 credits are not eligible.

Transfer students are eligible to join the BS/MS program, but they must be able to complete the program in the time it would take to complete the BS degree alone. International transfer students must be able to meet the required minimum TOEFL score for the department graduate program (currently 550) in order to be admitted to the BS/MS program.

Application Process

You need to formally apply to the program. Applications are available in the Office of Graduate Admissions or in the College of Arts & Sciences advisor's office. Your application must be accompanied by a Plan of Study prepared in consultation with the undergraduate and graduate advisor in the department and approved by both the Department Head and the Dean. Entry into the program must be officially approved by both the Department Head and Academic Dean.

BS/MS Requirements

Students enrolled in the BS/MS dual degree program must complete 180 undergraduate quarter credits for the BS degree and at least 45 graduate quarter credits for the MS degree. All graduate departmental requirements must be satisfied in full, including producing a thesis, if the thesis-option Masters program is elected. Masters thesis requirements may be completed in the summer term of the final year with prior approval of the department. Students in the BS/MS program must maintain a cumulative GPA of 3.0 in their undergraduate and graduate coursework to remain in the program. Further questions about the BS/MS degree program should be directed to the departmental graduate advisor.

Additional Information

For more information about the major in chemistry, contact:

Daniel King, PhD
Undergraduate Affairs Committee Chair

Department of Chemistry
Drexel University
dk68@drexel.edu

Degree Requirements (BA)

General Education Requirements *		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
UNIV S101	The Drexel Experience	2.0
Humanities and Arts electives		6.0
International Studies electives		6.0
Social and Behavioral Studies electives		6.0
Studies in Diversity electives		6.0
Language Requirements courses		8.0
CHEM 121	Majors Chemistry I	5.0
CHEM 122	Majors Chemistry II	5.0
CHEM 123	Majors Chemistry III	5.5
CHEM 230	Quantitative Analysis	4.0
CHEM 231 [WI]	Quantitative Analysis Laboratory	2.0
CHEM 246	Majors Organic I	6.5
CHEM 248	Majors Organic II	6.5
CHEM 249	Majors Organic III	7.0
CHEM 253	Thermodynamics and Kinetics	4.0
CHEM 270	Software Skills for Chemists	3.0
CHEM 357 [WI]	Physical Chemistry Laboratory I	2.5
CHEM 367	Chemical Information Retrieval	3.0
CHEM 421	Inorganic Chemistry I	3.0
Chemistry Electives		
Select two Chemistry Electives **		6.0
Biology Requirements		
BIO 122	Cells and Genetics	4.5
BIO 124	Evolution & Organismal Diversity	4.5
BIO 126	Physiology and Ecology	4.5
Mathematics Requirements		
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
Physics Requirements		
PHYS 101	Fundamentals of Physics I	4.0
PHYS 102	Fundamentals of Physics II	4.0
PHYS 201	Fundamentals of Physics III	4.0
Free Electives		
Free electives		36.0
Total Credits		183.5

* Categories of Electives:

- *Humanities and Arts Electives*
  Designated courses in art, art history, communication studies, foreign languages (300-level or above), history, literature, music, philosophy, religion, and theatre arts.
- *International Electives*
  Designated courses in anthropology, art history, history, literature, music, politics and sociology. Courses with an international focus may be used to fulfill requirements in other categories as well.
- *Social and Behavioral Studies Electives*
  Designated courses in anthropology,criminal justice, economics, international relations, history, politics, psychology and sociology.
- *Studies in Diversity Electives*
  Africana studies, women's studies or designated cross-listed courses in anthropology, art, art history, history, literature, music, philosophy, politics and sociology.
- *Language Requirement*
  Students may satisfy the language course requirements in two ways: (1) taking two terms of sequential study of a foreign language (or placement at the exit level of 103 or above); or (2) taking two terms of a computer language or placement out as determined by the Department of Computer Science.

** Courses with CHEM prefix, although ENVS chemistry courses can also fulfill this requirement.

Sample Plan of Study (BA)

Four-year Non-Co-op

Term 1		**Credits**
BIO 122	Cells and Genetics	4.5
CHEM 121	Majors Chemistry I	5.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 121	Calculus I	4.0
UNIV S101	The Drexel Experience	1.0
	Term Credits	**17.5**
Term 2		
BIO 124	Evolution & Organismal Diversity	4.5
CHEM 122	Majors Chemistry II	5.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
MATH 122	Calculus II	4.0
	Term Credits	**16.5**
Term 3		
BIO 126	Physiology and Ecology	4.5
CHEM 123	Majors Chemistry III	5.5
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
MATH 123	Calculus III	4.0
	Term Credits	**17.0**
Term 4		
CHEM 230*	Quantitative Analysis	4.0
CHEM 231 [WI] *	Quantitative Analysis Laboratory	2.0
CHEM 246	Majors Organic I	6.5
Free elective		3.0
	Term Credits	**15.5**
Term 5		
CHEM 248	Majors Organic II	6.5
MATH 200	Multivariate Calculus	4.0
PHYS 101	Fundamentals of Physics I	4.0
	Term Credits	**14.5**
Term 6		
CHEM 249	Majors Organic III	7.0
PHYS 102	Fundamentals of Physics II	4.0
Humanities electives		6.0
	Term Credits	**17.0**
Term 7		
CHEM 253	Thermodynamics and Kinetics	4.0
CHEM 367	Chemical Information Retrieval	3.0
CHEM 421	Inorganic Chemistry I	3.0
PHYS 201	Fundamentals of Physics III	4.0
UNIV S101	The Drexel Experience	2.0
	Term Credits	**16.0**
Term 8		
CHEM 270	Software Skills for Chemists	3.0
CHEM 357 [WI]	Physical Chemistry Laboratory I	2.5
International Studies elective		3.0
Diversity Studies elective		3.0
Language course		4.0
	Term Credits	**15.5**
Term 9		
Diversity Studies elective		3.0
Social and Behavioral Sciences elective		3.0
International Studies elective		3.0
Language course		4.0
	Term Credits	**13.0**
Term 10		
Social and Behavioral Sciences elective		3.0
Free electives		12.0
	Term Credits	**15.0**
Term 11		
Chemistry elective		3.0
Free elective		12.0
	Term Credits	**15.0**
Term 12		
Free electives		12.0
	Term Credits	**12.0**

Total Credit: 184.5

* CHEM 230 and CHEM 231 must be taken concurrently.

Degree Requirements (BS)

General Education Requirements

ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0

ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
UNIV S101	The Drexel Experience	3.0
Technical electives *		6.0
Liberal Studies electives *		6.0
Chemistry Requirements		
CHEM 121	Majors Chemistry I	5.0
CHEM 122	Majors Chemistry II	5.0
CHEM 123	Majors Chemistry III	5.5
CHEM 230	Quantitative Analysis	4.0
CHEM 231 [WI]	Quantitative Analysis Laboratory	2.0
CHEM 246	Majors Organic I	6.5
CHEM 248	Majors Organic II	6.5
CHEM 249	Majors Organic III	7.0
CHEM 253	Thermodynamics and Kinetics	4.0
CHEM 270	Software Skills for Chemists	3.0
CHEM 346	Qualitative Organic Chemistry	5.5
CHEM 355	Physical Chemistry IV	3.0
CHEM 357 [WI]	Physical Chemistry Laboratory I	2.5
CHEM 358	Physical Chemistry Laboratory II	2.5
CHEM 359	Atomic and Molecular Spectroscopy	3.0
CHEM 367	Chemical Information Retrieval	3.0
CHEM 420	Molecular Symmetry and Group Theory Applied Chemistry	3.0
CHEM 421	Inorganic Chemistry I	3.0
CHEM 422	Inorganic Chemistry II	3.0
CHEM 425	Inorganic Chemistry Laboratory	4.0
CHEM 430	Analytical Chemistry I	3.0
CHEM 431 [WI]	Analytical Chemistry II	4.0
CHEM 493	Senior Research Project	9.0
Biology Requirements		
BIO 122	Cells and Genetics	4.5
BIO 214	Principles of Cell Biology	3.0
Biochemistry Requirements **		
BIO 311	Biochemistry	4.0
or BIO 404	Structure and Function of Biomolecules	
BIO 306	Biochemistry Laboratory	2.0
Computer/Mathematics Requirements		
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	4.0
or MATH 210	Differential Equations	
Physics Requirements		
PHYS 101	Fundamentals of Physics I	4.0
PHYS 102	Fundamentals of Physics II	4.0
PHYS 201	Fundamentals of Physics III	4.0
Free Electives		
Free electives		24.0
Total Credits		190.5

Footnotes

* Technical electives are defined as 200+ level courses from Science, Mathematics, Business, Engineering or Information Studies. Liberal studies electives are defined as courses (at any level) from all other areas.

** The American Chemical Society requires ACS-certified students to take a specified number of biochemistry courses. To fulfill this requirement in the BS curriculum, you should take a combination of one lecture and one lab course from the choice of: BIO 311, BIO 306 or BIO 404 to fulfill the biochemistry requirement. Students may also choose to take the two lecture courses (BIO 404 and BIO 311) rather than a lecture/laboratory combination.

Sample Plans of Study (BS)

Five-year Co-op

(See below this plan for Four-year Non-Co-op and One-Co-op options)

Term 1		**Credits**
BIO 122	Cells and Genetics	4.5
CHEM 121	Majors Chemistry I	5.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 121	Calculus I	4.0
UNIV S101	The Drexel Experience	1.0
	Term Credits	**17.5**
Term 2		
CHEM 122	Majors Chemistry II	5.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
MATH 122	Calculus II	4.0
PHYS 101	Fundamentals of Physics I	4.0
	Term Credits	**16.0**
Term 3		
CHEM 123	Majors Chemistry III	5.5
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
MATH 123	Calculus III	4.0
PHYS 102	Fundamentals of Physics II	4.0
	Term Credits	**16.5**
Term 4		
CHEM 230*	Quantitative Analysis	4.0
CHEM 231 [WI] *	Quantitative Analysis Laboratory	2.0
CHEM 246	Majors Organic I	6.5
PHYS 201	Fundamentals of Physics III	4.0
	Term Credits	**16.5**
Term 5		
CHEM 248	Majors Organic II	6.5
MATH 200	Multivariate Calculus	4.0
Free elective		3.0
	Term Credits	**13.5**

Term 6		
BIO 214	Principles of Cell Biology	3.0
CHEM 249	Majors Organic III	7.0
CHEM 253	Thermodynamics and Kinetics	4.0
MATH 210 or 201	Differential Equations Linear Algebra	4.0
	Term Credits	**18.0**
Term 7		
CHEM 270	Software Skills for Chemists	3.0
CHEM 357 [WI]	Physical Chemistry Laboratory I	2.5
Technical elective***		3.0
Free electives		6.0
	Term Credits	**14.5**
Term 8		
CHEM 355	Physical Chemistry IV	3.0
CHEM 367	Chemical Information Retrieval	3.0
CHEM 421	Inorganic Chemistry I	3.0
CHEM 430	Analytical Chemistry I	3.0
UNIV S101	The Drexel Experience	2.0
	Term Credits	**14.0**
Term 9		
CHEM 359	Atomic and Molecular Spectroscopy	3.0
CHEM 420	Molecular Symmetry and Group Theory Applied Chemistry	3.0
CHEM 431 [WI]	Analytical Chemistry II	4.0
Technical elective***		3.0
Free elective		3.0
	Term Credits	**16.0**
Term 10		
BIO 311 or 404	Biochemistry Structure and Function of Biomolecules	4.0
CHEM 346	Qualitative Organic Chemistry	5.5
CHEM 493	Senior Research Project	3.0
CHEM 358	Physical Chemistry Laboratory II	2.5
	Term Credits	**15.0**
Term 11		
BIO 306	Biochemistry Laboratory	2.0
CHEM 493	Senior Research Project	3.0
Liberal Studies electives		6.0
Free electives		6.0
	Term Credits	**17.0**
Term 12		
CHEM 422	Inorganic Chemistry II	3.0
CHEM 425	Inorganic Chemistry Laboratory	4.0
CHEM 493	Senior Research Project	3.0
Free electives		6.0
	Term Credits	**16.0**
Total Credit:		**190.5**

BS in Chemistry: Four-year Non-Co-op

Term 1		**Credits**
BIO 122	Cells and Genetics	4.5
CHEM 121	Majors Chemistry I	5.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 121	Calculus I	4.0
UNIV S101	The Drexel Experience	1.0
	Term Credits	**17.5**
Term 2		
CHEM 122	Majors Chemistry II	5.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
MATH 122	Calculus II	4.0
PHYS 101	Fundamentals of Physics I	4.0
	Term Credits	**16.0**
Term 3		
CHEM 123	Majors Chemistry III	5.5
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
MATH 123	Calculus III	4.0
PHYS 102	Fundamentals of Physics II	4.0
	Term Credits	**16.5**
Term 4		
CHEM 230*	Quantitative Analysis	4.0
CHEM 231 [WI] *	Quantitative Analysis Laboratory	2.0
CHEM 246	Majors Organic I	6.5
PHYS 201	Fundamentals of Physics III	4.0
	Term Credits	**16.5**
Term 5		
CHEM 248	Majors Organic II	6.5
MATH 200	Multivariate Calculus	4.0
Free elective		6.0
	Term Credits	**16.5**
Term 6		
BIO 214	Principles of Cell Biology	3.0
CHEM 249	Majors Organic III	7.0
MATH 210 or 201	Differential Equations Linear Algebra	4.0
Technical elective***		3.0
	Term Credits	**17.0**
Term 7		
CHEM 253	Thermodynamics and Kinetics	4.0
CHEM 367	Chemical Information Retrieval	3.0
CHEM 421	Inorganic Chemistry I	3.0
CHEM 430	Analytical Chemistry I	3.0
UNIV S101	The Drexel Experience	2.0
	Term Credits	**15.0**
Term 8		
CHEM 270	Software Skills for Chemists	3.0

CHEM 357 [WI]	Physical Chemistry Laboratory I	2.5
CHEM 420	Molecular Symmetry and Group Theory Applied Chemistry	3.0
CHEM 431 [WI]	Analytical Chemistry II	4.0
Free elective		3.0
	Term Credits	**15.5**
Term 9		
Liberal Studies elective		3.0
Technical elective***		3.0
Free electives		9.0
	Term Credits	**15.0**
Term 10		
BIO 311 or 404	Biochemistry Structure and Function of Biomolecules	4.0
CHEM 346	Qualitative Organic Chemistry	5.5
CHEM 355	Physical Chemistry IV	3.0
CHEM 493	Senior Research Project	3.0
	Term Credits	**15.5**
Term 11		
BIO 306	Biochemistry Laboratory	2.0
CHEM 359	Atomic and Molecular Spectroscopy	3.0
CHEM 493	Senior Research Project	3.0
Liberal Studies elective		3.0
Free elective		3.0
	Term Credits	**14.0**
Term 12		
CHEM 358	Physical Chemistry Laboratory II	2.5
CHEM 422	Inorganic Chemistry II	3.0
CHEM 425	Inorganic Chemistry Laboratory	4.0
CHEM 493	Senior Research Project	3.0
Free elective		3.0
	Term Credits	**15.5**

Total Credit: 190.5

BS in Chemistry: Four-year One Co-op

Term 1		**Credits**
BIO 122	Cells and Genetics	4.5
CHEM 121	Majors Chemistry I	5.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 121	Calculus I	4.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**17.5**
Term 2		
CHEM 122	Majors Chemistry II	5.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
MATH 122	Calculus II	4.0
PHYS 101	Fundamentals of Physics I	4.0
	Term Credits	**16.0**
Term 3		
CHEM 123	Majors Chemistry III	5.5
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
MATH 123	Calculus III	4.0
PHYS 102	Fundamentals of Physics II	4.0
	Term Credits	**16.5**
Term 4		
CHEM 230*	Quantitative Analysis	4.0
CHEM 231 [WI] *	Quantitative Analysis Laboratory	2.0
CHEM 246	Majors Organic I	6.5
PHYS 201	Fundamentals of Physics III	4.0
	Term Credits	**16.5**
Term 5		
CHEM 248	Majors Organic II	6.5
MATH 200	Multivariate Calculus	4.0
Electives		6.0
	Term Credits	**16.5**
Term 6		
BIO 214	Principles of Cell Biology	3.0
CHEM 249	Majors Organic III	7.0
MATH 210 or 201	Differential Equations Linear Algebra	4.0
Technical Elective***		3.0
	Term Credits	**17.0**
Term 7		
Free Electives		9.0
Liberal Studies Elective		3.0
Technical Elective***		3.0
	Term Credits	**15.0**
Term 8		
CHEM 253	Thermodynamics and Kinetics	4.0
CHEM 367	Chemical Information Retrieval	3.0
CHEM 421	Inorganic Chemistry I	3.0
CHEM 430	Analytical Chemistry I	3.0
UNIV H101	The Drexel Experience	2.0
	Term Credits	**15.0**
Term 9		
CHEM 270	Software Skills for Chemists	3.0
CHEM 357 [WI]	Physical Chemistry Laboratory I	2.5
CHEM 420	Molecular Symmetry and Group Theory Applied Chemistry	3.0
CHEM 431 [WI]	Analytical Chemistry II	4.0
Elective		3.0
	Term Credits	**15.5**
Term 10		
BIO 311 or 404	Biochemistry Structure and Function of Biomolecules	4.0
CHEM 346	Qualitative Organic Chemistry	5.5
CHEM 355	Physical Chemistry IV	3.0

CHEM 493	Senior Research Project	3.0
	Term Credits	**15.5**
Term 11		
BIO 306	Biochemistry Laboratory	2.0
CHEM 359	Atomic and Molecular Spectroscopy	3.0
CHEM 493	Senior Research Project	3.0
Free Elective		3.0
Liberal Studies Elective		3.0
	Term Credits	**14.0**
Term 12		
CHEM 358	Physical Chemistry Laboratory II	2.5
CHEM 422	Inorganic Chemistry II	3.0
CHEM 425	Inorganic Chemistry Laboratory	4.0
CHEM 493	Senior Research Project	3.0
Free Elective		3.0
	Term Credits	**15.5**

Total Credit: 190.5

* CHEM 230 and CHEM 231 must be taken concurrently.

** *Biochemistry Requirement:* The American Chemical Society requires ACS-certified students to take a specified number of biochemistry courses. To fulfill this requirement in the BS curriculum, you should take a combination of one lecture and one lab course from the choice of: BIO 311, BIO 306 or BIO 404 to fulfill the biochemistry requirement. Students may also choose to take the two lecture courses (BIO 404 and BIO 311) rather than a lecture/laboratory combination. Note that the courses BIO 122 and BIO 214 are required in order to provide adequate background in biology for taking these upper-level biochemistry courses.

*** Must be at a 200+ level. See Degree Requirements for more information on acceptable classes.

Co-op/Career Opportunities

Opportunities for chemistry majors include working in research and development in corporate and government laboratories in the chemical, pharmaceutical and agricultural (e.g., U.S. Department of Agriculture) sectors. There is a remarkably high concentration of chemical and pharmaceutical companies in the Philadelphia region. Other options include entering medical, dental, law, or other professional schools.

The major in chemistry is sufficiently flexible to allow students to prepare to teach at the secondary level. With proper selection of electives, students can meet teacher certification requirements.

Sample Co-op Opportunities

A five-year co-op degree is offered. When students complete their co-op jobs, they are asked to write an overview of their experiences. These brief quotes are taken from some recent student reports:
Assistant chemist, pharmaceuticals manufacturer: “My position involved the synthesis and characterization of target compounds in the endotheline project. Involved the development of synthetic roots to the prescribed target. This would include the investigation of reactions which were going to be used. . . .the position was very independent. . .great working environment. ”

Co-op chemist, petroleum refiner: “Performed synthesis of ligands and metal complexes. Operated FT-IR spectrometer for sample analysis. Submitted samples for analysis by mass spectrometer and NMR. . . .The position allowed me to develop the skills necessary for independent research in organic synthesis. ”

Assistant lab technician, pharmaceuticals manufacturer: “I was an assistant technician in a mass spectrometry lab. . . . I was responsible for the development of SDS-gel electrophoresis techniques for gels and gel membranes. . . . I developed the methods independently and my employer encouraged me to be an expert on the technique and explore any method I found that would benefit the lab. ”

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on co-op and post-graduate opportunities.

Minor in Chemistry

The academic minor program in chemistry is designed to expose students to each of the major sub-disciplines of chemistry (analytical, inorganic, organic, and physical). In order to accomplish this students take a total of at least 27.5 credits of chemistry past the freshman year (100 level courses).

As chemistry is an experimental science at least two laboratory courses must be included in the group of courses taken for the minor. Students should note that their academic major may require certain chemistry courses that can also be used to fulfill the requirements for a minor in chemistry.

Required Courses

CHEM 241	Organic Chemistry I	4.0
CHEM 230	Quantitative Analysis	4.0
CHEM 253	Thermodynamics and Kinetics *	4.0
CHEM 421	Inorganic Chemistry I	3.0
CHEM 244	Organic Chemistry Laboratory I	3.0
Chemistry Electives **		9.5
Total Credits		27.5

* May substitute CHEC 352 Physical Chemistry and Applications II (4 credits) or CHEC 353 Physical Chemistry and Applications III (4 credits) for the CHEM 253 Thermodynamics and Kinetics requirement.

** The 9.5 credits of chemistry electives must include at least one additional laboratory course. These electives are selected from any of the regularly offered chemistry department lecture or laboratory courses 200-level and above according to your specific interests. Note that existing course pre-requisites may affect which courses may be selected. The variable credit courses CHEM 493 Senior Research Project or CHEM 497 Research (Undergraduate) may also be used to fulfill either the lecture or laboratory requirements for the minor.

Facilities

There are nine undergraduate teaching laboratories in the department: three freshman Chemistry labs, three Organic Chemistry labs, a Physical Chemistry lab, an Analytical Instrumentation Laboratory and a combined Analytical/Inorganic Chemistry lab.

Mass Spectrometry Laboratory
The department maintains a professionally staffed mass spectrometry facility available to all members of the university community. Currently available instrumentation consists of a Waters Autospec M high resolution magnetic-sector mass spectrometer, a Bruker Autoflex III MALDI Time-of-Flight Mass Spectrometer, a Thermo LTQ-FT Fourier Transform Mass Spectrometer, a Sciex API-3000 triple-quadrupole mass spectrometer, and a Varian Saturn 2000 Gas Chromatograph/Ion-trap mass spectrometer system.

Nuclear Magnetic Resonance Laboratory
The professionally staffed Chemistry Department NMR facility is equipped with 300MHz and 500MHz Varian Unity INNOVA NMR systems; both instruments have multi-nuclear capability. The probe on the 500MHz instrument is a cryogenically cooled triple resonance model (1H {13C/15N}) suitable for protein analysis. A Varian X-band 12" EPR spectrometer is also available.

Analytical Instrumentation Laboratory
The open-access departmental Analytical Instrumentation Laboratory includes two Perkin-Elmer (PE) Spectrum One Fourier-transform infrared absorption spectrometers each with a universal diamond ATR accessory, a PE Lambda-35 UV/visible spectrometer, a PE Lambda-950 UV/visible/NIR spectrometer with a 60-mm-diameter diffuse reflectance integrating sphere, a PE model 343 polarimeter, a PE LS55B luminescence spectrometer, a PE Clarus 500 capillary-column GC with dual FID detectors, a Clarus 500 capillary-column GC/MS system (with electron impact capability), a PE Series 200 Quaternary HPLC development system with UV/visible photodiode array detector, a PE Series 200 binary HPLC system interfaced to a Sciex 2000 triple-quadrupole mass spectrometer, a PE Series 2000 binary Gel Permeation Chromatography system with refractive index detector, and a Varian AA240FS flame atomic absorption spectrometer equipped with a GTA 120 Graphite Furnace Accessory.

Organic Instrumentation Laboratory
The Organic Instrumentation Laboratory (co-located with the organic synthesis teaching laboratories in the Papdakis Integrated Sciences Building) is equipped with two Perkin-Elmer (PE) Spectrum Two Fourier-transform infrared absorption spectrometers each with a universal diamond ATR accessory, a PE Clarus 500 capillary-column GC with one FID and one TCD detector, and an Anasazi EFT-90 FT-NMR system.

Other Departmental Facilities
The department has a VEECO INNOVA N3 Multimode Scanning Probe Microscope and also maintains a computational chemistry laboratory equipped with nine Dell Optiplex 790 computers running Hyperchem v 8.0. Research laboratories for each of the department faculty members are located in Disque and Stratton Halls. Instrumentation available in the research laboratories is described on individual faculty web pages. Full-time professional support includes an electronic instrument specialist (for NMR and MS- Chemistry Department), a glassblower (Chemistry Department), two electronics specialists (College of Arts & Sciences Electronics Shop), and four machinists (Drexel University Machine Shop).

Communication

Bachelor of Science: 182.0 quarter credits
Bachelor of Arts: 182.0 quarter credits

About the Program

The Culture and Communication (http://www.drexel.edu/culturecomm) department offers a major in communication, with concentrations in corporate and public relations, global journalism, and technical and science communication.

The department is committed to helping students become broadly educated and professionally competent individuals. Students are exposed to a variety of media and are guided in the development of their interpretive and expressive skills.

All communication majors take a common core of courses that emphasize communication theory and methods. Then, they specialize in one of three concentrations. Students in the corporate and public relations concentration pursue careers in public relations, corporate training, and corporate communication. Those who choose the technical and science communication concentration go on to work in technical writing, science writing, publishing, and software and hardware documentation. Global journalism students pursue careers in journalism and news. Many communication graduates also go on to law school, to business school for an MBA, or to graduate school.

Students who elect the corporate and public relations concentration have the option of pursuing either a bachelor of arts degree or a bachelor of science degree. Students who elect the technical and science communication concentration must pursue the bachelor of science degree. Students in global journalism must complete the requirements for the bachelor of arts degree.

Degree Requirements: Corporate and Public Relations (BA)

The concentration in corporate and public relations covers a broad range of activities that help an organization and its public communicate with one another. The field includes public relations, media relations, financial writing, publication design, employee and customer communication, desktop publishing, and government relations.

Skills in this field run the gamut from written to spoken to visual communication. A corporate communication specialist might be called on to write articles for an in-house newsletter, to research and write an annual report to shareholders, to publicize a special event, to write a speech for an executive, to plan a press conference, to develop a media plan for an organization, or to script a video for an employee orientation session.

General Requirements

ANTH 101	Introduction to Cultural Diversity	3.0
COM 150	Mass Media and Society	3.0
COM 360	International Communication	3.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
SOC 101	Introduction to Sociology	3.0
PSY 101	General Psychology I	3.0
UNIV H101	The Drexel Experience	3.0
Two mathematics courses		6.0-8.0
Two science courses		6.0-8.0
Foreign language courses (at least one must be at the 200-level.)		6.0-16.0

Three humanities/ fine arts courses		9.0
One social/behavioral sciences course		3.0
One international studies elective		3.0
Two studies in diversity electives		6.0
Communication Core Requirements		
Theory Sequence		
COM 101	Human Communication	3.0
COM 210	Theory and Models of Communication	3.0
COM 400	Seminar in Communication	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Methods Sequence		
COM 220	Qualitative Research Methods	3.0
SOC 250	Research Methods I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
Additional Core Requirements		
COM 230	Techniques of Speaking	3.0
COM 240	New Technologies In Communication	3.0
COM 380	Special Topics in Communication Theory	3.0
COM 491	Senior Project in Communication I	3.0
COM 492	Senior Project in Communication II	3.0
PHIL 305	Communication Ethics	3.0
Corporate and Public Relations Concentration Requirements		
COM 260 [WI]	Fundamentals of Journalism	3.0
COM 280	Public Relations Principles and Theory	3.0
COM 282 [WI]	Public Relations Writing	3.0
COM 284	Public Relations Research, Measurement and Evaluation	3.0
COM 286	Public Relations Strategies and Tactics	3.0
COM 386	Public Relations Campaign Planning	3.0
MKTG 301	Introduction to Marketing Management	4.0
ORGB 300 [WI]	Organizational Behavior	4.0
LING 101	Introduction to Linguistics	3.0
or LING 102	Language and Society	
Select one of the following Visual Communication courses: **		3.0
COM 335	Electronic Publishing	
COM 340	Desktop Publishing	
Culture and Communication Electives		
Culture electives (Any two courses with a SOC, ANTH or CJ rubric. At least one course must be at the 200-level or higher.)		6.0
Communication electives (Any four courses with a COM or LING rubric at the 200-level or higher)		12.0
Additional Electives		
Free electives		24.0
Total Credits		182.0

* Or other courses as appropriate in COM or in the College of Media Arts and Design.

Sample Plan of Study

Corporate and Public Relations Concentration (BA)

Term 1		**Credits**
COM 101	Human Communication	3.0
ENGL 101	Expository Writing and Reading	3.0
PSY 101	General Psychology I	3.0
SOC 101	Introduction to Sociology	3.0
UNIV H101	The Drexel Experience	1.0
Mathematics course		3.0-4.0
	Term Credits	**16.0-17.0**
Term 2		
COM 150	Mass Media and Society	3.0
ENGL 102	Persuasive Writing and Reading	3.0
UNIV H101	The Drexel Experience	1.0
Humanities/Fine arts elective		3.0
Foreign language course*		4.0
Mathematics course		3.0-4.0
	Term Credits	**17.0-18.0**
Term 3		
ANTH 101	Introduction to Cultural Diversity	3.0
COM 280	Public Relations Principles and Theory	3.0
ENGL 103	Analytical Writing and Reading	3.0
Language course*		4.0
International studies elective		3.0
	Term Credits	**16.0**
Term 4		
COM 210	Theory and Models of Communication	3.0
COM 230	Techniques of Speaking	3.0
Culture elective*		3.0
Science elective		3.0-4.0
Free elective/language		3.0-4.0
	Term Credits	**15.0-17.0**
Term 5		
COM 220	Qualitative Research Methods	3.0
COM 282 [WI]	Public Relations Writing	3.0
COM 260 [WI]	Fundamentals of Journalism	3.0
Science elective		3.0-4.0
Free elective/language		3.0-4.0
	Term Credits	**15.0-17.0**
Term 6		
COM 240	New Technologies In Communication	3.0
COM 284	Public Relations Research, Measurement and Evaluation	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Diversity studies elective		3.0
Social and behavioral sciences elective		3.0
	Term Credits	**15.0**

Term 7		
COM 286	Public Relations Strategies and Tactics	3.0
SOC 250	Research Methods I	3.0
Communication elective*		3.0
Culture elective*		3.0
Diversity studies elective		3.0
	Term Credits	**15.0**
Term 8		
ORGB 300 [WI]	Organizational Behavior	4.0
PHIL 305	Communication Ethics	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
LING 102 or 101	Language and Society Introduction to Linguistics	3.0
UNIV H101	The Drexel Experience	1.0
Communication elective*		3.0
	Term Credits	**17.0**
Term 9		
COM 380	Special Topics in Communication Theory	3.0
COM 386	Public Relations Campaign Planning	3.0
MKTG 301	Introduction to Marketing Management	4.0
Visual communication elective*		3.0
Humanities/Fine arts elective		3.0
	Term Credits	**16.0**
Term 10		
COM 400	Seminar in Communication	3.0
COM 360	International Communication	3.0
Communication elective*		3.0
Humanities/Fine arts elective		3.0
Free elective		3.0
	Term Credits	**15.0**
Term 11		
COM 491	Senior Project in Communication I	3.0
Communication elective*		3.0
Free electives		7.0
	Term Credits	**13.0**
Term 12		
COM 492	Senior Project in Communication II	3.0
Free electives		9.0
	Term Credits	**12.0**

Total Credit: 182.0-188.0

* See degree requirements (p. 26).

Degree Requirements: Corporate and Public Relations (BS)

The concentration in corporate and public relations covers a broad range of activities that help an organization and its publics communicate with one another. The field includes public relations, media relations, financial writing, publication design, employee and customer communication, desktop publishing, and government relations.

Skills in this field run the gamut from written to spoken to visual communication. A corporate communication specialist might be called on to write articles for an in-house newsletter, to research and write an annual report to shareholders, to publicize a special event, to write a speech for an executive, to plan a press conference, to develop a media plan for an organization, or to script a video for an employee orientation session.

General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
or ANTH 110	Human Past: Anthropology and Prehistoric Archeology	
COM 150	Mass Media and Society	3.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
PSY 101	General Psychology I	3.0
SOC 101	Introduction to Sociology	3.0
UNIV H101	The Drexel Experience	3.0
Political Science (PSCI) elective		4.0
Economics elective		4.0
Two History electives		6.0
Two English (ENGL) electives (200-level or above)		6.0
Fine arts elective		3.0
Philosophy elective		3.0
Select one of the following Science Sequences:		8.0
Biology Sequence		
BIO 107	Cells, Genetics & Physiology	
BIO 108	Cells, Genetics and Physiology Laboratory	
BIO 109	Biological Diversity, Ecology & Evolution	
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	
Chemistry Sequence		
CHEM 111	General Chemistry I	
CHEM 112	General Chemistry II	
Physics Sequence		
PHYS 103	General Physics I	
PHYS 104	General Physics II	
Select one of the following Mathematics Sequences		8.0
Analysis Sequence		
MATH 101	Introduction to Analysis I	
MATH 102	Introduction to Analysis II	
Calculus Sequence		
MATH 121	Calculus I	
MATH 122	Calculus II	
Communication Core Requirements		
Theory Sequence		
COM 101	Human Communication	3.0
COM 210	Theory and Models of Communication	3.0
COM 400	Seminar in Communication	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Methods Sequence		
COM 220	Qualitative Research Methods	3.0
SOC 250	Research Methods I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0

Additional Core Requirements		
COM 230	Techniques of Speaking	3.0
COM 240	New Technologies In Communication	3.0
COM 380	Special Topics in Communication Theory	3.0
COM 491	Senior Project in Communication I	3.0
COM 492	Senior Project in Communication II	3.0
PHIL 305	Communication Ethics	3.0
Corporate and Public Relations Concentration Requirements		
COM 260 [WI]	Fundamentals of Journalism	3.0
COM 280	Public Relations Principles and Theory	3.0
COM 282 [WI]	Public Relations Writing	3.0
COM 284	Public Relations Research, Measurement and Evaluation	3.0
COM 286	Public Relations Strategies and Tactics	3.0
COM 386	Public Relations Campaign Planning	3.0
MKTG 301	Introduction to Marketing Management	4.0
ORGB 300 [WI]	Organizational Behavior	4.0
LING 101	Introduction to Linguistics	3.0
or LING 102	Language and Society	
Visual Communication Courses *		
Select one of the following:		3.0
COM 335	Electronic Publishing	
COM 340	Desktop Publishing	
Culture and Communication Electives		
Communication Electives (Any four courses with a COM or LING rubric at the 200-level or higher)		12.0
Culture Electives (Any two courses with a SOC, ANTH or CJ rubric. At least one course must be at the 200-level or higher.)		6.0
Additional Electives		
Free Electives		27.0
Total Credits		182.0

* Or other courses as appropriate in COM or the College of Media Arts and Design.

Sample Plan of Study

Corporate and Public Relations Concentration (BS)

Term 1		**Credits**
COM 101	Human Communication	3.0
ENGL 101	Expository Writing and Reading	3.0
SOC 101	Introduction to Sociology	3.0
MATH 121 or 101	Calculus I Introduction to Analysis I	4.0
PSY 101	General Psychology I	3.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**17.0**
Term 2		
COM 150	Mass Media and Society	3.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122 or 102	Calculus II Introduction to Analysis II	4.0
UNIV H101	The Drexel Experience	1.0
Fine arts elective		3.0
History elective		3.0
	Term Credits	**17.0**
Term 3		
ANTH 101	Introduction to Cultural Diversity	3.0
COM 280	Public Relations Principles and Theory	3.0
ENGL 103	Analytical Writing and Reading	3.0
Political Science (PSCI) elective		4.0
Free elective		3.0
	Term Credits	**16.0**
Term 4		
COM 210	Theory and Models of Communication	3.0
COM 230	Techniques of Speaking	3.0
Science sequence course 1*		4.0
English (ENGL) course (200-level or above)		3.0
Culture elective *		3.0
	Term Credits	**16.0**
Term 5		
COM 220	Qualitative Research Methods	3.0
COM 260 [WI]	Fundamentals of Journalism	3.0
COM 282 [WI]	Public Relations Writing	3.0
Science sequence course 2*		4.0
History elective		3.0
	Term Credits	**16.0**
Term 6		
COM 284	Public Relations Research, Measurement and Evaluation	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Communication elective *		3.0
Economics (ECON) elective		4.0
Philosophy (PHIL) elective		3.0
	Term Credits	**16.0**
Term 7		
COM 240	New Technologies In Communication	3.0
SOC 250	Research Methods I	3.0
COM 286	Public Relations Strategies and Tactics	3.0
Visual Communication elective		3.0
Culture elective*		3.0
	Term Credits	**15.0**
Term 8		
ORGB 300 [WI]	Organizational Behavior	4.0
PHIL 305	Communication Ethics	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
LING 102 or 101	Language and Society Introduction to Linguistics	3.0

UNIV H101	The Drexel Experience	1.0
	Term Credits	**14.0**
Term 9		
COM 380	Special Topics in Communication Theory	3.0
COM 386	Public Relations Campaign Planning	3.0
MKTG 301	Introduction to Marketing Management	4.0
Communication elective*		3.0
Free elective		3.0
	Term Credits	**16.0**
Term 10		
COM 400	Seminar in Communication	3.0
English (ENGL) course (200-level or above)		3.0
Communication elective		3.0
Free electives		6.0
	Term Credits	**15.0**
Term 11		
COM 491	Senior Project in Communication I	3.0
Communication elective*		3.0
Free electives		6.0-9.0
	Term Credits	**12.0-15.0**
Term 12		
COM 492	Senior Project in Communication II	3.0
Free electives		9.0
	Term Credits	**12.0**
Total Credit: 182.0-185.0		

* See degree requirements (p. 28).

Degree Requirements: Global Journalism (BA)

Global journalism provides students with the skills and theoretical perspective they need to practice journalism on an international stage. Journalism is an international business, and the range of potential jobs for graduates grows almost daily. An extension of the program's core curriculum, the concentration hones the student's ability to write and edit while at the same time exposing the student to new and evolving aspects of the field.

General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
or ANTH 110	Human Past: Anthropology and Prehistoric Archeology	
COM 150	Mass Media and Society	3.0
COM 345	Intercultural Communication	3.0
or ANTH 312	Approaches to Intercultural Behavior	
COM 360	International Communication	3.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
SOC 101	Introduction to Sociology	3.0
PSY 101	General Psychology I	3.0
UNIV H101	The Drexel Experience	3.0
Two mathematics courses		6.0-8.0
Two science courses		6.0-8.0
Foreign language courses *		8.0-16.0
Three humanities and fine arts electives		9.0
One social and behavioral sciences elective		3.0
One international studies elective		3.0
One studies in diversity elective		3.0
Communication Core Requirements		
Theory Sequence		
COM 101	Human Communication	3.0
COM 210	Theory and Models of Communication	3.0
COM 400	Seminar in Communication	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Methods Sequence		
COM 220	Qualitative Research Methods	3.0
SOC 250	Research Methods I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
Additional Core Requirements		
COM 230	Techniques of Speaking	3.0
COM 240	New Technologies In Communication	3.0
COM 380	Special Topics in Communication Theory	3.0
COM 491	Senior Project in Communication I	3.0
COM 492	Senior Project in Communication II	3.0
PHIL 305	Communication Ethics	3.0
Global Journalism Concentration Requirements		
COM 260 [WI]	Fundamentals of Journalism	3.0
COM 280	Public Relations Principles and Theory	3.0
COM 300 [WI]	On-line Journalism	3.0
COM 315	Investigative Journalism	3.0
COM 365	Journalists, the Courts, and the Law	3.0
COM 390 [WI]	Global Journalism	3.0
TVPR 220	TV News Writing	3.0
LING 101	Introduction to Linguistics	3.0
or LING 102	Language and Society	
Select one of the following:		3.0-4.0
PSCI 150	International Politics	
BLAW 340	International Business Law	
COM 362	International Negotiations	
SOC 340	Globalization	
Culture and Communication Electives		
Culture electives (Any two courses with a SOC, ANTH or CJ rubric. At least one course must be at the 200-level or higher.)		6.0
Communication electives (Any four courses with a COM rubric at the 200-level or higher.)		12.0
Additional Electives		
Free Electives		30.0
Total Credits		182.0-195.0

* At least one foreign language course must be at the 200-level.

Sample Plan of Study

Global Journalism (BA)

Term 1		Credits
COM 101	Human Communication	3.0
ENGL 101	Expository Writing and Reading	3.0
SOC 101	Introduction to Sociology	3.0
PSY 101	General Psychology I	3.0
UNIV H101	The Drexel Experience	1.0
Math elective		3.0-4.0
	Term Credits	**16.0-17.0**
Term 2		
COM 150	Mass Media and Society	3.0
ENGL 102	Persuasive Writing and Reading	3.0
UNIV H101	The Drexel Experience	1.0
Foreign language course		4.0
Humanities and fine arts elective		3.0
	Term Credits	**14.0**
Term 3		
COM 260 [WI]	Fundamentals of Journalism	3.0
ENGL 103	Analytical Writing and Reading	3.0
ANTH 110 or 101	Human Past: Anthropology and Prehistoric Archeology Introduction to Cultural Diversity	3.0
Foreign language course		4.0
International studies elective		3.0
	Term Credits	**16.0**
Term 4		
COM 210	Theory and Models of Communication	3.0
COM 240	New Technologies In Communication	3.0
LING 102 or 101	Language and Society Introduction to Linguistics	3.0
Foreign language course/Free elective		4.0
Culture elective*		3.0
	Term Credits	**16.0**
Term 5		
COM 220	Qualitative Research Methods	3.0
COM 280	Public Relations Principles and Theory	3.0
COM 300 [WI]	On-line Journalism	3.0
Foreign language/Free elective		3.0-4.0
Science elective*		3.0-4.0
	Term Credits	**15.0-17.0**
Term 6		
COM 230	Techniques of Speaking	3.0
COM 345 or ANTH 312	Intercultural Communication Approaches to Intercultural Behavior	3.0
SOC 250	Research Methods I	3.0
TVPR 220	TV News Writing	3.0
Science elective*		3.0
	Term Credits	**15.0**
Term 7		
COM 315	Investigative Journalism	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Social and behavioral sciences elective		3.0
Communication elective*		3.0
Humanities/Fine arts elective		3.0
	Term Credits	**15.0**
Term 8		
COM 365	Journalists, the Courts, and the Law	3.0
UNIV H101	The Drexel Experience	1.0
Select one of the following:		4.0
BLAW 340	International Business Law	
SOC 340	Globalization	
PSCI 150	International Politics	
Communication elective*		3.0
Diversity studies elective		3.0
Humanities/Fine arts elective		3.0
	Term Credits	**17.0**
Term 9		
SOC 364	Computer-Assisted Data Analysis	3.0
Communication elective*		3.0
Culture elective*		3.0
Free electives		6.0
	Term Credits	**15.0**
Term 10		
COM 360	International Communication	3.0
COM 380	Special Topics in Communication Theory	3.0
COM 390 [WI]	Global Journalism	3.0
Communication elective*		3.0
Free elective		3.0
	Term Credits	**15.0**
Term 11		
COM 400	Seminar in Communication	3.0
COM 491	Senior Project in Communication I	3.0
PHIL 305	Communication Ethics	3.0
Free electives		4.0-6.0
	Term Credits	**13.0-15.0**
Term 12		
COM 492	Senior Project in Communication II	3.0
Free electives		9.0
	Term Credits	**12.0**

Total Credit: 179.0-184.0

* See degree requirements (p. 30).

Degree Requirements: Technical & Science Communication (BS)

Students learn to communicate scientific and technical information to various audiences. The program combines courses that develop

communication skills with courses that enhance understanding of science and technology.

Students in this concentration find work in a wide range of areas, including providing written documentation for software or hardware products, developing materials for the Web, writing proposals, researching and composing materials to accompany pharmaceutical submissions to the FDA, and writing in the fields of general medicine or science.

General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
or ANTH 110	Human Past: Anthropology and Prehistoric Archeology	
COM 150	Mass Media and Society	3.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
PSY 101	General Psychology I	3.0
SOC 101	Introduction to Sociology	3.0
UNIV H101	The Drexel Experience	3.0
Economics elective		4.0
Two History electives		6.0
English elective		3.0
Fine arts elective		3.0
Political Science (PSCI) elective		4.0
Philosophy elective		3.0
Science Sequences		
Select one of the following:		8.0
Biology Sequence		
BIO 107	Cells, Genetics & Physiology	
BIO 108	Cells, Genetics and Physiology Laboratory	
BIO 109	Biological Diversity, Ecology & Evolution	
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	
Chemistry Sequence		
CHEM 111	General Chemistry I	
CHEM 112	General Chemistry II	
Physics Sequence		
PHYS 103	General Physics I	
PHYS 104	General Physics II	
Mathematics Sequence		
Select one of the following:		8.0
Analysis Sequence		
MATH 101	Introduction to Analysis I	
MATH 102	Introduction to Analysis II	
Calculus Sequence		
MATH 121	Calculus I	
MATH 122	Calculus II	
Communication Core Requirements		
Theory Sequence		
COM 101	Human Communication	3.0
COM 210	Theory and Models of Communication	3.0
COM 400	Seminar in Communication	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Methods Sequence		
COM 220	Qualitative Research Methods	3.0
SOC 250	Research Methods I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
Additional Core Requirements		
COM 230	Techniques of Speaking	3.0
COM 240	New Technologies In Communication	3.0
COM 491	Senior Project in Communication I	3.0
COM 492	Senior Project in Communication II	3.0
PHIL 305	Communication Ethics	3.0
Technical and Science Concentration Requirements		
COM 280	Public Relations Principles and Theory	3.0
COM 310 [WI]	Technical Communication	3.0
COM 320 [WI]	Science Writing	3.0
COM 335	Electronic Publishing	3.0
COM 340	Desktop Publishing	3.0
COM 350 [WI]	Message Design and Evaluation	3.0
COM 380	Special Topics in Communication Theory	3.0
COM 420	Technical Editing	3.0
Other Program Requirements		
Select one of the following:		3.0
HIST 280	History of Science: Ancient to Medieval	
HIST 281	History of Science: Enlightenment to Modernity	
HIST 285	Technology in Historical Perspective	
Select one of the following:		3.0
LING 101	Introduction to Linguistics	
LING 102	Language and Society	
Select one of the following:		3.0
ENGL 300 [WI]	Literature & Science	
ENGL 302	Environmental Literature	
PHIL 361	Philosophy of Science	
Select one of the following:		3.0
PSY 330	Cognitive Psychology	
PSY 337	Human-Computer Interaction	
Culture and Communication electives		
Communication Electives (Any four courses with a COM rubric at the 200-level or higher)		12.0
Culture electives (Any two courses with a SOC, ANTH, or CJ rubric. At least one course must be at the 200-level or higher.)		6.0
Free electives		29.0
Additional Electives		
Total Credits		182.0

Sample Plan of Study

Technical and Science Communication (BS)

Term 1		Credits
COM 101	Human Communication	3.0
ENGL 101	Expository Writing and Reading	3.0
SOC 101	Introduction to Sociology	3.0
MATH 121 or 101	Calculus I Introduction to Analysis I	4.0

UNIV H101	The Drexel Experience	1.0
	Term Credits	**14.0**
Term 2		
COM 150	Mass Media and Society	3.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
or 102	Introduction to Analysis II	
UNIV H101	The Drexel Experience	1.0
	Term Credits	**11.0**
Term 3		
ENGL 103	Analytical Writing and Reading	3.0
PSCI 100	Introduction to Political Science	4.0
ANTH 110	Human Past: Anthropology and Prehistoric Archeology	3.0
or 101	Introduction to Cultural Diversity	
Fine arts elective		3.0
Political Science (PSCI) elective		4.0
	Term Credits	**17.0**
Term 4		
COM 220	Qualitative Research Methods	3.0
Philosophy (PHIL) elective		3.0
Science elective*		4.0
History elective		3.0
Communication elective*		3.0
	Term Credits	**16.0**
Term 5		
COM 230	Techniques of Speaking	3.0
COM 240	New Technologies In Communication	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Select one of the following:		3.0
ENGL 300 [WI]	Literature & Science	
PHIL 361	Philosophy of Science	
ENGL 302	Environmental Literature	
Science elective*		4.0
	Term Credits	**16.0**
Term 6		
COM 280	Public Relations Principles and Theory	3.0
COM 335	Electronic Publishing	3.0
Economics (ECON) elective		4.0
Culture elective *		3.0
English (ENGL) elective		3.0
	Term Credits	**16.0**
Term 7		
COM 320 [WI]	Science Writing	3.0
COM 340	Desktop Publishing	3.0
UNIV H101	The Drexel Experience	1.0
Communication elective*		3.0
Free electives		6.0
	Term Credits	**16.0**
Term 8		
COM 210	Theory and Models of Communication	3.0
COM 310 [WI]	Technical Communication	3.0
SOC 250	Research Methods I	3.0
Select one of the following:		3.0
HIST 280	History of Science: Ancient to Medieval	
HIST 281	History of Science: Enlightenment to Modernity	
HIST 285	Technology in Historical Perspective	
LING 101	Introduction to Linguistics	3.0
or 102	Language and Society	
	Term Credits	**15.0**
Term 9		
COM 350 [WI]	Message Design and Evaluation	3.0
COM 420	Technical Editing	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
History (HIST) elective		3.0
Free elective		3.0
	Term Credits	**15.0**
Term 10		
COM 380	Special Topics in Communication Theory	3.0
PSY 337	Human-Computer Interaction	3.0
or 330	Cognitive Psychology	
Communication elective*		3.0
Free electives		6.0
	Term Credits	**15.0**
Term 11		
COM 400	Seminar in Communication	3.0
COM 491	Senior Project in Communication I	3.0
PHIL 305	Communication Ethics	3.0
Communication elective*		3.0
Free elective		3.0
	Term Credits	**15.0**
Term 12		
COM 492	Senior Project in Communication II	3.0
Free electives		11.0
	Term Credits	**14.0**

Total Credit: 180.0

* See degree requirements (p. 31).

Co-op/Career Opportunities

Corporate and Public Relations

Graduates with a concentration in corporate and public relations find employment in a wide variety of fields, including public relations, advertising, special events planning, writing and editing, and public information. In addition, the strong communication and management skills stressed by this concentration enable the graduates to find administrative positions in various business areas with an indirect relationship to corporate communication such as marketing, sales, human resources consulting, or publishing.

Although graduate study is not necessary for those who pursue careers in corporate communication, students have used the major as a basis for graduate work in a variety of areas, including communication, business, and law.

Co-op Experiences in Corporate and Public Relations

Co-operative education opportunities are available with a variety of corporations and nonprofits in such positions as corporate communication specialist, public relations assistant, and newsletter writer. The following are samples of past co-op experiences:

- Advertising and Promotions Assistant, CoreStates Bicycle Championships, Philadelphia.
- Corporate Communications Co-op, Philadelphia Electric Company, Philadelphia.
- Advertising/ Promotions Co-op, U.S. Marketing Division, Mobil Oil Corp. , Fairfax, VA.
- Assistant Coordinator, Communications Bureau, United Way of Southeastern Pennsylvania, Philadelphia.

Global Journalism

Global journalism students pursue degrees in journalism and news. Many communication graduates also go on to law school, to business school for an MBA, or to graduate school. Graduates of this program are also in demand by news and information services as they expand their global reach.

Sample global journalism Co-op Experiences

- *Production assistant*, WPVI-TV (Channel 6) Philadelphia
- *Staff writer*, Delaware County Daily Times
- *Promotions department*, WPLY-FM (Y-100)
- *Production assistant*, sports department, FOX-29 (WTFX-TV)

Sample Global Journalism Senior Projects

- Content analysis of *New York Times* coverage of Rwanda tragedy
- Creation of http://www.abinka.org, a fully realized webzine

Technical and Science Communication

Students who study technical and science communication are prepared for a variety of career options. Currently there is a shortage of people qualified to write about the technology. Many students become technical writers and editors who produce manuals and reports about high-technology products and services. Many students go on to write specifications and in-house organs for business, industry, and government. Other students conduct and interpret surveys for business. Many students quickly rise to managerial and executive positions, in which they participate in the research and development of new products. Some students become science writers for newspapers.

In addition, this program is excellent preparation for graduate study in a number of fields, such as law and medicine.

Co-op Experiences in Technical and Science Communication

Communication students have worked for corporations and nonprofit organizations. The following are some samples of past co-op experiences:

- *Technical writer*, Unisys Corp. and Hewlett Packard
- *Web page writer*, Hospital of the University of Pennsylvania
- *Pharmaceutical writer*, GlaxoSmithKline
- *Medical writer*, Medcases Corp.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on co-op and post-graduate opportunities.

Minor in Communication

The minor in communication is a 24.0 credit curriculum designed to familiarize students with communication theory while providing training in print and electronic communication skills. The minor can provide a strong complement for majors that emphasize presentations, interpersonal skills, publicity, and marketing. Students minoring in communication can focus on corporate and public relations, journalism, technical and science communication or environmental communication.

Finally, students complete three additional electives from the area that fits their interest.

Core Courses		
COM 210	Theory and Models of Communication	3.0
COM 380	Special Topics in Communication Theory	3.0
Select one of the following:		3.0
COM 101	Human Communication	
COM 111	Principles of Communication	
Focus Areas		6.0
Select one of the following areas of focus (2 courses):		
Journalism		
COM 260 [WI]	Fundamentals of Journalism	
Select one of the following:		
COM 300 [WI]	On-line Journalism	
COM 315	Investigative Journalism	
COM 390 [WI]	Global Journalism	
Corporate and Public Relations		
COM 280	Public Relations Principles and Theory	
Select one of the following:		
COM 270 [WI]	Business Communication	
COM 282 [WI]	Public Relations Writing	
COM 284	Public Relations Research, Measurement and Evaluation	
Technical and Science Communication		
COM 310 [WI]	Technical Communication	
Select one of the following:		
COM 320 [WI]	Science Writing	
COM 375 [WI]	Grant Writing	
Environmental Communication		
COM 317 [WI]	Environmental Communication	
Select one of the following:		
COM 316	Campaigns for Health & Environment	
COM 318	Film, Celebrity and the Environmental Movement	

Three Additional Courses	
Three Communication (COM) or Linguistics (LING) Electives	9.0
Total Credits	24.0

Criminal Justice

Bachelor of Science Degree: 182.0 quarter credits

About the Program

Students majoring in criminal justice learn about the most recent scientific developments and the latest technologies relevant to criminal justice. Internships and co-ops provide opportunities for students to synthesize academic learning with direct experience in the criminal justice system.

Issues of crime and justice affect every individual at some point in their lives if only as tax- paying citizens and voters. Criminal justice legislation, policy and decision-making and matters of community safety and well being require well-educated professionals to administer, legislate, communicate, and implement the work of the criminal justice system. Students in Drexel's criminal justice major will be well prepared to assume these roles and responsibilities.

About the Curriculum

On completion of the bachelor's degree, the required courses provide the essential foundation for mid-level employment in the field of criminal justice or for further study in various areas of criminal justice and the law. Students will acquire theoretical and methodological skills as well as courses in written and oral communication so necessary for professional careers in this field. The students majoring in criminal justice will also have a robust foundation in statistics, and computer applications. Additional required courses focus on the areas of forensic sciences, law and political and social sciences.

Program Goals

The goals for the criminal justice program include the following:

- To provide excellent, cutting edge preparation for students planning to enter graduate study of criminal justice, law and law-related programs.
- To prepare students for upper level employment in the criminal justice system at local, state and federal levels.
- To communicate an understanding of crime, criminal behavior and the criminal justice system essential for aware citizens, as voters, taxpayers, planners and decision-makers.

Additional Information

For more information specific to the field of criminal justice, contact:

Robert Kane, PhD
Professor of Criminal Justice
Culture and Communcation
robert.j.kane@drexel.edu

For additional information about the BS in Criminal Justice, please visit the Culture and Communication Department's Criminal Justice (http://www.drexel.edu/culturecomm/academics/undergraduate/criminaljustice) page.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on opportunities.

Degree Requirements

General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
COM 150	Mass Media and Society	3.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
PHIL 101	Introduction to Western Philosophy	3.0
PSCI 100	Introduction to Political Science	4.0
PSY 101	General Psychology I	3.0
SOC 101	Introduction to Sociology	3.0
UNIV H101	The Drexel Experience	2.0
Fine Arts Elective		3.0
History Elective		3.0
English Elective (any ENGL course over 200-level)		3.0
Math Sequences		8.0
Select one of the following:		
Analysis Sequence		
MATH 101	Introduction to Analysis I	
MATH 102	Introduction to Analysis II	
Calculus Sequence		
MATH 121	Calculus I	
MATH 122	Calculus II	
Science Sequence		8.0
Select one of the following:		
Biology Sequence		
BIO 107	Cells, Genetics & Physiology	
BIO 108	Cells, Genetics and Physiology Laboratory	
BIO 109	Biological Diversity, Ecology & Evolution	
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	
Chemistry Sequence		
CHEM 111	General Chemistry I	
CHEM 112	General Chemistry II	
Criminal Justice Core Requirements		
Justice Sequence		
BLAW 342	Criminal Law	4.0
CJ 204	Criminology	3.0
CJ 206	Criminal Justice	3.0
CJ 276	Introduction to Computer Crime	3.0
CJ 277	Introduction to Correctional Practices	3.0
CJ 278	Introduction to Law Enforcement	3.0
CJ 360	Juvenile Justice	3.0
CJ 374 [WI]	Restorative Justice	3.0
CJ 375	Criminal Procedure	3.0
CJ 376	Sentencing: The History, Necessity and Morality of Punishment in America	3.0
CJ 390 [WI]	Internships in Criminal Justice	0.0-6.0
CJ 400 [WI]	Critical Issues in Criminal Justice	3.0
PHIL 330	Ethical Issues in Criminal Justice	3.0
Writing/Communication Sequence		
COM 230	Techniques of Speaking	3.0

COM 375 [WI]	Grant Writing	3.0
Theory Sequence		
SOC 260 [WI]	Classical Social Theory	3.0
SOC 460 [WI]	Contemporary Social Theory	3.0
PSCI 329	Theories of Justice	3.0
Methods Sequence		
COM 220	Qualitative Research Methods	3.0
SOC 250	Research Methods I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
Criminal Justice Specialization Courses		24.0-25.0
Select eight of the following:		
Forensics		
CJ 265	Criminal Investigation	
CJ 369	Forensic Science Survey Course	
CJ 378	Science of Forensic Science	
CJ 379	Forensic DNA Analysis	
PSY 370	Forensic Psychology	
Cybercrime		
CJ 273	Surveillance, Technology and the Law	
CJ 274	Sex, Violence & Crime on the Internet	
CJ 377	Intellectual Property Theft in the Digital Age	
Crime and Procedures		
CJ 266	Crime Prevention Planning	
CJ 267	Introduction to Security Studies	
CJ 275	Issues in Domestic Violence	
CJ 280	Communities and Crime	
CJ 282	Community Policing	
CJ 289	Terrorism	
CJ 290	Crime and Public Policy	
CJ 372	Death Penalty - An American Dilemma	
CJ 373	Environmental Crimes	
BLAW 348	White Collar Crime	
PSCI 220	Constitutional Law I	
PSCI 365	Politics, Law, & Justice	
Other Social Science Electives		
Select four of the following:		12.0
SOC 115	Social Problems	
SOC 120	Sociology of the Family	
SOC 220	Wealth and Power	
SOC 240	Urban Sociology	
SOC 320	Sociology of Deviant Behavior	
CJ 380	Special Topics	
CJ 399	Independent Study	
SOC 380	Special Topics in Sociology	
PSCI 363	Constitutional Law II	
PSCI 366	Supreme Court and American Politics	
Select one of the following:		3.0
ANTH 312	Approaches to Intercultural Behavior	
COM 345	Intercultural Communication	
SOC 210	Race and Ethnic Relations	
Electives		
Free Electives		19.0-25.0
Total Credits		182.0

Sample Plan of Study

Term 1		**Credits**
CJ 206	Criminal Justice	3.0
ENGL 101	Expository Writing and Reading	3.0
SOC 101	Introduction to Sociology	3.0
CHEM 111 or BIO 107	General Chemistry I Cells, Genetics & Physiology	4.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**14.0**
Term 2		
COM 150	Mass Media and Society	3.0
ENGL 102	Persuasive Writing and Reading	3.0
PHIL 101	Introduction to Western Philosophy	3.0
SOC 115	Social Problems	3.0
CHEM 112 or BIO 109	General Chemistry II Biological Diversity, Ecology & Evolution	4.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**17.0**
Term 3		
ANTH 101	Introduction to Cultural Diversity	3.0
CJ 204	Criminology	3.0
ENGL 103	Analytical Writing and Reading	3.0
PSCI 100	Introduction to Political Science	4.0
SOC 260 [WI]	Classical Social Theory	3.0
	Term Credits	**16.0**
Term 4		
CJ 277	Introduction to Correctional Practices	3.0
COM 220	Qualitative Research Methods	3.0
History Elective		3.0
Criminal Justice Specialization Courses*		6.0
	Term Credits	**15.0**
Term 5		
CJ 278	Introduction to Law Enforcement	3.0
CJ 360	Juvenile Justice	3.0
COM 230	Techniques of Speaking	3.0
SOC 250	Research Methods I	3.0
MATH 121 or 101	Calculus I Introduction to Analysis I	4.0
	Term Credits	**16.0**
Term 6		
CJ 276	Introduction to Computer Crime	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
MATH 122 or 102	Calculus II Introduction to Analysis II	4.0
English (ENGL) Course 200-level or Above		3.0
Other Social Science Elective*		3.0
	Term Credits	**16.0**

Term 7		
CJ 375	Criminal Procedure	3.0
CJ 390 [WI]	Internships in Criminal Justice	3.0
COM 375 [WI]	Grant Writing	3.0
UNIV 101	The Drexel Experience	1.0
Fine Arts Elective		3.0
Free Elective		3.0
	Term Credits	**16.0**
Term 8		
CJ 374 [WI]	Restorative Justice	3.0
PSCI 329	Theories of Justice	3.0
PSY 101	General Psychology I	3.0
SOC 320	Sociology of Deviant Behavior	3.0
Other Social Science Elective*		3.0
	Term Credits	**15.0**
Term 9		
SOC 460 [WI]	Contemporary Social Theory	3.0
Select one of the following:		3.0
ANTH 312	Approaches to Intercultural Behavior	
SOC 210	Race and Ethnic Relations	
COM 345	Intercultural Communication	
Criminal Justice Specialization Courses*		6.0
Free Elective		3.0
	Term Credits	**15.0**
Term 10		
BLAW 342	Criminal Law	4.0
CJ 376	Sentencing: The History, Necessity and Morality of Punishment in America	3.0
PHIL 330	Ethical Issues in Criminal Justice	3.0
Other Social Science Elective*		3.0
	Term Credits	**13.0**
Term 11		
Free Electives		6.0
Criminal Justice Specialization Courses*		9.0
	Term Credits	**15.0**
Term 12		
CJ 400 [WI]	Critical Issues in Criminal Justice	3.0
Criminal Justice Specialization Course*		3.0
Free Electives		5.0
Other Social Science Elective*		3.0
	Term Credits	**14.0**
Total Credit: 182.0		

* See degree requirements (p. 35).

Professional Experiences

Students will complete two professional placements. Some placements are paid and others are unpaid. The placements earn students academic credit while providing hands-on learning with criminal justice professionals. The networking aspects of these placements are invaluable for future career development. In addition to the learning experiences, past students have received excellent letters of recommendation for future employment agencies and for graduate and law school admissions.

In recent years, students have been placed in local agencies such as the District Attorney's Office, the Institutional Law Project, the Juvenile Law Center, the Defendants Association of Philadelphia, the Philadelphia and Bucks County Prison Systems and the Pennsylvania Prison Society, Pennsylvania and New Jersey State Police. Several students have interned and later worked full time at the Eastern State Penitentiary Historical Site and Museum. On the state level, interns have worked with the Board of Probation & Parole and other agencies. At the federal level, The US Customs Service had an agreement to accept cooperative education placements after having been screened by Dr. Hall in her CJ 206 course. Other students have interned at The Drug Enforcement Agency (DEA), Alcohol, Tobacco & Fire Arms (ATF) and students have interned in the Federal Bureau of Investigation (FBI) Honors Internship Program, a highly selective, nationally competitive program.

Minor in Criminal Justice

Students from any major who are interested in the law, legal issues and the forensic sciences may envision a future connection with the criminal justice system. These students could enhance their career possibilities by adding a minor in criminal justice to their major field of study.

The minor consists of four required courses and four criminal justice electives chosen from two categories, for a total of 24.0 credits. Students minoring in criminal justice are assumed to have already taken SOC 101 Introduction to Sociology.

Required Courses		
CJ 204	Criminology	3.0
CJ 206	Criminal Justice	3.0
CJ 360	Juvenile Justice	3.0
SOC 320	Sociology of Deviant Behavior	3.0
Criminal Justice Elective Courses		
Category I		
Select one of the following:		3.0
SOC 210	Race and Ethnic Relations	
COM 345	Intercultural Communication	
or ANTH 312	Approaches to Intercultural Behavior	
Category II		
Select three of the following:		9.0
CJ 282	Community Policing	
CJ 362	Gender, Crime and Justice	
CJ 380	Special Topics	
COM 355	Ethnography of Communication	
COM 365	Journalists, the Courts, and the Law	
SOC 115	Social Problems	
SOC 120	Sociology of the Family	
PSY 150	Introduction to Social Psychology	
PSY 240 [WI]	Abnormal Psychology	
PSY 370	Forensic Psychology	
Total Credits		24.0

English

Bachelor of Arts Degree: 182.0 quarter credits

About the Program

Specifically designed to engage students in critical thinking and applied writing skills, the English major offers a wide-ranging curriculum on British, American and World literatures and stresses the cultural, historical and political contexts that shape and affect literary production. The Department of English and Philosophy (http://www.drexel.edu/engphil) also offers variety of courses on periods and genres; creative writing; and the relationship between literature and the visual arts, science and technology.

Students develop solid techniques in critical inquiry as well as in writing, literary, and reading skills. Implicit in our undertaking is the leadership role of our department in the formulation and discussion of such broad theoretical and practical questions as the following: the connection between oral and written communication skills; analytical, ethical, and critical thinking; questions of value and morality; the relevance and relation of the past to the present; the relations between and among cultures; the role of literary and philosophical texts in our attempts to explain human motives and behavior; and the relations between the sexes.

Degree Requirements

University Requirements		
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
UNIV H101	The Drexel Experience	3.0
Two Mathematics Courses		6.0-8.0
Two Science Courses		6.0-8.0
Foreign Language Courses		
Any two (2) consecutive foreign language courses (completing level 201)		8.0
Humanities and Fine Arts		
Select four of the following:		12.0
ARTH 101	History of Art I: Ancient to Medieval	
ARTH 102	History of Art II: High Renaissance to Modern	
ARTH 103	History of Art- Early to Late Modern	
DANC 201 [WI]	Dance Appreciation	
DANC 210	Introduction to Dance	
DANC 220	History of Dance	
DANC 325 [WI]	Twentieth Century Dance	
FMST 150	American Classic Cinema	
FMST 250	The Documentary Tradition	
FMST 355	Contemporary Cinema	
FMVD 218	Intermediate Cinematography	
MUSC 130	Introduction to Music	
MUSC 231 [WI]	Music History I	
MUSC 232 [WI]	Music History II	
MUSC 236	Rock Music Through the Mid-60s	
MUSC 238	Rock Music Since the Mid-60s	
PHIL 101	Introduction to Western Philosophy	
PHIL 105	Critical Reasoning	
PHIL 211	Metaphysics	
PHIL 221	Epistemology	
PHIL 231	Aesthetics	
PHIL 251	Ethics	
PHTO 110	Photography	
PHTO 115	Photographic Principles	
THTR 115	Theatrical Experience	
THTR 221 [WI]	Theatre History I	
THTR 222 [WI]	Theatre History II	
Social and Behavioral Sciences		
Select four of the following:		12.0
ANTH 110	Human Past: Anthropology and Prehistoric Archeology	
ANTH 210 [WI]	Worldview: Science, Religion and Magic	
COM 150	Mass Media and Society	
COM 230	Techniques of Speaking	
HIST 161	Themes in World Civilization I	
HIST 162	Themes in World Civilization II	
HIST 163	Themes in World Civilization III	
PSCI 100	Introduction to Political Science	
PSCI 120	History of Political Thought	
PSY 101	General Psychology I	
PSY 120	Developmental Psychology	
PSY 140	Approaches to Personality	
SOC 101	Introduction to Sociology	
SOC 115	Social Problems	
SOC 120	Sociology of the Family	
International Studies		
Select two of the following:		6.0
ANTH 212	Topics in World Ethnography	
ANTH 312	Approaches to Intercultural Behavior	
COM 360	International Communication	
COM 361	International Public Relations	
COM 362	International Negotiations	
FMST 160	European Cinema	
FMST 245	Non-Western Cinema	
HIST 209	The United States & Central America: From Monroe Doctrine to Cold War	
HIST 235	The Great War, 1914-1918	
HIST 236	World War II	
HIST 259	History of Europe in the 20th Century	
HIST 270 [WI]	Introduction to Latin American History	
MUSC 331	World Musics	
PHIL 335	Global Ethical Issues	
PSCI 150	International Politics	
SOC 340	Globalization	

Studies in Diversity		
Select two of the following:		6.0
AFAS 101	Introduction to Africana Studies	
AFAS 201	Cross Currents in Africana Studies	
ANTH 101	Introduction to Cultural Diversity	
ANTH 215	Anthropology of Gender	
COM 345	Intercultural Communication	
ENGL 345	American Ethnic Literature	
ENGL 350	Jewish Literature and Civilization	
ENGL 355 [WI]	Women and Literature	
ENGL 365	Topics in African American Literature	
HIST 212	Themes in African-American History	
HIST 214	United States Civil Rights Movement	
HIST 215	American Slavery	
HIST 216	Freedom in America	
HIST 218	Race and Film in United States History	
HIST 223	Women and Work in America	
HIST 224	Women in American History	
HIST 249	Modern Jewish History	
JUDA 201	Jewish Literature and Civilization	
JUDA 202	Jewish Life and Culture in Middle Ages	
JUDA 203	Modern Jewish History	
MUSC 333	Afro-American Music USA	
SOC 210	Race and Ethnic Relations	
SOC 330	Developing Nations and the International Division of Labor	
WMST 101	Introduction to Women's Studies	
WMST 240	Women and Society in a Global Context	
WMST 250	African American Herstories	
Major Requirements		
Foundational and Professional Courses		
ENGL 205 [WI]	American Literature I	3.0
ENGL 206 [WI]	American Literature II	3.0
ENGL 211 [WI]	British Literature I	3.0
ENGL 212	British Literature II	3.0
ENGL 315 [WI]	Shakespeare	3.0
ENGL 380	Literary Theory	3.0
ENGL 490	Seminar in English and American Literature	4.0
ENGL 492	Seminar in World Literature	4.0
ENGL 499	Senior Project in Literature	4.0
Select three of the following:		9.0
ENGL 200 [WI]	Classical to Medieval Literature	
ENGL 201	Renaissance to the Enlightenment	
ENGL 202 [WI]	Romanticism to Modernism	
ENGL 203 [WI]	Post-Colonial Literature I	
ENGL 204	Post-Colonial Literature II	
ENGL 207 [WI]	African American Literature	
ENGL 214	Readings in Fiction	
ENGL 215 [WI]	Readings in Poetry	
ENGL 216 [WI]	Readings in Drama	
Select three of the following:		9.0
ENGL 310 [WI]	Period Studies	
ENGL 320 [WI]	Major Authors	
ENGL 325	Topics in World Literature	
ENGL 330	The Bible as Literature	
ENGL 335	Mythology	
Select three of the following:		9.0
ENGL 305 [WI]	The Mystery Story	
ENGL 306	Literature of Baseball	
ENGL 307	Literature of the Holocausts	
ENGL 323	Literature and Other Arts	
ENGL 345	American Ethnic Literature	
ENGL 350	Jewish Literature and Civilization	
ENGL 355 [WI]	Women and Literature	
ENGL 360 [WI]	Literature and Society	
ENGL 365	Topics in African American Literature	
ENGL 395 [WI]	Special Studies in Literature	
ENGL 399	Independent Project in Literature	
PHIL 381 [WI]	Philosophy in Literature	
Creative and Professional Writing		
Select five of the following:		15.0
WRIT 306	Writing About the Media	
WRIT 310	Literary Editing & Publication	
WRIT 312	The Practice of Professional Writing	
WRIT 400	Writing in Cyberspace	
WRIT 405	Internship in Literary Publishing	
COM 260 [WI]	Fundamentals of Journalism	
COM 300 [WI]	On-line Journalism	
COM 310 [WI]	Technical Communication	
COM 315	Investigative Journalism	
COM 335	Electronic Publishing	
COM 340	Desktop Publishing	
WRIT 210 [WI]	Writing & Peer Tutoring Workshop	
WRIT 220 [WI]	Creative Nonfiction Writing	
WRIT 225 [WI]	Creative Writing	
WRIT 301 [WI]	Writing Poetry	
WRIT 302	Writing Fiction	
WRIT 303	Writing Humor and Comedy	
SCRP 270 [WI]	Screenwriting I	
SCRP 275 [WI]	Screenwriting II	
Science and Technology in the Humanities		
Select four of the following:		12.0

ENGL 300 [WI]	Literature & Science	
ENGL 302	Environmental Literature	
ENGL 303	Science Fiction	
ENGL 370	Topics in Literature and Medicine	
HIST 280	History of Science: Ancient to Medieval	
HIST 281	History of Science: Enlightenment to Modernity	
HIST 285	Technology in Historical Perspective	
HIST 292	Technology in American Life	
PHIL 311	Computer Ethics	
PHIL 315	Engineering Ethics	
PHIL 341	Philosophy of the Environment	
PHIL 355	Philosophy of Medicine	
PHIL 351	Philosophy of Technology	
PHIL 361	Philosophy of Science	
Electives		
Free Electives		30.0
Total Credits		182.0-186.0

Sample Plan of Study

Term 1		**Credits**
ENGL 101	Expository Writing and Reading	3.0
UNIV H101	The Drexel Experience	1.0
HIST 161	Themes in World Civilization I	3.0
Math Elective		4.0
Foreign Language Course (1st consecutive course)		4.0
	Term Credits	**15.0**
Term 2		
ENGL 102	Persuasive Writing and Reading	3.0
HIST 162	Themes in World Civilization II	3.0
UNIV H101	The Drexel Experience	2.0
Foreign Language Course (2nd consecutive course, 201-level)		4.0
Math Elective		4.0
	Term Credits	**16.0**
Term 3		
ANTH 101	Introduction to Cultural Diversity	3.0
ENGL 103	Analytical Writing and Reading	3.0
MUSC 130	Introduction to Music	3.0
PHIL 101	Introduction to Western Philosophy	3.0
PSY 101	General Psychology I	3.0
	Term Credits	**15.0**
Term 4		
ENGL 205 [WI]	American Literature I	3.0
ENGL 211 [WI]	British Literature I	3.0
PHIL 105	Critical Reasoning	3.0
Social and Behavioral Sciences Elective		3.0
Lab Science Elective		3.0
	Term Credits	**15.0**
Term 5		
ENGL 206 [WI]	American Literature II	3.0
ENGL 212	British Literature II	3.0
International Studies Elective		3.0
Lab Science Elective		3.0
Diversity Studies Elective		3.0
	Term Credits	**15.0**
Term 6		
COM 260 [WI]	Fundamentals of Journalism	3.0
ENGL 202 [WI]	Romanticism to Modernism	3.0
ENGL 203 [WI]	Post-Colonial Literature I	3.0
SOC 210	Race and Ethnic Relations	3.0
WMST 101	Introduction to Women's Studies	3.0
	Term Credits	**15.0**
Term 7		
COM 300 [WI]	On-line Journalism	3.0
ENGL 207 [WI]	African American Literature	3.0
ENGL 216 [WI]	Readings in Drama	3.0
Free Elective		3.0
Science, Technology and Human Affairs Elective*		3.0
	Term Credits	**15.0**
Term 8		
COM 340	Desktop Publishing	3.0
ENGL 315 [WI]	Shakespeare	3.0
WRIT 220 [WI]	Creative Nonfiction Writing	3.0
Free Electives		6.0
	Term Credits	**15.0**
Term 9		
WRIT 310	Literary Editing & Publication	3.0
English Major Foundational Courses*		6.0
Free Electives		6.0
	Term Credits	**15.0**
Term 10		
ENGL 300 [WI]	Literature & Science	3.0
ENGL 323	Literature and Other Arts	3.0
ENGL 360 [WI]	Literature and Society	3.0
Free Electives		6.0
	Term Credits	**15.0**
Term 11		
ENGL 380	Literary Theory	3.0
HIST 281	History of Science: Enlightenment to Modernity	3.0
PHIL 361	Philosophy of Science	3.0
ENGL 492 or 490	Seminar in World Literature Seminar in English and American Literature	4.0

Free Electives		3.0
	Term Credits	**16.0**
Term 12		
ENGL 499	Senior Project in Literature	4.0
WRIT 312	The Practice of Professional Writing	3.0
Free Electives		8.0
	Term Credits	**15.0**

Total Credit: 182.0

* See degree requirements (p. 38).

Co-op/Career Opportunities

English majors pursue many professional fields in addition to teaching and creative writing. Many go on to law school, politics and government, or business careers. The critical thinking, analytical and writing skills provided by our program are essential for high-level decision-making and problem solving in any professional situation.

Co-op employment is an option for English majors, who can explore co-op or internship opportunities at Philadelphia museums, city government and visitors' bureaus, television and radio stations, law firms, and nonprofit organizations.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) for more detailed information on co-op and post-graduate opportunities.

Minor in English

The English minor provides students from other majors with a more intensive background in literature. Coursework in the minor exposes students to literature from a variety of periods, cultures and genres and also provides practice in critical thinking, literary analysis and writing. These courses enrich students' intellectual lives and provide them with skills that are valuable in a variety of professional situations.

Where a course required for the minor is already required for a student's major, the student is directed to choose another English elective. Other substitutions are permissible at the discretion of the Program Director.

Requirements

Select three of the following:		9.0
ENGL 200 [WI]	Classical to Medieval Literature	
ENGL 201	Renaissance to the Enlightenment	
ENGL 202 [WI]	Romanticism to Modernism	
ENGL 203 [WI]	Post-Colonial Literature I	
ENGL 204	Post-Colonial Literature II	
ENGL 205 [WI]	American Literature I	
ENGL 206 [WI]	American Literature II	
ENGL 207 [WI]	African American Literature	
ENGL 211 [WI]	British Literature I	
ENGL 212	British Literature II	
ENGL 214	Readings in Fiction	
ENGL 215 [WI]	Readings in Poetry	
ENGL 216 [WI]	Readings in Drama	
Select two of the following:		6.0
WRIT 220 [WI]	Creative Nonfiction Writing	
WRIT 225 [WI]	Creative Writing	
WRIT 301 [WI]	Writing Poetry	
WRIT 302	Writing Fiction	
WRIT 303	Writing Humor and Comedy	
WRIT 304 [WI]	Special Topics in Writing	
WRIT 306	Writing About the Media	
WRIT 310	Literary Editing & Publication	
WRIT 312	The Practice of Professional Writing	
WRIT 400	Writing in Cyberspace	
WRIT 405	Internship in Literary Publishing	
Select three of the following:		9.0
ENGL 300 [WI]	Literature & Science	
ENGL 302	Environmental Literature	
ENGL 303	Science Fiction	
ENGL 305 [WI]	The Mystery Story	
ENGL 306	Literature of Baseball	
ENGL 307	Literature of the Holocausts	
ENGL 310 [WI]	Period Studies	
ENGL 315 [WI]	Shakespeare	
ENGL 320 [WI]	Major Authors	
ENGL 325	Topics in World Literature	
ENGL 330	The Bible as Literature	
ENGL 335	Mythology	
ENGL 345	American Ethnic Literature	
ENGL 350	Jewish Literature and Civilization	
ENGL 355 [WI]	Women and Literature	
ENGL 360 [WI]	Literature and Society	
ENGL 365	Topics in African American Literature	
ENGL 370	Topics in Literature and Medicine	
ENGL 380	Literary Theory	
Total Credits		24.0

Environmental Science

Bachelor of Science Degree: 185.5 - 189.5 quarter credits

About the Program

The environmental science program at Drexel University is committed to educating undergraduates for technical careers and graduate study in the diverse areas of environmental science vital to restoration of a clean and healthy environment in the 21st century. The affiliation between the Academy of Natural Science (http://www.ansp.org) and Drexel University offers the opportunity to take a national leadership role in environmental science and environmental policy, and grow the scope, capacity and reputation of the natural sciences at the University. The philosophy of the Biodiversity, Earth, and Environmental Science Department is *"Experiential Learning Early and Often."*

Environmental science is a multidisciplinary field designed to examine environmental problems and find solutions. This field requires understanding of a number of disciplines, including biology, physics and chemistry. Solving some of our environmental problems also requires knowledge of environmental policy, ethics, and scientific data analysis.

The program has an integrated curricular approach designed around student laboratory investigations. The goal of this program is to give students not only knowledge about biology, but also the ability to use the tools and skills of a scientist. The program includes extensive use of computers in the laboratory, and students make frequent oral and written presentations based on their laboratory projects.

Field experience electives may includes trips to local aquatic and terrestrial habitats such as streams, lakes, the John Heinz National Wildlife Refuge, New Jersey Pine Barrens, Delaware, Barnegat and Chesapeake Bays, and Appalachian Mountains. Students are also encouraged to take advantage of study abroad (http://www.drexel.edu/studyabroad) options. These programs often require early planning so it is advisable for interested students to speak to their advisor about opportunities in their first year.

Concentrations are available in

- Biodiversity and Evolution
- Earth Science
- Ecology & Conservation
- Environmental Science

Additional Information

For more information about the program, visit the College's Environmental Science (http://www.drexel.edu/envscience) website.

Susan Cole
Undergraduate Advisor
Environmental Science
coless@drexel.edu or email bees@drexel.edu.

Degree Requirements

The program is designed to prepare students for careers in environmental science, environmental assessment, marine science, applied ecology, biodiversity and conservation and paleontology. The requirements for specific concentrations in biodiversity and evolution; earth science; ecology & conservation; and environmental science follow the list of degree requirements.

Degree Requirements		
Humanities and Social Science		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
COM 230	Techniques of Speaking	3.0
COM 310 [WI]	Technical Communication	3.0
PHIL 341	Philosophy of the Environment	3.0
or PHIL 251	Ethics	
UNIV S101	The Drexel Experience	1.0
UNIV S201	Looking Forward: Academics and Careers	1.0
CIVC 101	Introduction to Civic Engagement	1.0
Humanities/Social Science electives		6.0
Mathematics and Statistics		18.0
Select one of the following sequences:		
Calculus sequence		
MATH 121	Calculus I	
MATH 122	Calculus II	
MATH 123	Calculus III	
Analysis sequence		
MATH 101	Introduction to Analysis I	
MATH 102	Introduction to Analysis II	
MATH 239	Mathematics for the Life Sciences	
Additional required mathematics courses:		
MATH 410	Scientific Data Analysis I	
MATH 411	Scientific Data Analysis II	
Physical Sciences		
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
CHEM 103	General Chemistry III	5.0
CHEM 241	Organic Chemistry I	4.0
Physics sequence		
PHYS 152	Introductory Physics I	4.0
PHYS 153	Introductory Physics II	4.0
PHYS 154	Introductory Physics III	4.0
Biological Sciences		
BIO 122	Cells and Genetics	4.5
BIO 124	Evolution & Organismal Diversity	4.5
BIO 126	Physiology and Ecology	4.5
Geoscience Requirements		
GEO 103	Introduction to Field Methods in Earth Science	2.0
GEO 201 [WI]	Earth Systems Processes	3.0
GEO 301	Advanced Field Methods in Earth Science	2.0
Environmental Science Core Requirements		
ENVS 101	Introduction to Environmental Science	5.0
ENVS 102	Natural History, Research and Collections	2.0
ENVS 201	Practical Identification of Plants and Animals	2.0
ENVS 202	Tree of Life	2.0
ENVS 203	The Watershed Approach	2.0
ENVS 212	Evolution	4.0
ENVS 230	General Ecology	3.0
ENVS 260	Environmental Science and Society	3.0

ENVS 302	Environmental Chemistry Laboratory	2.0
ENVS 308	GIS and Environmental Modeling	4.0
ENVS 441 [WI]	Issues in Global Change I: Seminar	2.0
ENVS 442	Issues in Global Change II: Research	2.0
ENVS 443	Issues in Global Change III: Synthesis	2.0
ENVP 360	Environmental Movements in America	3.0
or ENVP 365	Introduction to Environmental Policy Analysis	
Environmental Science Lab Requirements		2.0
Environmental Concentration Requirements		12.0-16.0
See list of concentration requirements below.		
Environmental Electives		15.0
Free Electives		24.0
Total Credits		185.5-189.5

Environmental Science Concentrations

Each concentration has four required courses. In addition, the department maintains a menu of electives specific to each concentration. Check with the department for selecting the appropriate 12.0 - 16.0 credits of Environmental Science electives.

Biodiversity & Evolution Concentration

Required Courses		
BIO 244	Genetics I	3.0
ENVS 312	Systematic Bio: Principles & Methods	3.0
ENVS 438	Biodiversity	3.0
ENVS 470	Advanced Topics in Evolution	3.0
Total Credits		12.0

Earth Science Concentration

Required Courses		
GEO 101	Physical Geology	4.0
GEO 102	History of Life on Earth	4.0
GEO 309	Geochemistry	4.0
GEO 310	Sedimentary Environments	4.0
Total Credits		16.0

Ecology & Conservation Concentration

Required Courses		
ENVS 284 [WI]	Physiological and Population Ecology	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
ENVS 328	Conservation Biology	3.0
Ecology & Conservation elective		3.0
Total Credits		12.0

Environmental Science Concentration

Required Courses		
GEO 101	Physical Geology	4.0
ENVS 275	Global Climate Change	3.0
ENVS 310	Introduction to Environmental Chemistry	3.0
ENVP 360	Environmental Movements in America	3.0
or ENVP 365	Introduction to Environmental Policy Analysis	
Total Credits		13.0

Notes about Environmental Science Opportunities:

- Field experience electives include quantitative environmental measurements in local aquatic and terrestrial habitats, such as streams, lakes, the Delaware Bay, the Poconos, and the New Jersey Pine Barrens (for example, Field Botany: NJ Pine Barrens; Ecology of the Pine Barrens; Marine Field Methods).
- Students are required to consult frequently with their academic advisors for curriculum planning. Many of the graduate courses in environmental science are also open to qualified seniors who wish to become familiar with some of the applications in the field. Prerequisites and descriptions of available graduate courses appear in the graduate catalog.
- The Equatorial Guinea: Bioko Island Study Abroad Program offers a unique opportunity for undergraduates and recent graduates to study tropical biodiversity and its conservation, with an emphasis on field work that takes advantage of Bioko Island's pristine rainforests ranging from sea level to over 10,000 feet in altitude, its seven species of rare monkeys and its four species of nesting sea turtles. For more information, please visit the Drexel Study Abroad Office (https://drexel.studioabroad.com/index.cfm?FuseAction=Abroad.Home).

Sample Plan of Study

The plan of study below is a generic plan, suited for all four concentrations. Contact the program advisor for additional details.

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENVS 101	Introduction to Environmental Science	5.0
ENVS 260	Environmental Science and Society	3.0
MATH 101 or 121	Introduction to Analysis I Calculus I	4.0
UNIV S101	The Drexel Experience	1.0
	Term Credits	**16.0**
Term 2		
BIO 124	Evolution & Organismal Diversity	4.5
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENVS 102	Natural History, Research and Collections	2.0
MATH 102 or 122	Introduction to Analysis II Calculus II	4.0
CIVC 101	Introduction to Civic Engagement	1.0
Free elective		3.0
	Term Credits	**17.5**
Term 3		
BIO 126	Physiology and Ecology	4.5
GEO 103	Introduction to Field Methods in Earth Science	2.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
MATH 239 or 123	Mathematics for the Life Sciences Calculus III	4.0
Humanities/social science elective		3.0
	Term Credits	**16.5**

Term 4		
BIO 122	Cells and Genetics	4.5
CHEM 101	General Chemistry I	3.5
ENVS 201	Practical Identification of Plants and Animals	2.0
ENVS 212	Evolution	4.0
	Term Credits	**14.0**
Term 5		
CHEM 102	General Chemistry II	4.5
ENVS 202	Tree of Life	2.0
ENVS 308	GIS and Environmental Modeling	4.0
GEO 201 [WI]	Earth Systems Processes	3.0
Free elective		3.0
	Term Credits	**16.5**
Term 6		
CHEM 103	General Chemistry III	5.0
ENVS 203	The Watershed Approach	2.0
ENVS 230	General Ecology	3.0
PHYS 152	Introductory Physics I	4.0
	Term Credits	**14.0**
Term 7		
ENVP 360 or 365	Environmental Movements in America Introduction to Environmental Policy Analysis	3.0
CHEM 241	Organic Chemistry I	4.0
PHYS 153	Introductory Physics II	4.0
UNIV S201	Looking Forward: Academics and Careers	1.0
ENVS concentration course*		3.0-4.0
	Term Credits	**15.0-16.0**
Term 8		
GEO 301	Advanced Field Methods in Earth Science	2.0
COM 310 [WI]	Technical Communication	3.0
PHYS 154	Introductory Physics III	4.0
ENVS concentration course*		3.0-4.0
Humanities/Social Science elective		3.0
	Term Credits	**15.0-16.0**
Term 9		
ENVS 302	Environmental Chemistry Laboratory	2.0
PHIL 251 or 341	Ethics Philosophy of the Environment	3.0
COM 230	Techniques of Speaking	3.0
ENVS concentration course*		3.0-4.0
Free elective		3.0
	Term Credits	**14.0-15.0**
Term 10		
ENVS 441 [WI]	Issues in Global Change I: Seminar	2.0
MATH 410	Scientific Data Analysis I	3.0
ENVS concentration course*		3.0-4.0
Environmental Science (ENVS) elective		3.0
Environmental Science (ENVS) lab elective		2.0
Free elective		3.0
	Term Credits	**16.0-17.0**
Term 11		
ENVS 442	Issues in Global Change II: Research	2.0
MATH 411	Scientific Data Analysis II	3.0
Environmental Science (ENVS) electives		6.0
Free elective		6.0
	Term Credits	**17.0**
Term 12		
ENVS 443	Issues in Global Change III: Synthesis	2.0
Environmental Science (ENVS) electives		6.0
Free electives		6.0
	Term Credits	**14.0**

Total Credit: 185.5-189.5

* See degree requirements (p. 42).

Co-op/Career Opportunities

Environmental scientists pursue careers in environmental assessment, environmental health, ecology, conservation, marine science, and atmospheric science.

Co-Op Opportunities

Co-op and research opportunities will be available with the scientists at the Academy of Natural Sciences (http://www.ansp.org). In addition, recent co-op experiences have included:

CHPlanning, Center City Philadelphia
Lakes Environmental Assn., Maine
US Environmental Protection Agency, Center City Philadelphia
Criterion Lab Inc, Philadelphia PA Suburbs
Philadelphia Water Department, Philadelphia
Temple University, Philadelphia
Fairway Testing Co., NYC
University of Alaska, Fairbanks, Alaska
Bioko Biodiversity Protection Program, Equatorial Guinea
React Environmental Professional Services Group Inc., Philadelphia
Air Management Services, Philadelphia
Exelon Corporation, Philadelphia

Graduate Opportunities

Graduates in this major typically work for government environmental agencies, in environmental consulting firms, and in environmental departments of various industries. Additional training at the graduate level is an option for many students.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on co-op and post-graduate opportunities.

Environmental Studies

Bachelor of Science Degree: 182.0 quarter credits

About the Program

The major in environmental studies is a multi-disciplinary program designed to provide students with both a technical grounding in environmental science as well as a strong emphasis in social science in order to prepare students for environmental policy careers

The causes and consequences of environmental problems are extremely complex, involving the connection of natural ecological systems to human systems such as physical infrastructure and the built environment. Equally important to understanding environmental problems are the social, economic and political considerations that govern society's ability to balance its current needs and desires with those of future generations. Indeed, ecological problems and their consequences are an enduring problem of society. Problems such as air and water pollution, exposure to toxic chemicals, sprawling land development, environmentally damaging energy extraction and unsustainable energy use practices, to name a few, all conspire to negatively influence our natural world as well as human health and well being.

The environmental studies major draws on the University's academic strengths in science, technology, social science and communication. Courses and faculty are drawn from a diverse set of academic programs: including the natural sciences, social sciences and the humanities. The program also benefits from Drexel's urban location -- as issues related to urban sustainability policy and planning, including urban redevelopment and land reuse practices, transportation policy, green building, energy efficiency, urban farming and food systems, recycling, and racial and class-based environmental justice and health -- are core topics of the program of study.

The degree is designed to prepare students for a wide set of vocational opportunities with governmental agencies, corporations, and nonprofit organizations that develop, implement and communicate environmental policies. Students are strongly encouraged to gain valuable professional experience through Drexel's cooperative education program.

For more information visit the Environmental Studies (http://www.drexel.edu/culturecomm/academics/undergraduate/envrstudies) page at Drexel University.

Degree Requirements

General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
or ANTH 110	Human Past: Anthropology and Prehistoric Archeology	
BIO 107	Cells, Genetics & Physiology	3.0
BIO 108	Cells, Genetics and Physiology Laboratory	1.0
BIO 109	Biological Diversity, Ecology & Evolution	3.0
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	1.0
COM 150	Mass Media and Society	3.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
PSCI 110	American Government I	4.0
PSY 101	General Psychology I	3.0
SOC 101	Introduction to Sociology	3.0
UNIV H101	The Drexel Experience	3.0
Two English (ENGL) Electives *		6.0
Philosophy (PHIL) Elective		3.0
Two History (HIST) Electives		6.0
Math Sequences		8.0
Select one of the following:		
Analysis		
MATH 101	Introduction to Analysis I	
MATH 102	Introduction to Analysis II	
Calculus		
MATH 121	Calculus I	
MATH 122	Calculus II	
Environmental Studies Core Requirements		
Theory Sequence Requirements		
COM 210	Theory and Models of Communication	3.0
SOC 260 [WI]	Classical Social Theory	3.0
ANTH 410	Cultural Theory	3.0
or SOC 460	Contemporary Social Theory	
Methods Sequence Requirements		
COM 220	Qualitative Research Methods	3.0
SOC 250	Research Methods I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
Natural Science Requirements		
ENVS 230	General Ecology	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
ENVS 328	Conservation Biology	3.0
Natural Science Elective **		3.0
Other Required Courses		
ANTH 360	Culture and the Environment	3.0
COM 316	Campaigns for Health & Environment	3.0
COM 317 [WI]	Environmental Communication	3.0
CJ 373	Environmental Crimes	3.0
ENVP 325	Introduction to Urban and Environmental Planning	3.0
ENVP 345	Sociology of the Environment	3.0
ENVP 346	Environmental Justice	3.0
ENVP 360	Environmental Movements in America	3.0
ENVP 365	Introduction to Environmental Policy Analysis	3.0
ENVS 260	Environmental Science and Society I	3.0
PSCI 331	Environmental Politics	3.0
SOC 240	Urban Sociology	3.0
Other Environmental Studies Program Electives		
Select ten of the following:		30.0
BIO 118	Basics of Cancer	
BIO 220	Essential Microbiology	
CHEM 111	General Chemistry I	
CHEM 112	General Chemistry II	
CHEM 151	Applied Chemistry	
COM 101	Human Communication	
COM 230	Techniques of Speaking	
COM 260 [WI]	Fundamentals of Journalism	
COM 270 [WI]	Business Communication	
COM 280	Public Relations Principles and Theory	
COM 310 [WI]	Technical Communication	
COM 318	Film, Celebrity and the Environmental Movement	
COM 320 [WI]	Science Writing	
COM 350 [WI]	Message Design and Evaluation	
COM 375 [WI]	Grant Writing	

ENGL 302	Environmental Literature	
ENVS 284 [WI]	Physiological and Population Ecology	
ENVS 285	Population Ecology Laboratory	
ENVS 321	Environmental Health	
ENVS 322	Tropical Ecology	
ENVS 330	Aquatic Ecology	
ENVS 413	Advanced Population Ecology	
ENVS 436	Principles of Toxicology I	
ENVS 437	Principles of Toxicology II	
ENVS 441 [WI]	Issues in Global Change I: Seminar	
ENVS 437	Principles of Toxicology II	
ENVP 275	Global Climate Change	
ENVP 480	Special Topics	
HNRS 201	Colloquium I	
PHEV 145	Weather I: Climate and Global Change	
PHIL 335	Global Ethical Issues	
PHIL 341	Philosophy of the Environment	
PSCI 211	American Government II	
PSCI 371	Science, Technology, & Public Policy	
PSCI 372	City in United States Political Development	
PSY 150	Introduction to Social Psychology	
SOC 110	Sociology of the Future	
SOC 115	Social Problems	
SOC 235	Sociology of Health	
SOC 330	Developing Nations and the International Division of Labor	
SOC 340	Globalization	
SOC 343	The American Experience of the Wilderness	
SOC 344	Social Movements	
SOC 349	Sociology of Disasters	
Electives		
Free Electives		19.0
Total Credits		182.0

Sample Plan of Study

Term 1		**Credits**
BIO 107	Cells, Genetics & Physiology	3.0
BIO 108	Cells, Genetics and Physiology Laboratory	1.0
ENGL 101	Expository Writing and Reading	3.0
MATH 101	Introduction to Analysis I	4.0
SOC 101	Introduction to Sociology	3.0
UNIV H101	The Drexel Experience	2.0
	Term Credits	**16.0**
Term 2		
BIO 109	Biological Diversity, Ecology & Evolution	3.0
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	1.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122 or 102	Calculus II Introduction to Analysis II	4.0
UNIV H101	The Drexel Experience	1.0
Environmental Studies Program Elective*		3.0
	Term Credits	**15.0**
Term 3		
COM 150	Mass Media and Society	3.0
ENGL 103	Analytical Writing and Reading	3.0
ENVS 230	General Ecology	3.0
ANTH 110 or 101	Human Past: Anthropology and Prehistoric Archeology Introduction to Cultural Diversity	3.0
Environmental Studies Program Elective*		3.0
	Term Credits	**15.0**
Term 4		
COM 210	Theory and Models of Communication	3.0
COM 220	Qualitative Research Methods	3.0
ECON 201	Principles of Microeconomics	4.0
ENVS 260	Environmental Science and Society I	3.0
SOC 240	Urban Sociology	3.0
	Term Credits	**16.0**
Term 5		
ANTH 360	Culture and the Environment	3.0
ECON 202	Principles of Macroeconomics	4.0
ENVP 345	Sociology of the Environment	3.0
SOC 250	Research Methods I	3.0
SOC 260 [WI]	Classical Social Theory	3.0
	Term Credits	**16.0**
Term 6		
CJ 373	Environmental Crimes	3.0
ENVS 286	Community and Ecosystem Ecology	3.0
PSCI 110	American Government I	4.0
PSY 101	General Psychology I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
	Term Credits	**16.0**
Term 7		
ENVP 346	Environmental Justice	3.0
ENVP 360	Environmental Movements in America	3.0
PSCI 331	Environmental Politics	3.0
UNIV 101	The Drexel Experience	1.0
Environmental Studies Program Elective*		3.0
Natural Science Elective		3.0
	Term Credits	**16.0**
Term 8		
COM 317 [WI]	Environmental Communication	3.0
English Literature Course 200-level or Above		3.0
Environmental Studies Program Electives*		9.0
	Term Credits	**15.0**
Term 9		
COM 316	Campaigns for Health & Environment	3.0
ENVP 325	Introduction to Urban and Environmental Planning	3.0

English Literature Course 200-level or Above		3.0
Environmental Studies Program Elective*		3.0
History (HIST) Elective		3.0
	Term Credits	**15.0**
Term 10		
ENVP 365	Introduction to Environmental Policy Analysis	3.0
Free Elective		3.0
Philosophy (PHIL) Elective		3.0
Environmental Studies Program Electives*		6.0
	Term Credits	**15.0**
Term 11		
SOC 460 [WI] or ANTH 410	Contemporary Social Theory Cultural Theory	3.0
Free Elective		3.0
History (HIST) Elective		3.0
Environmental Studies Program Elective*		3.0
	Term Credits	**12.0**
Term 12		
ENVS 328	Conservation Biology	3.0
Free Electives		13.0
	Term Credits	**16.0**

Total Credit: 183.0

* See degree requirements (p. 45).

Minor in Environmental Studies

The environmental studies minor is an interdisciplinary minor designed to give students specializing in other fields a background in contemporary environmental issues and the ability to analyze such issues. For students majoring in such fields as business and engineering, the minor in environmental studies will provide them with the tools to make better decisions about products or projects related to environmental economics, politic pollutants, environmental policy, and environmental justice. For students who are liberal arts majors, the minor in environmental studies offers the opportunity to focus on the social- and natural-science aspects of the environment, and to be prepared for issues they may encounter in their careers.

The minor includes a core of six courses and at least six credits of natural science electives

Required Courses

ANTH 360	Culture and the Environment	3.0
COM 317 [WI]	Environmental Communication	3.0
ENVS 260	Environmental Science and Society I	3.0
SOC 240	Urban Sociology	3.0
ENVP 345	Sociology of the Environment	3.0
ENVP 365	Introduction to Environmental Policy Analysis	3.0
Select two of the following:		6.0
COM 316	Campaigns for Health & Environment	
ECON 351	Resource and Environmental Economics	
PSCI 331	Environmental Politics	
ENVP 346	Environmental Justice	
ENVP 360	Environmental Movements in America	
CJ 373	Environmental Crimes	
SOC 470	Social Change & Planning	
Total Credits		24.0

Geoscience

Bachelor of Science: 185.0 - 189.0 quarter credits

About the Program

From energy to climate change to environmental degradation, many of the most pressing societal issues of the coming century will pertain to geoscience. The study of the Earth is central to maintaining clean drinking water, mitigating environmental contamination, providing ores and rare elements necessary for industry, and locating new sources of energy.

The Biodiversity, Earth and Environmental Science (BEES) Department offers a major in geoscience, with three concentration options designed to meet the needs of students wishing to pursue graduate school or immediate employment in the geosciences:

- Applied Geology
- General Geoscience
- Paleontology

The core requirements encompass foundational courses in science, writing, and math, and traditional courses that form the backbone of the geosciences. Building upon these are innovative courses focused on Earth systems processes, key environmental issues, practical field experiences, and advanced geological study.

In addition to nourishing and honing the passions of students studying the Earth, the core curriculum is designed to:

1. Instill key technical skills early-on, as a pathway to high-quality co-op opportunities;
2. Lay the groundwork for our students to pursue advanced graduate study in the geosciences and other disciplines, and;
3. Enable our graduates to translate marketable skills and knowledge into high-quality jobs in industry and government.

Geoscience majors will begin their field experiences during the first term of their freshmen year. Most courses include a laboratory section or a hands-on recitation section (“dry lab”), plus at least three field trips to relevant regional geological sites. These courses, combined with the co-op experience and summer geological field camp, provide students real-world experience in the field.

About the Concentrations

Applied Geology

The applied geology concentration is designed for students wishing to enter the geoscience workforce upon graduation. Possible employment opportunities include jobs in: environmental consulting, geotechnical consulting, geophysical consulting, the petroleum and natural gas industry, the mining industry, federal agencies (e.g. USGS, USDA, NOAA, FEMA, EPA, DOI, and Army Corps of Engineers), and state and local agencies (e.g. state environmental agencies, state geological surveys, and municipal water departments).

General Geoscience

The general geoscience concentration allows maximum flexibility and is designed for students wishing to pursue other areas of study within the geosciences, students wishing to pursue policy-related careers, and students planning to apply to professional graduate programs, such as those in law or business schools. The policy component of this concentration allows students to explore related societal issues, which may help guide their career aspirations. This concentration also provides transfer students with a pathway to graduate on time.

Students graduating from this concentration will be well prepared to enter graduate school in science or policy, as well as to pursue professional studies. Students seeking immediate employment will be competitive for jobs with, for example, certain NGOs, environmental foundations, consulting companies, and government policy positions related to natural resources and the environment.

Paleontology

The concentration in paleontology prepares students who are interested in pursuing related research in graduate school and students seeking entry-level positions in paleontology. Examples of these jobs include biostratigrapher for petroleum companies, fossil resource manager for the Bureau of Land Management, and related positions with the National Parks Service, USGS, and state geological surveys.

Undergraduates in this concentration benefit from world-class resources already established at the Academy of Natural Sciences. These include the Invertebrate paleontology collection, with over 1 million specimens; the vertebrate fossil collection, with over 22,000 specimens; historically important specimens, such as the Thomas Jefferson fossil collection, the first discovered dinosaur skeleton, and the first discovered tyrannosaur; and the paleobotany collection, with over 5,000 specimens, including a large proportion of type specimens.

Students in the paleontology concentration will have access to numerous fossil sites along the Atlantic Coastal Plain and in the Appalachian Province. Opportunities exist for student research at two well-established sites: Dr. Daeschler's Red Hill site, which produces evolutionarily important forms representing the fish to tetrapod transition; and Dr. Lacovara's Inversand site, which records a mass-death assemblage at the end of the Cretaceous Period.

Additional Information

For additional information about this program, visit the Biodiversity, Earth and Environmental Science (BEES) Department website.

Degree Requirements

General Education Requirements		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
COM 230	Techniques of Speaking	3.0
COM 310 [WI]	Technical Communication	3.0
PHIL 251	Ethics	3.0
or PHIL 341	Philosophy of the Environment	
UNIV S101	The Drexel Experience	2.0
UNIV S201	Looking Forward: Academics and Careers	1.0
Humanities or Social Science electives		6.0
Free electives		24.0
Mathematics and Statistics		
Choose one of the following math sequences:		12.0
MATH 101 & MATH 102 & MATH 239	Introduction to Analysis I and Introduction to Analysis II and Mathematics for the Life Sciences	
MATH 121 & MATH 122 & MATH 123	Calculus I and Calculus II and Calculus III	
MATH 410	Scientific Data Analysis I	3.0
MATH 411	Scientific Data Analysis II	3.0
Physical Sciences		
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
CHEM 103	General Chemistry III	5.0
Complete one of the following Physics sequences:		8.0
PHYS 152 & PHYS 153	Introductory Physics I and Introductory Physics II	
PHYS 101 & PHYS 102	Fundamentals of Physics I and Fundamentals of Physics II	
Complete one of the following Biological Sciences sequences:		8.0-9.0
BIO 107 & BIO 108 & BIO 109 & BIO 110	Cells, Genetics & Physiology and Cells, Genetics and Physiology Laboratory and Biological Diversity, Ecology & Evolution and Biological Diversity, Ecology and Evolution Laboratory	
BIO 124 & BIO 126	Evolution & Organismal Diversity and Physiology and Ecology	
Environmental Science		
ENVS 101	Introduction to Environmental Science	5.0
ENVS 102	Natural History, Research and Collections	2.0
ENVS 212	Evolution	4.0
ENVS 441 [WI]	Issues in Global Change I: Seminar	2.0
ENVS 442	Issues in Global Change II: Research	2.0
ENVS 443	Issues in Global Change III: Synthesis	2.0
Geoscience Core Courses		
GEO 101	Physical Geology	4.0
GEO 102	History of Life on Earth	4.0
GEO 103	Introduction to Field Methods in Earth Science	2.0
GEO 201 [WI]	Earth Systems Processes	3.0
GEO 210	Structural Geology	4.0
GEO 215	Minerology	4.0
GEO 301	Advanced Field Methods in Earth Science	2.0
GEO 310	Sedimentary Environments	4.0
GEO 311	Stratigraphy	4.0
GEO 320	Invertebrate Paleontology	4.0
GEO 401	Igneous and Metamorphic Petrology	4.0
Geology Field Camp		3.0
GEO Electives *		8.0
Geoscience Concentration Courses		20.0-23.0

Applied Geology Concentration	
ENVS 308	GIS and Environmental Modeling
GEO 306	Environmental Geology
GEO 309	Geochemistry
GEO 412	Geology of Groundwater
GEO 418	Geophysics
General Geoscience Concentration	
See the Biodiversity, Earth and Environmental Science (BEES) Department for the General Geoscience Concentration course list.	
Paleontology Concentration	
ENVS 202	Tree of Life
GEO 365	Field Methods in Paleoecology
GEO 322	Vertebrate Paleontology
Paleontology elective *	
Choose one of the following:	
BIO 224 & BIO 225	Form, Function & Evolution of Vertebrates and Vertebrate Biology and Evolution Laboratory
ENVS 254 & ENVS 255	Invertebrate Morphology and Physiology and Invertebrate Morphology and Physiology Lab
Total Credits	185.0-189.0

* See the Biodiversity, Earth and Environmental Science (BEES) for the GEO Core and Paleo elective list.

Sample Plans of Study

The sample plan of study is a general guideline that can be used for each of the three concentrations, depending on course selections in certain terms.

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENVS 101	Introduction to Environmental Science	5.0
GEO 101	Physical Geology	4.0
MATH 101 or 121	Introduction to Analysis I Calculus I	4.0
UNIV S101	The Drexel Experience	1.0
	Term Credits	**17.0**
Term 2		
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENVS 102	Natural History, Research and Collections	2.0
GEO 102	History of Life on Earth	4.0
MATH 102 or 122	Introduction to Analysis II Calculus II	4.0
Choose one of the following biology sequences:		4.0-4.5
BIO 109 & BIO 110	Biological Diversity, Ecology & Evolution	
BIO 124	Evolution & Organismal Diversity	
	Term Credits	**17.0-17.5**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
GEO 103	Introduction to Field Methods in Earth Science	2.0
MATH 239 or 123	Mathematics for the Life Sciences Calculus III	4.0
UNIV S101	The Drexel Experience	1.0
Choose one of the following biology sequences:		4.0-4.5
BIO 107 & BIO 108	Cells, Genetics & Physiology	
BIO 126	Physiology and Ecology	
	Term Credits	**14.0-14.5**
Term 4		
CHEM 101	General Chemistry I	3.5
ENVS 212	Evolution	4.0
GEO 210	Structural Geology	4.0
Humanities or Social Science elective		3.0
	Term Credits	**14.5**
Term 5		
CHEM 102	General Chemistry II	4.5
GEO 201 [WI]	Earth Systems Processes	3.0
GEO 215	Minerology	4.0
Choose one of the following two options, based on chosen concentration:		4.0-5.0
4-credit GEO concentration course		
2-credit GEO concentration (Paleo) course and a 3-credit free elective		
	Term Credits	**15.5-16.5**
Term 6		
CHEM 103	General Chemistry III	5.0
COM 230	Techniques of Speaking	3.0
GEO 310	Sedimentary Environments	4.0
PHYS 152 or 101	Introductory Physics I Fundamentals of Physics I	4.0
	Term Credits	**16.0**
Term 7		
COM 310 [WI]	Technical Communication	3.0
GEO 311	Stratigraphy	4.0
PHYS 153 or 102	Introductory Physics II Fundamentals of Physics II	4.0
UNIV S201	Looking Forward: Academics and Careers	1.0
Select one of the following options based on chosen concentration:		3.0-6.0
GEO Concentration (Paleo) course		
Free elective		
	Term Credits	**15.0-18.0**
Term 8		
GEO 301	Advanced Field Methods in Earth Science	2.0
MATH 410	Scientific Data Analysis I	3.0
PHIL 251 or 341	Ethics Philosophy of the Environment	3.0
GEO Concentration elective		4.0
Free elective		3.0
	Term Credits	**15.0**
Term 9		
GEO 320	Invertebrate Paleontology	4.0
MATH 411	Scientific Data Analysis II	3.0

GEO Concentration course		4.0
Free elective		4.0
	Term Credits	**15.0**
Term 10		
Geology Field Camp Summer JR Year		3.0
	Term Credits	**3.0**
Term 11		
ENVS 441 [WI]	Issues in Global Change I: Seminar	2.0
Humanities or Social Science elective		3.0
GEO Concentration course		4.0
GEO elective		4.0
Free elective		3.0
	Term Credits	**16.0**
Term 12		
ENVS 442	Issues in Global Change II: Research	2.0
GEO Concentration course		3.0-4.0
GEO elective		4.0
Free elective		4.0
	Term Credits	**13.0-14.0**
Term 13		
ENVS 443	Issues in Global Change III: Synthesis	2.0
GEO 401	Igneous and Metamorphic Petrology	4.0
Free electives		6.0
	Term Credits	**12.0**

Total Credit: 183.0-189.0

Co-Op/Career Opportunities

Co-Op Opportunities

There are over one hundred environmental, geophysical, and geotechnical firms within the greater Philadelphia region. Plus, there are opportunities with federal, state, and municipal agencies, jobs in central Pennsylvania related to the Marcellus Shale, and research opportunities between Drexel and the Academy of Natural Sciences.

As of 2013-2014, a five-year, three co-op plan of study program will be available. Transfer students may be granted an exception for a two co-op plan of study, so that they may remain on schedule. The summer geological field camp will occur during the third co-op cycle. In this third co-op, geoscience students attend field camp and also partake in an abbreviated co-op work experience.

Career Opportunities

According to the US Bureau of Labor Statistics (BLS) employment for geoscientists, through 2020, is expected to grow faster than the average for all occupations. In addition, the geosciences are expected to outpace life, physical, and social sciences in job creation. The employment outlook for geoscientists in Drexel's surrounding area is particularly bright, with a robust environmental consulting industry and exploding demand related to Marcellus Shale drilling.

The geoscience major, with its three concentrations, prepares students who are interested in entering the workforce immediately as well as those who are interested in pursuing related research in graduate schools.

Facilities and Field Sites

Facilities

The geoscience major leverages resources at Drexel University and the Academy of Natural Sciences (http://www.ansp.org), such as a mineral collection with 9,000 specimens, over a million fossil specimens, Dinosaur Hall, The Patrick Center for Environmental Research, a state-of-the-art fossil preparation lab, notable research programs, and faculty with expertise in geology, paleontology, and related disciplines.

Summer Geological Field Camp

Summer geological field camp is the quintessential undergraduate experience for geosciences students. It is a long-held tradition in geology departments that students head out West, during the summer before graduation, to apply their knowledge to real-world situations and to acquire field skills that will serve them throughout their careers. This is particularly important for students in eastern schools, where the mountains are small and outcrops are scarce. Field camp also provides networking and bonding opportunity for students. Friends made at field camp often become colleagues for life. At the Geological Society of America meeting, reunions are organized by university *and* by field camp.

The summer geological field camp for geoscience students will occur during the third co-op cycle.

Barnegat Bay Coastal Field Station

The BEES field station on Barnegat Bay in Waretown, NJ provides geoscience students with opportunities to engage in hands-on research in coastal geology, barrier island morphology, oceanography, and sedimentology. The facility includes a lodge, two classrooms/meeting rooms, dining hall, dormitories, and rustic cabins. The field station is located on 194 acres of diverse coastal habitat, including a maritime forest, tidal creek, salt marsh, fresh water pond, brackish impoundment, and bayshore environments. The department's research vessel gives students access to back-bay and near-shore marine environments.

The department holds its introductory field session for incoming freshmen and other events at the field station. The facility may also serve as a base for excursions into the Pine Barrens, a heavily forested area containing a number of interesting deposits related to the last glacial period.

Red Hill Fossil Site

The Red Hill fossil site, in Tioga County, Pennsylvania, exposes Devonian coastal sedimentary rocks that preserve a rich fossil fauna. Of particular importance is a fossil fish species, studied by Dr. Ted Daeschler, representing a critical transition between fish and tetrapods (land animals.) This site offers opportunities for studying vertebrate paleontology, stratigraphy, and sedimentology and provides students with a window into an important moment in the history of life on Earth.

Inversand Fossil Site: Local training ground for Geoscience Majors

The Inversand fossil site is a unique resource for geological education, research, and STEM outreach. The quarry is located in Gloucester Country, NJ, only 20 minutes from Drexel's campus, making it possible to conduct field exercises there within a three-hour class period. The geological formations that outcrop in the Inversand Quarry have yielded many new fossil species. The site has significance beyond vertebrate paleontology, however, and will provide a local laboratory for classes in geochemistry, geophysics, stratigraphy, sedimentology, hydrogeology,

and environmental geology. As such, it will provide a valuable training-ground, a short distance from campus, for all Drexel geoscience majors.

History

Bachelor of Arts Degree: 182.0 quarter credits
Bachelor of Science Degree: 182.0 quarter credits

About the Program

This flexible major allows students to shape a curriculum that meets their needs, whether they are preparing for the business world, graduate school in history, an MBA or other business program, or law school.

Required courses in history introduce students to historical interpretations in the specific context of selected time periods, geographic areas, and themes. Introductory courses in political science expose students to the particular approaches and subject matter of the five recognized branches of the discipline. Research methods in history and political science complete the core curriculum.
Beyond core introductory and seminar requirements in history, the department believes the most desirable curriculum offers students a wide degree of flexibility and independence. The curriculum plan permits students to design a course of study that reflects individual interest and meets a wide variety of preprofessional needs, such as pre-law or pre-civil service. This course of study is selected after close, continuing consultation with a faculty advisor chosen by the student or by the department head.

Degrees Offered

The department offers both a Bachelor of Science (BS) and a Bachelor of Arts (BA) in history. Students may choose the program that best fits their needs and future goals.

The **Bachelor of Science (BS)** provides a framework for those students who prefer specific course requirements, including sequences in mathematics and the natural sciences.

The **Bachelor of Arts (BA)** provides a more flexible course of study, which includes foreign language and allows for options in the fulfillment of humanities, social science, math, and science requirements.

In addition to the minor in history, the department also offers minors in American studies (p. 83), European studies (p. 85), politics (p. 88), world history and politics (p. 89) as well as a minor in science, technology and human affairs (p. 88).

Additional Information

For more information about this program, please visit the Department of History & Politics (http://www.drexel.edu/histpol) website or contact:

Jonathan Seitz, PhD
Director of Undergraduate Studies
History + Politics
jws66@drexel.edu

Degree Requirements (BA)

General Education Requirements		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
UNIV H101	The Drexel Experience	2.0
Two Math courses		6.0-8.0
Two Science courses *		6.0-8.0
Foundation Requirements		
Two Studies in Diversity electives		6.0
Two Consecutive Foreign Language courses (must complete level 201)		8.0
Four Humanities/Fine Arts electives		12.0
Four Social Science electives		12.0
Two International Studies electives		6.0
Core History Requirements		
HIST 161	Themes in World Civilization I	3.0
HIST 162	Themes in World Civilization II	3.0
HIST 163	Themes in World Civilization III	3.0
HIST 201	United States History to 1815	3.0
HIST 202	United States History, 1815-1900	3.0
HIST 203	United States History since 1900	3.0
HIST 296	Research Methods in History **	3.0
HIST 301	The Study of History **	3.0
HIST 490 [WI]	Senior Seminar I **	3.0
HIST 491 [WI]	Senior Seminar II **	3.0
PSCI 110	American Government I	4.0
PSCI 120	History of Political Thought	4.0
PSCI 140	Introduction to Comparative Political Analysis	4.0
or PSCI 150	International Politics	
Any 200-level European History course		3.0
Any History of Latin America, Africa, or Asia course		3.0
History Electives ***		30.0
Free Electives		33.0-37.0
Total Credits		182.0

* Any Biology (BIO), Chemisitry (CHEM), Nutrition (NFS), Physics (PHYS) or Environmental Science (ENVS) course.

** These courses must be taken in sequence.

*** Only 200-level and above HIST courses will fulfill this this requirement.

Sample Plan of Study (BA)

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
HIST 161	Themes in World Civilization I	3.0
PSCI 110	American Government I	4.0
UNIV H101	The Drexel Experience	1.0
Foreign language course (103-level or higher)		4.0
	Term Credits	**15.0**

Term 2		
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
HIST 162	Themes in World Civilization II	3.0
UNIV 101	The Drexel Experience	1.0
Foreign language course (201-level or higher)		4.0
Mathematics course		3.0-4.0
Humanities/fine arts elective		3.0
	Term Credits	**17.0-18.0**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
HIST 163	Themes in World Civilization III	3.0
PSCI 150 or 140	International Politics Introduction to Comparative Political Analysis	4.0
Mathematics course		3.0-4.0
Free elective		2.0
	Term Credits	**15.0-16.0**
Term 4		
HIST 201	United States History to 1815	3.0
HIST 296	Research Methods in History	3.0
Science elective*		3.0-4.0
Humanities/fine arts elective		3.0
History of Latin America, Africa, or Asia		3.0
	Term Credits	**15.0-16.0**
Term 5		
HIST 202	United States History, 1815-1900	3.0
Diversity studies elective		
Humanities/fine arts elective		3.0
Social and behavioral sciences elective		3.0
Science elective*		3.0-4.0
	Term Credits	**12.0-13.0**
Term 6		
HIST 203	United States History since 1900	3.0
PSCI 120	History of Political Thought	4.0
International studies elective		3.0
Diversity studies elective		3.0
Free elective		3.0
	Term Credits	**16.0**
Term 7		
History elective (200-level and above HIST course)		3.0
Humanities/fine arts elective		3.0
International studies elective		3.0
Social and behavioral sciences elective		3.0
Free electives		5.0-7.0
	Term Credits	**17.0-19.0**
Term 8		
HIST 301	The Study of History	3.0
History of Europe course (200-level or higher)		3.0
History electives (200-level and above HIST courses)		6.0
Free elective		3.0
	Term Credits	**15.0**
Term 9		
Social and behavioral sciences elective		3.0
History electives (200-level and above HIST courses)		6.0
Free electives		6.0
	Term Credits	**15.0**
Term 10		
HIST 490 [WI] Senior Seminar I		3.0
Social and behavioral sciences elective		3.0
History electives (200-level and above HIST courses)		6.0
Free elective		3.0
	Term Credits	**15.0**
Term 11		
HIST 491 [WI] Senior Seminar II		3.0
History electives (200-level and above HIST courses)		3.0
Free electives		6.0
	Term Credits	**12.0**
Term 12		
History electives (200-level and above HIST courses)		6.0
Free electives		9.0
	Term Credits	**15.0**

Total Credit: 179.0-185.0

* See degree requirements (p. 51).

Degree Requirements (BS)

General Education Requirements		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
UNIV H101	The Drexel Experience	2.0
Any 8-credit Math sequence		8.0
Any 8-credit Science sequence		8.0
Sample Math Sequences *		
MATH 101 & MATH 102	Introduction to Analysis I and Introduction to Analysis II	
MATH 121 & MATH 122	Calculus I and Calculus II	
Sample Science Sequences *		
Biology sequence sample:		
BIO 107	Cells, Genetics & Physiology	
BIO 108	Cells, Genetics and Physiology Laboratory	
BIO 109	Biological Diversity, Ecology & Evolution	
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	
Chemistry Sequence Samples:		
CHEM 111 & CHEM 112	General Chemistry I and General Chemistry II	
PHYS 103 & PHYS 104	General Physics I and General Physics II	

Literature		
Nonwestern Literature Requirement		
Select one of the following:		3.0
ENGL 203 [WI]	Post-Colonial Literature I	
ENGL 204	Post-Colonial Literature II	
Western Literature Requirement		
Select one of the following:		3.0
ENGL 200 [WI]	Classical to Medieval Literature	
ENGL 201	Renaissance to the Enlightenment	
ENGL 202 [WI]	Romanticism to Modernism	
ENGL 205 [WI]	American Literature I	
ENGL 206 [WI]	American Literature II	
ENGL 207 [WI]	African American Literature	
ENGL 211 [WI]	British Literature I	
ENGL 212	British Literature II	
Additional General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
or ANTH 110	Human Past: Anthropology and Prehistoric Archeology	
COM 150	Mass Media and Society	3.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0
MUSC 130	Introduction to Music	3.0
PSY 101	General Psychology I	3.0
SOC 101	Introduction to Sociology	3.0
PHIL 105	Critical Reasoning	3.0
Any 4-credit Statistics Course		4.0
Core History Requirements		
HIST 161	Themes in World Civilization I	3.0
HIST 162	Themes in World Civilization II	3.0
HIST 163	Themes in World Civilization III	3.0
HIST 201	United States History to 1815	3.0
HIST 202	United States History, 1815-1900	3.0
HIST 203	United States History since 1900	3.0
HIST 296	Research Methods in History **	3.0
HIST 301	The Study of History **	3.0
HIST 490 [WI]	Senior Seminar I **	3.0
HIST 491 [WI]	Senior Seminar II **	3.0
PSCI 110	American Government I	4.0
PSCI 120	History of Political Thought	4.0
PSCI 140	Introduction to Comparative Political Analysis	4.0
or PSCI 150	International Politics	
Any 200-level European History course		3.0
Any History of Latin America, Africa, or Asia course		3.0
History Electives ***		30.0
Free Electives		41.0
Total Credits		182.0

* Additional math and science sequence options are available. Students should check with the the Department.

** These courses must be taken in sequence.

*** Only 200-level and above HIST courses will fulfill this this requirement.

Sample Plan of Study (BS)

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
HIST 161	Themes in World Civilization I	3.0
MATH 101	Introduction to Analysis I	4.0
PSCI 110	American Government I	4.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**15.0**
Term 2		
COM 150	Mass Media and Society	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
HIST 162	Themes in World Civilization II	3.0
MATH 102	Introduction to Analysis II	4.0
PHIL 105	Critical Reasoning	3.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**17.0**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
HIST 163	Themes in World Civilization III	3.0
MUSC 130	Introduction to Music	3.0
PSCI 120	History of Political Thought	4.0
PSY 101	General Psychology I	3.0
	Term Credits	**16.0**
Term 4		
HIST 201	United States History to 1815	3.0
HIST 296	Research Methods in History	3.0
Western Literature Survey course*		3.0
History of Latin America, Africa, or Asia		3.0
Science sequence course 1*		4.0
	Term Credits	**16.0**
Term 5		
HIST 202	United States History, 1815-1900	3.0
ENGL 203 [WI]	Post-Colonial Literature I	3.0
or 204	Post-Colonial Literature II	
PSCI 140	Introduction to Comparative Political Analysis	4.0
or 150	International Politics	
SOC 101	Introduction to Sociology	3.0

Science sequence course 2*		4.0
	Term Credits	**17.0**
Term 6		
ECON 201	Principles of Microeconomics	4.0
HIST 203	United States History since 1900	3.0
ANTH 110 or 101	Human Past: Anthropology and Prehistoric Archeology Introduction to Cultural Diversity	3.0
Free electives		5.0
	Term Credits	**15.0**
Term 7		
ECON 202	Principles of Macroeconomics	4.0
Statistics elective		4.0
Free electives		6.0
	Term Credits	**14.0**
Term 8		
HIST 301	The Study of History	3.0
History of Europe course (200-level or higher)		3.0
History electives (200-level and above HIST courses)		6.0
Free elective		3.0
	Term Credits	**15.0**
Term 9		
History electives (200-level and above HIST courses)		6.0
Free electives		9.0
	Term Credits	**15.0**
Term 10		
HIST 490 [WI] Senior Seminar I		3.0
Free electives		6.0
History electives (200-level and above HIST courses)		6.0
	Term Credits	**15.0**
Term 11		
HIST 491 [WI] Senior Seminar II		3.0
History electives (200-level and above HIST courses)		6.0
Free electives		6.0
	Term Credits	**15.0**
Term 12		
History electives (200-level and above HIST courses)		6.0
Free electives		6.0
	Term Credits	**12.0**

Total Credit: 182.0

* See degree requirements (p. 52).

Co-Op/Career Opportunities

Co-Op Experiences

History majors have a wide variety of co-op experiences from which to choose. Business and public utilities offer many lucrative possibilities, and local, state, and federal governments; museums and archives; and law firms present many additional interesting co-op placements. Pre-law students, for example, are especially eager to see the inside of a law office, whether the co-op job they receive is clerical or a more challenging paralegal assignment. These practical experiences in the “real” world can reinforce the lessons of the classroom, sharpen skills, and establish important contacts. Sample co-op positions include:

- Law clerk/paralegal, Joe Davidson, Attorney-at-Law, Philadelphia
- Research analyst, Legislative Office for Research Liaison, Harrisburg, PA
- Legislative intern, Corporate Public Affairs Division, Philadelphia Electric Company
- Assistant lobbyist, Government Relations Office, Drexel University
- Education intern, Philadelphia Museum of Art
- Researcher, Philadelphia Chamber of Commerce
- Assistant, Office of the Governor, Harrisburg, PA

Career Opportunities

The flexible programs allow students to shape a curriculum that meets their needs, whether they are preparing for the business world, graduate school in history or political science, the Department’s MS in Science, Technology, and Society program (p. 114), an MBA or other business program, or law school.

Accelerated/Dual Degrees

About the Programs

Two accelerated/dual degrees are available: the BS/BA in History and MS in Science, Technology & Society program; and the BS/BA in History and the MS(LIS) program.

Drexel University permits undergraduate students in 5-year programs to apply for graduate programs while completing their undergraduate programs, allowing students to complete their master’s degrees in a shorter amount of time.

The accelerated-degree program provides an opportunity to simultaneously earn both a BA or BS degree and an MS degree in Science, Technology & Society (two diplomas are awarded) in the time normally required to finish a bachelor’s degree alone.

Students entering the program must:

- have and maintain a minimum of 3.0 grade point average throughout the program
- have no fewer than 90.0 earned credits
- have no more than 120.0 registered credits
- complete only 2 co-ops if in a BS/MS program.

The Department of History and Politics would especially like to encourage its own majors to consider the accelerated Science, Technology & Society (p. 114) program

Additional Information

For more information about the accelerated BA-BS/MS program, contact:

MSTS Program Director
3025 Macalister Hall
215.895.2463

Recommended Plan of Study

Students should work closely with faculty advisors in the Science, Technology & Society program to schedule an individualized plan of study for their accelerated degree completion.

The following is a sample plan of study for a student starting in pre-junior year, with 108.0 credit hours completed (based on a 5-year program in which the last co-op was dropped):

Dual Bachelor's Degree & MSTS Degree

222.0 minimum credits (quarter)

Term 7		Credits
Undergraduate courses		13.0
Two Science, Technology & Society courses		6.0
	Term Credits	**19.0**
Term 8		
Undergraduate courses		13.0
Two Science, Technology & Society courses		6.0
	Term Credits	**19.0**
Term 9		
Undergraduate courses		10.0
Two Science, Technology & Society courses		6.0
One graduate elective*		3.0
	Term Credits	**19.0**
Term 10		
HIST 696	Seminar in Science, Technology, and Society	3.0
Undergraduate courses		10.0
Two Science, Technology & Society courses		6.0
	Term Credits	**19.0**
Term 11		
HIST 697	Practicum: Science and Technology in Action	3.0
Undergraduate courses		13.0
One graduate elective*		3.0
	Term Credits	**19.0**
Term 12		
HIST 698	Master's Thesis	6.0
Undergraduate courses		10.0
One graduate elective		3.0
	Term Credits	**19.0**

Total Credit: 114.0

* Graduate electives may be taken as graduate-level courses in History-Politics, or from other departments or colleges within the University.

BS/BA in History and the MS(LIS) Accelerated Degree

This program pairs the undergraduate History major with the school's MS in Library and Information Science in an accelerated time-frame. Students have the opportunity to earn both the undergraduate and graduate degrees in five years. For students completing this program, the undergraduate background in history provides a natural fit with areas of library specialization, such as archival studies.

About the Program

Applicants will be provisionally admitted into the program as incoming freshmen. Participants have the option of choosing either a one or a two co-op history program. The non-co-op option is not available for students choosing this accelerated degree option.

Students complete 180.0 credits toward the BA in History or the BS in History degree, with five fewer free elective credits than the non-accelerated program. Students complete 45.0 credits for the MS in Library and Information Science degree (http://www.drexel.edu/catalog/masters/mslis.htm), starting to complete some graduate requirements during the last years of the BS or BA portion of their program.

While completing the BS or BA portion of the program, students must complete one of the following undergraduate information science courses:

INFO 101	Introduction to Information Technology	3.0
INFO 105	Introduction to Informatics	3.0
INFO 108	Foundations of Software	3.0
INFO 110	Human-Computer Interaction I	3.0
INFO 215	Social Aspects of Information Systems	3.0

When BS/BA students have accumulated 90.0 credits, but have not yet registered for 120.0 credits, they can apply to formally enter the graduate program. The student must have at least a 3.2 GPA, and they must maintain this 3.2 GPA for the graduate portion of the program.

Advising/Plan of Study

Students should work closely with faculty advisors to schedule and maintain a plan of study throughout the accelerated program.

Additional Information

For more information on the undergraduate history portion of the program, contact:

Kathryn Steen
History & Politics
Macalister Hall 5012
steen@drexel.edu

For more information on the graduate portion of the program, contact:

Lynne Hickle
Program Coordinator
iSchool
leh25@drexel.edu

Minor in History

Students select one of the following sequences:		9.0
Sequence A		
HIST 161	Themes in World Civilization I	
HIST 162	Themes in World Civilization II	
HIST 163	Themes in World Civilization III	
Sequence B		
HIST 201	United States History to 1815	
HIST 202	United States History, 1815-1900	
HIST 203	United States History since 1900	

History Elective	
Additional 200-level or higher HIST courses	15.0
Total Credits	24.0

International Area Studies

Bachelor of Arts Degree: 182.0 quarter credits

About the Program

International area studies is a language-based, interdisciplinary major designed to prepare students for careers in a global environment.

The International Area Studies Program (http://www.drexel.edu/ias) offers a BA in international area studies and minors in international area studies and in eight languages: Arabic, Chinese, French, German, Italian, Japanese, Russian, and Spanish. Courses in an ninth language—Korean—are currently offered at the introductory level, and the Modern Language program plans to develop advanced-level Korean courses in the near future.

International area studies (IAS) at Drexel University is an interdisciplinary, intercultural, and interactive major, linking language study with other academic disciplines such as politics, history, economics, sociology, anthropology, literature and philosophy. It provides critical direction in study, research and professional experience necessary to understanding current global trends in politics, sociology and economics. IAS also offers an innovative framework for the preparation of responsible citizens who are aware of larger world issues and local concerns and are able to draw on both the arts and sciences in considering these changes.

The four thematic concentrations—justice and human rights; global science, sustainability and health; international business and economics; and literature, culture and arts—provide dynamic frameworks for studying about international technology transfers, humanitarian crises, border crossings, and global culture.

Students majoring in the program study one or more languages, and may qualify for the University's advanced-level Certification of Proficiency in their target language or languages. French, German, Italian and Spanish are the Western languages available; non-Western languages include Arabic, Chinese, Japanese, and Russian. The major enrolls a number of students from abroad as well as students who lived or studied in Europe, Latin America, or Asia during high school.

IAS programs give international area studies students the option of study programs in Brussels, Bonn, Berlin, Madrid, Paris, and London. The programs feature academic internships with national legislatures, the European Parliament, international law firms, nongovernmental service agencies, and multinational corporations. IAS Abroad programs are also available in China, Japan, Russia, and Costa Rica.

Additional Information

For additional information about the program, contact:

Dr. Joel Oestreich
Director of International Area Studies
Associate Professor of Political Science
215.895.6794
Jeo25@drexel.edu

Degree Requirements

Students select one of the following four concentrations, each having unique degree requirements:

- Global Science, Sustainability Technology and Health Society
- International Business and Economics
- Justice and Human Rights
- Literature, Culture and the Arts

Global Science, Sustainability and Health (GSSH)		
General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
ENGL 204	Post-Colonial Literature II	3.0
LING 102	Language and Society	3.0
PHIL 105	Critical Reasoning	3.0
PSCI 150	International Politics	4.0
ENVS 260	Environmental Science and Society	3.0
UNIV H101	The Drexel Experience	2.0
One additional science course		3.0-4.0
Two mathematics courses		6.0-8.0
One ethics course		3.0
IAS Core Curriculum Requirements		
IAS 190	Global Research Methods	3.0
IAS 359	Culture and Values	3.0
IAS 360	Special Topics in World Civilization	3.0
WMST 240	Women and Society in a Global Context	3.0
Language Requirements		21.0-36.0
At least 4 language courses at the 300-level are required for graduation, with a minimum of 21 credits in at least one language.		
Area-specific Courses		6.0
Students select two region-specific courses approved by IAS. Courses must focus on the same region, but can be in any discipline.		
Global Science, Sustainability and Health Concentration Requirements		
ANTH 360	Culture and the Environment	3.0
or SOC 345	Sociology of the Environment	
CULA 427	The Kitchen Garden: Fall	3.0
PBHL 301	Epidemiology in Public Health	3.0
PBHL 303	Overview of Issues in Global Health	3.0
PHIL 335	Global Ethical Issues	3.0
SOC 235	Sociology of Health	3.0
SOC 346	Environmental Justice	3.0
Choose one of the following History courses		3.0
HIST 280	History of Science: Ancient to Medieval	
HIST 281	History of Science: Enlightenment to Modernity	

HIST 282	History of Science: Medieval to Enlightenment	
Chose one of the following English classes		3.0
ENGL 300 [WI]	Literature & Science	
ENGL 302	Environmental Literature	
ENGL 370	Topics in Literature and Medicine	
Global Science, Sustainability and Health Distribution Options		
Select eleven of the following:		33.0-36.0
ANTH 210 [WI]	Worldview: Science, Religion and Magic	
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	
ANTH 360	Culture and the Environment	
BIO 109	Biological Diversity, Ecology & Evolution	
BIO 264	Ethnobotany	
BIO 312	Genetically Modified Foods	
COM 316	Campaigns for Health & Environment	
COM 317 [WI]	Environmental Communication	
COM 320 [WI]	Science Writing	
COM 375 [WI]	Grant Writing	
CJ 373	Environmental Crimes	
ECON 301	Microeconomics	
ECON 321	Macroeconomics	
ECON 351	Resource and Environmental Economics	
ENGL 300 [WI]	Literature & Science	
ENGL 302	Environmental Literature	
ENGL 370	Topics in Literature and Medicine	
ENVS 169	Environmental Science	
ENVS 275	Global Climate Change	
or ENVP 275	Global Climate Change	
ENVS 289	Global Warming, Biodiversity and Your Future	
ENVS 321	Environmental Health	
ENVS 328	Conservation Biology	
HIST 280	History of Science: Ancient to Medieval	
HIST 281	History of Science: Enlightenment to Modernity	
HIST 282	History of Science: Medieval to Enlightenment	
HSAD 312	Development of World Health Care	
HSAD 316	Health Care across Cultures	
IAS 320	Building Global Bridges	
IAS 360	Special Topics in World Civilization ***	
IAS 390	Special Topics in International Area Studies ***	
NFS 345	Foods and Nutrition of World Cultures	
NFS 446	Perspectives in World Nutrition	
PBHL 302	Introduction to the History of Public Health	
PBHL 304	Introduction to Health & Human Rights	
PBHL 305	Women and Children: Health & Society	
PHIL 321	Biomedical Ethics	
PHIL 341	Philosophy of the Environment	
PHIL 351	Philosophy of Technology	
PHIL 355	Philosophy of Medicine	
PHIL 361	Philosophy of Science	
PSCI 331	Environmental Politics	
PSCI 351	International Organizations	
PSCI 352	Ethics and International Relations	
PSCI 353	International Human Rights	
PSY 352	Environmental Psychology	
SOC 315	HIV/AIDS and Africa	
SOC 330	Developing Nations and the International Division of Labor	
SOC 340	Globalization	
SOC 435	Seminar - Organization of American States ***	
WMST 275	Women's Health & Human Rights	
Electives		33.0-12.0
Total Credits		182.0

* Special topics courses with an international or relevant theme will be considered for course credit upon request and review.

** As appropriate to the major.

*** Repeatable for credit.

International Business and Economics

General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
ENGL 204	Post-Colonial Literature II	3.0
LING 102	Language and Society	3.0
PHIL 105	Critical Reasoning	3.0
PSCI 150	International Politics	4.0
UNIV 101	The Drexel Experience	2.0
Two mathematics courses		6.0-8.0
Two science courses		6.0-8.0
One ethics course		3.0
IAS Core Curriculum Requirements		
IAS 359	Culture and Values	3.0
IAS 360	Special Topics in World Civilization	3.0
IAS 190	Global Research Methods	3.0
WMST 240	Women and Society in a Global Context	3.0
Language Requirements		
At least 4 language courses at the 300-level are required for graduation, with a minimum of 21 credits in at least one language.		21.0-36.0
Area-specific Courses		
Students select two region specific courses approved by IAS. Courses must focus on the same region, but can be in any discipline.		6.0
International Business and Economics Concentration Requirements		
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	3.0

or SOC 330	Developing Nations and the International Division of Labor	
BLAW 340	International Business Law	4.0
ECON 342	Economic Development	4.0
ENGL 308 [WI]	The Literature of Business	3.0
INTB 332	Multinational Corporations	4.0
INTB 334	International Trade	4.0
INTB 338	Regional Studies in Economic Policies and International Business	4.0
PHIL 301	Business Ethics	3.0
SOC 260 [WI]	Classical Social Theory	3.0
International Business and Economics Distribution Options		
Select eleven of the following:		33.0-44.0
ANTH 312	Approaches to Intercultural Behavior	
COM 270 [WI]	Business Communication	
COM 345	Intercultural Communication	
COM 360	International Communication	
COM 361	International Public Relations	
COM 362	International Negotiations	
COM 375 [WI]	Grant Writing	
ECON 301	Microeconomics	
ECON 321	Macroeconomics	
ECON 326 [WI]	Economic Ideas	
ECON 351	Resource and Environmental Economics	
ENGL 325	Topics in World Literature	
ENGL 360 [WI]	Literature and Society	
FIN 301	Introduction to Finance	
FIN 346	Global Financial Management	
IAS 320	Building Global Bridges	
IAS 360	Special Topics in World Civilization ***	
IAS 390	Special Topics in International Area Studies ***	
INTB 336	International Money and Finance	
INTB 338	Regional Studies in Economic Policies and International Business	
PSCI 255	International Political Economics	
PSCI 340	Politics of Developing Nations	
PSCI 351	International Organizations	
PSCI 352	Ethics and International Relations	
PSCI 357	The European Union	
MKTG 301	Introduction to Marketing Management	
MKTG 322	Advertising & Integrated Marketing Communications	
MKTG 351	Marketing for Non-Profit Organizations	
MKTG 357	Global Marketing	
SOC 220	Wealth and Power	
SOC 310	Topics in Political Sociology	
SOC 340	Globalization	
SOC 435	Seminar - Organization of American States **	
STAT 201	Introduction to Business Statistics	
STAT 202	Business Statistics II	
Electives		28-0
Total Credits		182.0-184.0

* Special topics courses with an international or relevant theme will be considered for course credit upon request and review.

** Repeatable for credit.

Justice and Human Rights

General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
ENGL 204	Post-Colonial Literature II	3.0
LING 102	Language and Society	3.0
PHIL 105	Critical Reasoning	3.0
PSCI 150	International Politics	4.0
UNIV 101	The Drexel Experience	2.0
Two mathematics courses		6.0-8.0
Two science courses		6.0-8.0
One ethics course		3.0
IAS Core Curriculum Requirements		
IAS 359	Culture and Values	3.0
IAS 360	Special Topics in World Civilization	3.0
IAS 190	Global Research Methods	3.0
WMST 240	Women and Society in a Global Context	3.0
Language Requirements		
At least 4 language courses at the 300-level are required for graduation, with a minimum of 21 credits in at least one language.		21.0-36.0
Area-specific Courses		
Students select two region specific courses approved by IAS. Courses must focus on the same region, but can be in any discipline.		6.0
Justice and Human Rights Concentration Requirements		
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	3.0
or SOC 330	Developing Nations and the International Division of Labor	
ENGL 360 [WI]	Literature and Society	3.0
PHIL 335	Global Ethical Issues	3.0
PSCI 120	History of Political Thought	4.0
PSCI 329	Theories of Justice	3.0
PSCI 352	Ethics and International Relations	3.0
PSCI 353	International Human Rights	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Select one of the following:		3.0
PSCI 351	International Organizations	
PSCI 357	The European Union	
SOC 435	Seminar - Organization of American States	

Justice and Human Rights Distribution Options [**]		
Select eleven of the following:		33.0-38.0
AFAS 295	Special Topics in Africana Studies [**]	
ANTH 312	Approaches to Intercultural Behavior	
or COM 345	Intercultural Communication	
ANTH 250	Anthropology of Immigration	
COM 360	International Communication	
COM 362	International Negotiations	
COM 375 [WI]	Grant Writing	
CJ 289	Terrorism	
CULA 427	The Kitchen Garden: Fall	
ECON 301	Microeconomics	
ECON 321	Macroeconomics	
ECON 342	Economic Development	
ECON 351	Resource and Environmental Economics	
ENGL 325	Topics in World Literature	
IAS 320	Building Global Bridges	
IAS 360	Special Topics in World Civilization [***]	
IAS 390	Special Topics in International Area Studies [***]	
PHIL 241	Social & Political Philos	
PHIL 341	Philosophy of the Environment	
PHIL 385	Philosophy of Law	
PHIL 391	Philosophy of Religion	
PBHL 303	Overview of Issues in Global Health	
PBHL 304	Introduction to Health & Human Rights	
PSCI 240	Comparative Government	
PSCI 255	International Political Economics	
PSCI 250	American Foreign Policy	
PSCI 340	Politics of Developing Nations	
PSCI 351	International Organizations	
PSCI 357	The European Union	
PSCI 365	Politics, Law, & Justice	
PSCI 367	International Law	
SOC 210	Race and Ethnic Relations	
SOC 220	Wealth and Power	
SOC 310	Topics in Political Sociology	
SOC 315	HIV/AIDS and Africa	
SOC 340	Globalization	
SOC 344	Social Movements	
SOC 346	Environmental Justice	
SOC 435	Seminar - Organization of American States [***]	
WMST 280	Special Topics in Women's Studies [****]	
Electives		32.0-8.0
Total Credits		182.0

* Justice and Human rights related topics.

** Special topics courses with an international or relevant theme will be considered for course credit upon request and review.

*** Repeatable for credit.

**** Justice and Human rights related topics.

Literature, Culture and the Arts

General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
LING 102	Language and Society	3.0
PHIL 105	Critical Reasoning	3.0
PSCI 150	International Politics	4.0
UNIV 101	The Drexel Experience	2.0
Two mathematics courses		6.0-8.0
Two science courses		6.0-8.0
One ethics course		3.0
IAS Core Curriculum Requirements		
IAS 359	Culture and Values	3.0
IAS 360	Special Topics in World Civilization	3.0
IAS 190	Global Research Methods	3.0
WMST 240	Women and Society in a Global Context	3.0
Language Requirements		
At least 4 language courses at the 300-level are required for graduation, with a minimum of 21 credits in at least one language.		21.0-36.0
Area-specific Courses		6.0
Students select two region specific courses approved by IAS. Courses must focus on the same region, but can be in any discipline.		
Literature, Culture and the Arts Requirements		
ANTH 212	Topics in World Ethnography	3.0
ANTH 312	Approaches to Intercultural Behavior	3.0
or COM 345	Intercultural Communication	
ENGL 325	Topics in World Literature	3.0
ENGL 360 [WI]	Literature and Society [*]	3.0
MUSC 331	World Musics	3.0
PHIL 231	Aesthetics	3.0
Select one of the following:		3.0
ARTH 101	History of Art I: Ancient to Medieval	
ARTH 102	History of Art II: High Renaissance to Modern	
ARTH 103	History of Art- Early to Late Modern	
Language Minor thesis course		3.0
Literature Culture and the Arts Distribution Options [**]		
Select eleven of the following:		33.0
ANTH 210 [WI]	Worldview: Science, Religion and Magic	
ANTH 220	Aging In Cross-Cultural Perspective	
ANTH 250	Anthropology of Immigration	
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	
ANTH 410	Cultural Theory	
ARCH 141	Architecture and Society I	

COM 210	Theory and Models of Communication	
COM 342	English Worldwide	
COM 355	Ethnography of Communication	
COM 360	International Communication	
COM 375 [WI]	Grant Writing	
COM 390 [WI]	Global Journalism	
CULA 405 [WI]	Culture and Gastronomy I	
ENGL 200 [WI]	Classical to Medieval Literature	
ENGL 201	Renaissance to the Enlightenment	
ENGL 203 [WI]	Post-Colonial Literature I	
ENGL 300 [WI]	Literature & Science	
ENGL 323	Literature and Other Arts *	
ENGL 325	Topics in World Literature	
ENGL 335	Mythology	
ENGL 355 [WI]	Women and Literature	
FMST 265	Special Topics in Cinema Studies **	
IAS 320	Building Global Bridges	
IAS 360	Special Topics in World Civilization ***	
IAS 390	Special Topics in International Area Studies ***	
MUSC 130	Introduction to Music	
NFS 446	Perspectives in World Nutrition	
PHIL 211	Metaphysics	
PHIL 241	Social & Political Philos	
PHIL 335	Global Ethical Issues	
PHIL 391	Philosophy of Religion	
PSCI 120	History of Political Thought	
PSCI 323	Comparative Political Thought	
SOC 210	Race and Ethnic Relations	
SOC 340	Globalization	
WRIT 310	Literary Editing & Publication	
Electives		39.0-20.0
Total Credits		182.0

Sample Plans of Study

(For concentrations in Global Science, Sustainability and Health, or Justice and Human Rights, please see your advisor.)

International Business and Economics

Term 1		**Credits**
ANTH 101	Introduction to Cultural Diversity	3.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 101	Introduction to Analysis I	4.0
UNIV H101	The Drexel Experience	1.0
PHIL 105	Critical Reasoning	3.0
Language course		4.0
	Term Credits	**18.0**
Term 2		
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
LING 102	Language and Society	3.0
MATH 102	Introduction to Analysis II	4.0
ECON 201	Principles of Microeconomics	4.0
Language course		4.0
	Term Credits	**18.0**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
ECON 202	Principles of Macroeconomics	4.0
IAS 190	Global Research Methods	3.0
PSCI 150	International Politics	4.0
Language course		4.0
	Term Credits	**18.0**
Term 4		
ENGL 204	Post-Colonial Literature II	3.0
WMST 240	Women and Society in a Global Context	3.0
Language course		4.0
Science elective*		3.0
One concentration distribution course		4.0
	Term Credits	**17.0**
Term 5		
Area-Specific history course		3.0
Language course		3.0
Two concentration distribution courses*		6.0
Science elective*		4.0
	Term Credits	**16.0**
Term 6		
INTB 334	International Trade	4.0
SOC 260 [WI]	Classical Social Theory	3.0
Ethics elective		3.0
Area-Specific history course		3.0
	Term Credits	**13.0**
Term 7		
ECON 342	Economic Development	4.0
IAS 360	Special Topics in World Civilization	3.0
PHIL 301	Business Ethics	3.0
SOC 330 or ANTH 310	Developing Nations and the International Division of Labor Societies In Transition: The Impact of Modernization and the Third World	3.0
Language course		3.0
	Term Credits	**16.0**
Term 8		
BLAW 340	International Business Law	4.0
INTB 332	Multinational Corporations	4.0
One concentration distribution dourse*		3.0
Language course		3.0
	Term Credits	**14.0**

Term 9		
INTB 338	Regional Studies in Economic Policies and International Business	4.0
ENGL 308 [WI]	The Literature of Business	3.0
Language course		3.0
Two concentration distribution courses*		6.0
	Term Credits	**16.0**
Term 10		
Language course		3.0
Two concentration distribution courses*		6.0
Free elective		3.0
	Term Credits	**12.0**
Term 11		
IAS 359	Culture and Values	3.0
Language course		3.0
Concentration distribution course*		3.0
Free elective		3.0
	Term Credits	**12.0**
Term 12		
Two concentration distribution courses*		6.0
Language course		3.0
Free elective		3.0
	Term Credits	**12.0**

Total Credit: 182.0

Literature, Culture and the Arts

Term 1		**Credits**
ANTH 101	Introduction to Cultural Diversity	3.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 101	Introduction to Analysis I	4.0
UNIV H101	The Drexel Experience	2.0
Language course		4.0
	Term Credits	**16.0**
Term 2		
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
LING 102	Language and Society	3.0
MATH 102	Introduction to Analysis II	4.0
PHIL 105	Critical Reasoning	3.0
UNIV H101	The Drexel Experience	1.0
Language course		4.0
	Term Credits	**18.0**
Term 3		
ECON 201	Principles of Microeconomics	4.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
IAS 190	Global Research Methods	3.0
PSCI 150	International Politics	4.0
Language course		4.0
	Term Credits	**18.0**
Term 4		
ANTH 212	Topics in World Ethnography	3.0
ECON 202	Principles of Macroeconomics	4.0
Ethics elective		3.0
Science elective*		3.0
Language course		4.0
	Term Credits	**17.0**
Term 5		
MUSC 331	World Musics	3.0
Literature, Culture & Arts distribution course*		3.0
Area-specific course*		3.0
Science elective*		4.0
Language course		4.0
	Term Credits	**17.0**
Term 6		
ENGL 360 [WI]	Literature and Society	3.0
PHIL 231	Aesthetics	3.0
Select one of the following:		3.0
ARTH 101	History of Art I: Ancient to Medieval	
ARTH 102	History of Art II: High Renaissance to Modern	
ARTH 103	History of Art- Early to Late Modern	
Language course		4.0
Literature, Culture & Arts distribution course*		3.0
	Term Credits	**16.0**
Term 7		
COM 345 or ANTH 312	Intercultural Communication Approaches to Intercultural Behavior	3.0
Two Literature, Culture & Arts distribution courses*		6.0
Area-specific course*		3.0
Language course		3.0
	Term Credits	**15.0**
Term 8		
Free elective		
ENGL 204	Post-Colonial Literature II	3.0
ENGL 360 [WI]	Literature and Society	3.0
Language course		3.0
Two Literature, Culture & Arts distribution courses*		6.0
	Term Credits	**15.0**
Term 9		
IAS 360	Special Topics in World Civilization	3.0
ENGL 325	Topics in World Literature	3.0
PHIL 335	Global Ethical Issues	3.0
Language course		3.0
Literature, Culture & Arts distribution course*		3.0
	Term Credits	**15.0**
Term 10		
WMST 240	Women and Society in a Global Context	3.0
Language course		3.0
Literature, Culture & Arts distribution course*		3.0

Free elective		3.0
	Term Credits	**12.0**
Term 11		
IAS 359	Culture and Values	3.0
Language course		3.0
Literature, Culture & Arts distribution course*		3.0
Free elective		3.0
	Term Credits	**12.0**
Term 12		
Two Literature, Culture & Arts distribution courses*		6.0
Language course		3.0
Free elective		3.0
	Term Credits	**12.0**
Total Credit: 183.0		

* See degree requirements (p. 56).

Co-op/Career Opportunities

Opportunities

Career placements include entry-level international marketing and communications positions with national and multinational business concerns in the United States and abroad. Other placements are with public and private international service organizations, advertising, and investment concerns, the Peace Corps, and local and national governmental agencies.

Graduate admissions are in international relations, government, international law, public policy, the humanities, and MBA programs. Recent graduates have pursued advanced study at Yale, Harvard, Georgetown, Johns Hopkins, Cornell, Columbia, American University, the University of California, the Monterey Institute, the University of Pennsylvania, Drexel University, and the Woodrow Wilson School at Princeton University. International graduate admissions include the London School of Economics, the University of London, and Cambridge University in Britain; the Free University of Bonn and the University of Mannheim in Germany; the College of Europe in Belgium; and Ben Gurion University in Israel.

This degree is designed to provide preparation for entry-level careers in government, public relations, international advertising, and service agencies. The BA is also recommended for graduate study in fields such as law, international relations, public policy, political science, sociology, history, and economics.

Co-Op Experiences

Students in the major generally take co-operative education positions with international service organizations, law firms, investment concerns, and multinational corporations, both in the United States and abroad. In addition, students may elect independent study or study-internships abroad as partial fulfillment of co-operative education requirements.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on co-op and post-graduate opportunities.

Minor in International Area Studies

The international area studies minor provides a cross-cultural, interdisciplinary frame of reference for students in other disciplines who are interested in careers in the international sector.

Language study through level 201 is a prerequisite for the minor.

Core Requirements		
IAS 360	Special Topics in World Civilization	3.0
WMST 240	Women and Society in a Global Context	3.0
Students select one region specific HIS or PSCI courses approved by IAS. *		3.0
International Area Studies (IAS) Electives		
Select five of the following:		15.0
AFAS 295	Special Topics in Africana Studies	
ANTH 212	Topics in World Ethnography	
ANTH 220	Aging In Cross-Cultural Perspective	
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	
ANTH 312	Approaches to Intercultural Behavior	
ANTH 410	Cultural Theory	
BIO 264	Ethnobotany	
BLAW 340	International Business Law	
COM 342	English Worldwide	
COM 345	Intercultural Communication	
COM 355	Ethnography of Communication	
COM 360	International Communication	
COM 361	International Public Relations	
COM 390 [WI]	Global Journalism	
ECON 342	Economic Development	
ENGL 203 [WI]	Post-Colonial Literature I	
ENGL 204	Post-Colonial Literature II	
ENGL 323	Literature and Other Arts **	
ENGL 325	Topics in World Literature	
ENGL 360 [WI]	Literature and Society **	
HIST 290	Technology and the World Community	
IAS 320	Building Global Bridges	
IAS 390	Special Topics in International Area Studies ***	
INTB 332	Multinational Corporations	
INTB 334	International Trade	
INTB 336	International Money and Finance	
MUSC 331	World Musics	
NFS 345	Foods and Nutrition of World Cultures	
NFS 446	Perspectives in World Nutrition	
PHIL 335	Global Ethical Issues	
PSCI 120	History of Political Thought	
PSCI 240	Comparative Government	
PSCI 255	International Political Economics	
PSCI 323	Comparative Political Thought	
PSCI 340	Politics of Developing Nations	
PSCI 351	International Organizations	

PSCI 352	Ethics and International Relations	
PSCI 353	International Human Rights	
PSCI 357	The European Union	
PSCI 367	International Law	
SOC 220	Wealth and Power	
SOC 330	Developing Nations and the International Division of Labor	
SOC 344	Social Movements	
SOC 346	Environmental Justice	
SOC 435	Seminar - Organization of American States	
WMST 280	Special Topics in Women's Studies **	
Total Credits		24.0

* Typically an region-specific history course is determined by what language the student is studying.

** These courses must have an international focus.

*** Special topics courses with an international or relevant theme will be considered for course credit upon request and review.

The programs in modern languages offer a language minor in Chinese, French, German, Italian, Japanese, Russian, and Spanish.

Mathematics

Bachelor of Arts Degree: 180.0 quarter credits
Bachelor of Science Degree: 180 quarter credits

About the Program

The mathematics major at Drexel provides a supportive learning environment in which students obtain a firm grounding in the core areas of mathematics and apply this knowledge to problems encountered in a technological society. The Department of Mathematics (http://www.drexel.edu/math) offers students the option of either a BA or a BS degree.

The Mathematics Department takes pride in offering a balanced and flexible curriculum. Three very different kinds of skills are emphasized in the mathematics major:

- **Abstract Reasoning**

  All students majoring in mathematics take courses that emphasize abstract reasoning. Students read and write proofs, and graduate well prepared to enter a PhD program in mathematics.
- **Computing**

  All students majoring in mathematics take a series of computing courses. This emphasis on computing is one of the distinctive features of the mathematics program at Drexel, and provides students with a competitive advantage in the job market.
- **Mathematical Modeling**

  All students majoring in mathematics take multidisciplinary courses that focus on the interplay between mathematics and an area of application.

  Students often use electives to focus on an area of personal interest. The Department of Mathematics encourages students to minor in a subject where mathematics is applied. The Department provides an advisor to assist students in selecting electives and planning career paths.

Degree Requirements (BA)

General Education Requirements		
COM 230	Techniques of Speaking	3.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
UNIV H101	The Drexel Experience	2.0
One of the following Computer Science sequences:		9.0
Option I		
CS 280	Special Topics in Computer Science (Introduction to Programming with Media: Python)	
CS 280	Special Topics in Computer Science (Computer Programming Fundamentals)	
CS 171	Computer Programming I	
Option II		
CS 280	Special Topics in Computer Science (Introduction to Programming with Media: Python)	
CS 171	Computer Programming I	
CS 172	Computer Programming II	
Humanities and fine arts electives		6.0
International studies electives		6.0
Science electives		8.0
Social and behavioral sciences electives		6.0
Studies in diversity electives		6.0
Free Electives (depending upon other options selected)		64.0
Core Mathematics Requirements		
MATH 121	Calculus I *	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	4.0
MATH 210	Differential Equations	4.0
MATH 220	Introduction to Mathematical Reasoning	3.0
MATH 331	Abstract Algebra I	3.0-4.0
or MATH 401	Elements of Modern Analysis I	
Additional Mathematics Requirements		
Track Courses		9.0-11.0
Select one of the following sequences:		
MATH 221 & MATH 316 & MATH 332	Discrete Mathematics and Mathematical Applications of Symbolic Software and Abstract Algebra II	
MATH 321 & MATH 322 & MATH 402	Vector Calculus and Complex Variables and Elements of Modern Analysis II	
MATH 300 & MATH 301 & MATH 305	Numerical Analysis I and Numerical Analysis II and Introduction to Optimization Theory	

MATH 311	Probability and Statistics I	
& MATH 312	and Probability and Statistics II	
& MATH 318	and Mathematical Applications of Statistical Software	
MATH 205	Survey of Geometry	
& MATH 311	and Probability and Statistics I	
& MATH 312	and Probability and Statistics II	
Four Mathematics Courses [**]		12.0
Three Mathematics Related Courses [***]		9.0
Total Credits		180.0

* Math majors must pass MATH 121 with a grade of B or higher.

** Students either select these courses from the list of MATH courses in for the BS in Mathematics (http://www.drexel.edu/catalog/degree/math.htm) or from additional mathematics electives, provided that approval is obtained *in advance* from the undergraduate mathematics advisor. The following courses **cannot** be counted toward the BA in Mathematics: MATH 004, MATH 100, MATH 101, MATH 102, MATH 110, MATH 119, MATH 180, MATH 181, MATH 182, MATH 183, and MATH 239.

*** Students must complete three additional courses in fields related to mathematics such as science, engineering, economics, finance, decision sciences, and computer science. A list of approved courses will be maintained by the undergraduate mathematics advisor. These three courses are in addition to the two science courses required as part of the General Education requirements, as well as the CS 131-133 required sequence.

Categories of Electives

- *Humanities and arts electives*
  Designated courses in art, art history, communication studies, foreign languages (300-level or above), history, literature, music, philosophy, religion, and theatre arts.
- *International electives*
  Designated courses in anthropology, art history, history, literature, music, politics and sociology. Courses with an international focus may be used to fulfill requirements in other categories as well.
- *Science electives*
  Students select two courses from chemistry, biology or physics. both courses may be in the same subject or they may be in different subject areas.
- *Social and behavioral sciences electives*
  Designated courses in anthropology, economics, criminal justice, international relations, history, politics, psychology and sociology.
- *Studies in diversity electives*
  Designated courses in Africana studies, anthropology, communication, English, history, Judaic studies, linguistics, music, sociology and women's studies.

Sample Plan of Study (BA)

5-year co-op sequence

Term 1		**Credits**
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
UNIV H101	The Drexel Experience	1.0
Computer Science (CS) sequence course*		3.0
Science elective		4.0
	Term Credits	**15.0**
Term 2		
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
UNIV H101	The Drexel Experience	1.0
Computer Science (CS) sequence course*		3.0
Science elective		4.0
	Term Credits	**15.0**
Term 3		
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
MATH 220	Introduction to Mathematical Reasoning	3.0
Computer Science (CS) sequence course*		3.0
Social science elective		3.0
	Term Credits	**16.0**
Term 4		
COM 230	Techniques of Speaking	3.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	4.0
Diversity studies elective		3.0
International studies elective		3.0
	Term Credits	**17.0**
Term 5		
Mathematics (MATH) course*		3.0
Course in math-related field**		3.0
Humanities/Fine arts elective		3.0
Free electives		6.0
	Term Credits	**15.0**
Term 6		
MATH 210	Differential Equations	4.0
Mathematics (MATH) course*		3.0
Social science elective		3.0
Humanities/Fine arts elective		3.0
Free elective		3.0
	Term Credits	**16.0**
Term 7		
Mathematics (MATH) sequence option*		3.0
Diversity studies elective		3.0
Free electives		9.0
	Term Credits	**15.0**
Term 8		
MATH 401 or 331	Elements of Modern Analysis I Abstract Algebra I	3.0
Course in a math-related field**		3.0
International studies elective		3.0
Free electives		6.0
	Term Credits	**15.0**
Term 9		

Mathematics sequence option*	3.0
Course in a math-related field**	3.0
Free electives	9.0
Term Credits	**15.0**
Term 10	
Mathematics (MATH) course*	4.0
Free electives	12.0
Term Credits	**16.0**
Term 11	
Mathematics sequence option*	3.0
Free electives	10.0
Term Credits	**13.0**
Term 12	
Mathematics (MATH) course*	3.0
Free electives	9.0
Term Credits	**12.0**

Total Credit: 180.0

* See degree requirements (p. 63).

Students select these courses from the list of Mathematics (MATH) requirements/electives listed in the degree requirements, or can suggest additional mathematics electives, provided that approval is obtained *in advance* from the undergraduate mathematics advisor. The following courses **cannot** be counted toward the BA in Mathematics: MATH 004, MATH 100, MATH 101, MATH 102, MATH 110, MATH 119, MATH 180, MATH 181, MATH 182, MATH 183, and MATH 239.

** Students must complete three courses in fields related to mathematics such as science, engineering, economics, finance, decision sciences, and computer science. A list of approved courses will be maintained by the undergraduate mathematics advisor. These three courses are in addition to the two science courses required as part of the General Education requirements, as well as the Computer Science (CS) required sequence.

Degree Requirements (BS)

General Education Requirements		
COM 230	Techniques of Speaking	3.0
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
UNIV S101	The Drexel Experience	2.0
One of the following Computer Science sequences:		9.0
Option I		
CS 140	Intro Multimedia Programming	
CS 143	Computer Programming Fundamentals	
CS 171	Computer Programming I	
Option II		
CS 140	Intro Multimedia Programming	
CS 171	Computer Programming I	
CS 172	Computer Programming II	
Any Biology (BIO) course		3.0-4.0
Any Chemistry (CHEM) course		3.0-4.0
Any Physics (PHYS) course		3.0-4.0
Humanities electives		9.0
Social sciences electives		18.0
Free electives		41.0
Mathematics Requirements		
MATH 121	Calculus I *	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	4.0
MATH 210	Differential Equations	4.0
MATH 220	Introduction to Mathematical Reasoning	3.0
MATH 331	Abstract Algebra I	4.0
MATH 332	Abstract Algebra II	3.0
MATH 401	Elements of Modern Analysis I	3.0
MATH 402	Elements of Modern Analysis II	3.0
Math Major Electives		40.0
Select a minimum of 40 credits (10-14 classes) from the following:		
MATH 205	Survey of Geometry	
MATH 221	Discrete Mathematics	
MATH 235	Math Competition Problem Solving Seminar	
MATH 238	History of Mathematics	
MATH 285	Differential Equations II	
MATH 291	Complex and Vector Analysis for Engineers	
MATH 300	Numerical Analysis I	
MATH 301	Numerical Analysis II	
MATH 305	Introduction to Optimization Theory	
MATH 311	Probability and Statistics I	
MATH 312	Probability and Statistics II	
MATH 316	Mathematical Applications of Symbolic Software	
MATH 318 [WI]	Mathematical Applications of Statistical Software	
MATH 319	Techniques of Data Analysis	
MATH 320	Actuarial Mathematics	
MATH 321	Vector Calculus	
MATH 322	Complex Variables	
MATH 323	Partial Differential Equations	
MATH 387	Linear Algebra II	
MATH 422	Introduction to Topology	
MATH 449	Mathematical Finance	
MATH 475	Cryptography	
Total Credits		180.0-183.0

* Math majors must pass MATH 121 with a grade of B or higher.

Sample Plan of Study (BS)

This a recommended plan, illustrating the five-year co-op sequence. Additional recommended plans of study for other co-op options are available from the department.

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 121	Calculus I	4.0
UNIV S101	The Drexel Experience	2.0
Computer Science (CS) sequence course*		3.0
Any Biology (BIO) course		3.0-4.0
	Term Credits	**15.0-16.0**
Term 2		
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
MATH 122	Calculus II	4.0
Computer Science (CS) sequence course*		3.0
Any Chemistry (CHEM) course		3.0-4.0
	Term Credits	**13.0-14.0**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
Computer Science (CS) sequence course*		3.0
Any Physics (PHYS) course		3.0-4.0
	Term Credits	**17.0-18.0**
Term 4		
COM 230	Techniques of Speaking	3.0
MATH 201	Linear Algebra	4.0
MATH 220	Introduction to Mathematical Reasoning	3.0
Social science electives		6.0
	Term Credits	**16.0**
Term 5		
MATH 210	Differential Equations	4.0
Mathematics (MATH) elective**		3.0
Social science elective		3.0
Humanities elective		3.0
	Term Credits	**13.0**
Term 6		
MATH 331	Abstract Algebra I	4.0
Mathematics (MATH) elective**		4.0
Social science elective		3.0
Humanities elective		3.0
	Term Credits	**14.0**
Term 7		
MATH 332	Abstract Algebra II	3.0
Mathematics (MATH) elective**		4.0
Humanities elective		3.0
Social science elective		3.0
Free elective		3.0
	Term Credits	**16.0**
Term 8		
MATH 401	Elements of Modern Analysis I	3.0
Mathematics (MATH) elective**		3.0
Social science elective		3.0
Free electives		6.0
	Term Credits	**15.0**
Term 9		
MATH 402	Elements of Modern Analysis II	3.0
Mathematics (MATH) electives**		7.0
Free electives		6.0
	Term Credits	**16.0**
Term 10		
Mathematics (MATH) electives**		8.0
Free electives		7.0-8.0
	Term Credits	**15.0-16.0**
Term 11		
Mathematics (MATH) electives**		7.0
Free electives		8.0
	Term Credits	**15.0**
Term 12		
Mathematics (MATH) electives**		6.0
Free electives		9.0-10.0
	Term Credits	**15.0-16.0**

Total Credit: 180.0-185.0

* See degree requirements (p. 63).

** Select from MATH 205, MATH 221, MATH 235, MATH 238, MATH 285, MATH 291, MATH 300, MATH 301, MATH 305, MATH 311, MATH 312, MATH 316, MATH 318 [WI] , MATH 319, MATH 320, MATH 321, MATH 322, MATH 323, MATH 387, MATH 422, MATH 449,MATH 475.

Co-op/Career Opportunities

Mathematicians are employed in a variety of capacities in business, industry, and government. Students can combine courses in economics or finance and mathematics to prepare for careers in the actuarial field, banks, stock exchanges, or finance departments of large corporations or other financial institutions. Students interested in science careers may focus on probability and statistics in order to work for industries like pharmaceutical manufacturers. Many others combine math studies with computer science courses to prepare for careers in information systems or engineering.

Teacher certification is also a career option available through a joint program in mathematics and teacher education.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) for more detailed information on co-op and post-graduate opportunities.

Dual Degree Bachelor's Programs

Since applied mathematics plays an important role in many different disciplines, mathematics majors often choose to pursue specialization in a second field of study. Students may choose a dual major that involves completing the requirements of two separate majors or they can opt for a minor, which involves completing the major in one field and a smaller set of courses in another.

Dual majors are common in mathematics/computer science and mathematics/physics. Students interested in a dual major should consult with their advisor or contact the assistant department head. Dual majors in other fields are also possible, but early planning and discussions with advisors is essential.

Minor in Mathematics

The minor in mathematics consists of five required courses and at least 18.0 credits of electives from a specified group of elective courses specified below.

Required Courses

MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra *	3.0-4.0
or MATH 261	Linear Algebra	

Mathematics Minor Electives **

Select six of the foll0wing:		19.0-20.0
MATH 205	Survey of Geometry	
MATH 210	Differential Equations *	
or MATH 262	Differential Equations	
MATH 220	Introduction to Mathematical Reasoning	
MATH 221	Discrete Mathematics	
MATH 235	Math Competition Problem Solving Seminar	
MATH 285	Differential Equations II	
MATH 286	Applied Differential Equations	
MATH 291	Complex and Vector Analysis for Engineers ***	
MATH 300	Numerical Analysis I	
MATH 301	Numerical Analysis II	
MATH 305	Introduction to Optimization Theory	
MATH 311	Probability and Statistics I	
MATH 312	Probability and Statistics II	
MATH 316	Mathematical Applications of Symbolic Software	
MATH 318 [WI]	Mathematical Applications of Statistical Software	
MATH 320	Actuarial Mathematics	
MATH 321	Vector Calculus	
MATH 322	Complex Variables	
MATH 323	Partial Differential Equations	
MATH 331	Abstract Algebra I	
MATH 332	Abstract Algebra II	
MATH 401	Elements of Modern Analysis I	
MATH 402	Elements of Modern Analysis II	
MATH 410	Scientific Data Analysis I	
MATH 411	Scientific Data Analysis II	
MATH 422	Introduction to Topology	
MATH 449	Mathematical Finance	
MATH 450	Introduction to Graph Theory	
MATH 475	Cryptography	
Total Credits		38.0-40.0

* Students count only one of these two courses for their minor.

** A request form is available for any other mathematics courses upon the written approval prior to the beginning of the quarter in which the course is to be offered. Students should contact the department's academic advisor, Professor Marna Mozeff for further information. Professor Mozeff can be reached at 215.895.6691 or marna.a.mozeff@drexel.edu.

*** Students who take MATH 291 cannot also count MATH 321 or MATH 322 toward their minor.

Philosophy

Bachelor of Arts Degree: 182.0 - 188.0 credits

About the Program

The work of philosophers and philosophically-trained researchers is aimed at questioning and illuminating the issues, principles, concepts, and problems that organize our lives and fields of endeavor so as to give rise to a more subtle, precise, and interesting sense of their meaning, their prospects, and their limitations. Although philosophy is correctly identified with asking life's big questions, like: "What is reality?", "What is goodness?", "What is beauty?", "What is truth?", most philosophers work on concrete, well-focused questions that emerge from all areas of life and work: social and natural scientific research, health care, the law, criminal justice, engineering, public policy, the arts, sports, business, etc. Drexel's philosophy faculty conduct research that is uniquely engaged in real-world issues and the kinds of problems that emerge from life and work in politics, law, health care, literature and every area of scientific and humanistic research. They are widely-published in some of the finest research journals in the field, and are deeply engaged in specialized work in the discipline.

In the broadest sense, philosophical study is intended to stimulate, provoke, and encourage the student to think for himself or herself, and its real value lies in what it helps to illuminate about life and experience. But the study of philosophy benefits students and serves society in more tangible ways too. A philosophy major won't guarantee you a job—*no major will*—but no major will prepare you for success in as wide a range and variety of fields as philosophy will. This is because philosophy classes help you develop the skills and abilities that are fundamental to success in any worthwhile career. Among many other things, philosophical study helps you develop your ability and inclination to think for yourself, to reflect upon complex situations and circumstances, to tell the difference between good and bad arguments, and to write and speak clearly and coherently.

It is no coincidence that assessments of critical, logical, and dialogical abilities are featured prominently in exams like the GRE, GMAT, LSAT and MCAT, which are designed to gauge one's likelihood of success in graduate study or the pursuit of careers in law, business, and medicine. In this respect, a philosophy major prepares the student uniquely well for

success in the widest range of fields. And since the philosophy major at Drexel reserves a full 48.0 credit hours for free electives, it is particularly suitable as a double major that can broaden, deepen, and enhance the student's educational experience, preparation for various non-academic careers, and preparation for life.

Most students who choose philosophy as a major pursue careers in which thoughtful, logical, reasonable, creative persons are needed. Another large group are looking toward careers in the legal profession or graduate study in fields related to philosophy, like critical media studies, or public policy. A further group of philosophy majors pursue academic careers in philosophy by eventually getting an MA or PhD. At Drexel, our philosophy program is a great first step for the student who is interested in pursuing any of these paths. Alongside our major, (BA), program, we offer two certificate programs, (18 credits each), and a minor, (24 credits).
Drexel philosophy majors take our introduction to Western Philosophy class, two logic classes and a 200-level ethics class during the first year of the program. In the second year, majors take the history of philosophy sequence, (three classes), a 200-level logic class, foundational classes in metaphysics and epistemology, and a 300-level applied ethics class. In the third year, along with aesthetics and philosophy of science, majors begin taking seminar classes, which are discussion-driven, reading and writing intensive classes which meet in small groups. Philosophy majors take at least five seminars, usually during their junior and senior years. As seniors, majors embark upon a year-long, self-designed research and writing project, culminating in the defense of a Senior Thesis before the program's faculty and other majors. This jointly-designed project consists of three one-on-one tutorials with a faculty member of the student's choosing.

Additional Information

For more information about the Drexel philosophy program, please visit the Department of English & Philosophy website or drop by to see our director anytime. The Department of English and Philosophy is located in MacAlister Hall, room 5044. You can contact the director directly at:

Dr. Peter Amato
Director of Programs in Philosophy
Department of English and Philosophy

MacAlister 5030
phone 215-895-1353

peterama@drexel.edu

Degree Requirements

College of Arts and Sciences Requirements

ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
CHEM 201	Why Things Work: Everyday Chemistry	3.0
MATH 101	Introduction to Analysis I *	4.0
MATH 102	Introduction to Analysis II **	4.0
PHIL 105	Critical Reasoning	3.0
PHYS 135	How Things Work	4.0
UNIV H101	The Drexel Experience	3.0
Two Studies in Diversity Electives		6.0
Two International Studies Electives		6.0-8.0
Four Social and Behavioral Sciences Electives		12.0-16.0
Select two of the following:		6.0
ARTH 101	History of Art I: Ancient to Medieval	
ARTH 102	History of Art II: High Renaissance to Modern	
ARTH 103	History of Art- Early to Late Modern	

Language Requirement

201 Language Course †		4.0
202 Language Course		4.0

Major Requirements

COM 230	Techniques of Speaking	3.0
PHIL 101	Introduction to Western Philosophy (College requirements state students can select PHIL 101 or PHIL 102, but the major requires PHIL 101.)	3.0
PHIL 111	Propositional Logic	3.0
PHIL 207	Predicate Logic	3.0
PHIL 211	Metaphysics	3.0
PHIL 221	Epistemology	3.0
PHIL 212	Ancient Philosophy	3.0
PHIL 214	Modern Philosophy	3.0
PHIL 215	Contemporary Philosophy	3.0
PHIL 231	Aesthetics	3.0
PHIL 251	Ethics	3.0
PHIL 361	Philosophy of Science	3.0
PHIL 431 [WI]	Seminar in Modern Philosophy	3.0
PHIL 481 [WI]	Seminar in a Philosophical School ‡	3.0
PHIL 485 [WI]	Seminar in a Major Philosopher ‡	3.0
PHIL 497 [WI]	Senior Essay I: Research & Thesis	3.0
PHIL 498 [WI]	Senior Essay II: Argument Construction	3.0
PHIL 499 [WI]	Senior Essay III: Defense	3.0
Select one of the following:		3.0
PHIL 371	Philosophy of Social Sciences	
PHIL 391	Philosophy of Religion	
Select one of the following:		3.0
PHIL 425 [WI]	Seminar in Medieval Philosophy	
PHIL 421 [WI]	Seminar in Ancient Philosophy	
Select one of the following:		3.0
PHIL 461 [WI]	Seminar in Contemporary Philosophy	
PHIL 465 [WI]	Seminar in American Philosophy	

Professional Ethics Elective

Select one of the following:		3.0
PHIL 301	Business Ethics	
PHIL 305	Communication Ethics	
PHIL 311	Computer Ethics	
PHIL 315	Engineering Ethics	
PHIL 317	Ethics and Design Professions	
PHIL 321	Biomedical Ethics	
PHIL 322	Ethics of Human Enhancement	
PHIL 323	Organizational Ethics	

PHIL 325	Ethics in Sports Management	
PHIL 330	Ethical Issues in Criminal Justice	
PHIL 335	Global Ethical Issues	
Electives		
Free Electives		48.0
Total Credits		182.0-188.0

* Credit will be granted to students who achieve Advanced Placement (AP) in relevant mathematical disciplines. On the other hand, students unprepared for MATH 101 should take MATH 100 Fundamentals of Mathematics.

** Students who took MATH 100 in Term 1 must take MATH 101 in Term 2, and MATH 102 in Term 3 or Term 4.

† Presupposes a level of success in the placement examination warranting enrollment at this language level. Students are encouraged to pursue language instruction in "the languages of Western Philosophy;" thus, French, German, Italian and Spanish would be recommended. However, pursuit of proficiency in languages other than those recommended would not be discouraged. Credit will be granted to students who achieve Advanced Placement (AP) in a language.

‡ This course may be repeated for credit.

Sample Plan of Study

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 101	Introduction to Analysis I	4.0
PHIL 101	Introduction to Western Philosophy	3.0
UNIV H101	The Drexel Experience	1.0
Language 201*		4.0
	Term Credits	**15.0**
Term 2		
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
MATH 102	Introduction to Analysis II	4.0
PHIL 105	Critical Reasoning	3.0
UNIV H101	The Drexel Experience	2.0
Language 202		4.0
	Term Credits	**16.0**
Term 3		
CHEM 201	Why Things Work: Everyday Chemistry	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
PHIL 111	Propositional Logic	3.0
PHIL 251	Ethics	3.0
Social science elective		3.0-4.0
	Term Credits	**15.0-16.0**
Term 4		
PHIL 207	Predicate Logic	3.0
ARTH 102 or 101	History of Art II: High Renaissance to Modern History of Art I: Ancient to Medieval	3.0
PHIL 212	Ancient Philosophy	3.0
Social science elective		3.0-4.0
Diversity studies elective		3.0
	Term Credits	**15.0-16.0**
Term 5		
PHIL 211	Metaphysics	3.0
PHYS 135	How Things Work	4.0
PHIL 214	Modern Philosophy	3.0
ARTH 103 or 102	History of Art- Early to Late Modern History of Art II: High Renaissance to Modern	3.0
Diversity studies elective		3.0
	Term Credits	**16.0**
Term 6		
COM 230	Techniques of Speaking	3.0
PHIL 215	Contemporary Philosophy	3.0
PHIL 221	Epistemology	3.0
Social science elective		3.0-4.0
Free elective		3.0
	Term Credits	**15.0-16.0**
Term 7		
PHIL 231	Aesthetics	3.0
Social science elective		3.0-4.0
Professional ethics elective*		3.0
Free electives		6.0
	Term Credits	**15.0-16.0**
Term 8		
PHIL 361	Philosophy of Science	3.0
PHIL 481 [WI]	Seminar in a Philosophical School	3.0
International studies elective		3.0-4.0
Free electives		6.0
	Term Credits	**15.0-16.0**
Term 9		
PHIL 485 [WI]	Seminar in a Major Philosopher	3.0
International Studies Elective		3.0-4.0
Free Electives		9.0
	Term Credits	**15.0-16.0**
Term 10		
PHIL 497 [WI]	Senior Essay I: Research & Thesis	3.0
PHIL 425 [WI] or 421 [WI]	Seminar in Medieval Philosophy Seminar in Ancient Philosophy	3.0
PHIL 391 or 371	Philosophy of Religion Philosophy of Social Sciences	3.0
Free electives		6.0
	Term Credits	**15.0**
Term 11		
PHIL 431 [WI]	Seminar in Modern Philosophy	3.0
PHIL 498 [WI]	Senior Essay II: Argument Construction	3.0
Free electives		9.0
	Term Credits	**15.0**
Term 12		
PHIL 499 [WI]	Senior Essay III: Defense	3.0
PHIL 465 [WI] or 461 [WI]	Seminar in American Philosophy Seminar in Contemporary Philosophy	3.0

Free electives	9.0
Term Credits	**15.0**

Total Credit: 182.0-188.0

* See degree requirements (p. 68).

Minor in Philosophy

This minor is intended for undergraduates seeking to broaden and enhance their education by attaining a firm grounding in philosophy. The minor requires seven carefully-selected classes, plus one of the senior seminars. Students who have completed 30.0 credits may apply for the philosophy minor by submitting the Application for Admission to Minor Program form, available online at the Student Resource Center (http://www.drexel.edu/src) website.

Required Courses

PHIL 101	Introduction to Western Philosophy	3.0
PHIL 211	Metaphysics	3.0
PHIL 221	Epistemology	3.0
PHIL 251	Ethics	3.0
Select one of the following:		3.0
PHIL 105	Critical Reasoning	
PHIL 111	Propositional Logic	
Select one of the following Professional Ethics courses:		3.0
PHIL 301	Business Ethics	
PHIL 305	Communication Ethics	
PHIL 311	Computer Ethics	
PHIL 315	Engineering Ethics	
PHIL 317	Ethics and Design Professions	
PHIL 321	Biomedical Ethics	
PHIL 322	Ethics of Human Enhancement	
PHIL 323	Organizational Ethics	
PHIL 325	Ethics in Sports Management	
PHIL 330	Ethical Issues in Criminal Justice	
PHIL 335	Global Ethical Issues	
Select one of the following:		3.0
PHIL 231	Aesthetics	
PHIL 241	Social & Political Philos	
PHIL 351	Philosophy of Technology	
PHIL 341	Philosophy of the Environment	
PHIL 355	Philosophy of Medicine	
PHIL 361	Philosophy of Science	
PHIL 371	Philosophy of Social Sciences	
PHIL 381 [WI]	Philosophy in Literature	
PHIL 385	Philosophy of Law	
PHIL 391	Philosophy of Religion	
Select one of the following:		3.0
PHIL 421 [WI]	Seminar in Ancient Philosophy	
PHIL 425 [WI]	Seminar in Medieval Philosophy	
PHIL 431 [WI]	Seminar in Modern Philosophy	
PHIL 461 [WI]	Seminar in Contemporary Philosophy	
Total Credits		24.0

Physics

Bachelor of Science Degree: 180.0 quarter credits

About the Program

Drexel's undergraduate program provides a solid foundation in physics suitable for graduate study or to branch out into other scientific or technical disciplines. The physics program offers an innovative curriculum in a top-notch learning environment: small class sizes, personal input from faculty, and close interaction with researchers who are leaders in their fields. Students explore the span of universal phenomenon—from the farthest reaches of astrophysics and cosmology, to molecular biophysics and subatomic particle physics— providing a solid foundation for continued study and exploration. Most undergraduates actively participate in research projects, including co-authoring publications and presenting results at conferences.

Virtually every course in the physics major is designed to extend the students' ability to handle real-world problems solved by state-of-the-art techniques. An important feature of the program is the large number of electives, which allow a student to pursue topics of special interest. There are numerous elective courses in areas as diverse as biophysics and cosmology, nanoscience and particle physics. Students can also choose electives to meet teacher certification requirements.

The Laboratory for High-Performance Computational Physics is a venue for students to become proficient in numerical techniques, parallel processing, electronic communication, and the basic computer languages and software relevant to advanced studies and research in physics.

The Department of Physics (http://www.physics.drexel.edu) conducts a broad array of outreach activities including the Kaczmarczik Lecture Series, public observing nights at the Lynch Observatory (http://www.physics.drexel.edu/observatory), and demonstrations in grade school performed by the Drexel Chapter of the Society of Physics Students (http://www.drexel.edu/physics/about/society-of-physics-students) (SPS).

In addition to the physics major, the Department also offers a minor in physics as well as a minor in astrophysics (p. 84).

Degree Requirements

Core Physics Requirements

PHYS 113	Contemporary Physics I	5.0
PHYS 114	Contemporary Physics II	5.0
PHYS 115	Contemporary Physics III	5.0
PHYS 105	Computational Physics I	3.0
PHYS 217	Thermodynamics	4.0
PHYS 311	Classical Mechanics I	4.0
PHYS 223 [WI]	Modern Physics Laboratory	3.0
PHYS 317	Statistical Mechanics	3.0
PHYS 321	Electromagnetic Fields I	4.0
PHYS 322	Electromagnetic Fields II	4.0
PHYS 326	Quantum Mechanics I	4.0
PHYS 327	Quantum Mechanics II	4.0

PHYS 328	Advanced Laboratory	3.0
PHYS 491	Senior Research I	3.0
PHYS 492	Senior Research II	3.0
PHYS 493 [WI]	Senior Research III	3.0
PHYS 408	Physics Seminar (To be taken 3 times.)	3.0
Method Classes: Complete 12 credits from the following *		12.0
PHYS 160	Introduction to Scientific Computing	
PHYS 226 [WI]	Instrumentation for Scientists I	
PHYS 227 [WI]	Instrumentation for Scientists II	
PHYS 232	Observational Astrophysics	
PHYS 305	Computational Physics II	
PHYS 315	Computational Physics III	
PHYS 324	Topics in Mathematical Physics	
PHYS 405	Advanced Computational Physics	
MATH 322	Complex Variables	
MATH 323	Partial Differential Equations	
MATH 331	Abstract Algebra I	
MATH 489	Tensor Analysis	
Subject Courses: Complete 15 credits from the following: **		15.0
PHYS 231	Introductory Astrophysics	
PHYS 262	Introduction to Biophysics	
HNRS 301	Colloquium II (Special Relativity)	
PHYS 330	Introduction to Nuclear Physics	
PHYS 312	Classical Mechanics II	
PHYS 428	Quantum Mechanics III	
PHYS 431	Galactic Astrophysics	
PHYS 432	Cosmology	
PHYS 452	Solid State Physics	
PHYS 453	Nanoscience	
PHYS 461	Biophysics	
PHYS 462	Computational Biophysics	
PHYS 463	Single Molecule Methods	
PHYS 471	Nonlinear Dynamics	
PHYS 476	Particle Physics	
Math and Technical Requirements		
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	3.0-4.0
or MATH 261	Linear Algebra	
MATH 210	Differential Equations	4.0
Sciences		
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
CHEM 103	General Chemistry III (OR Any Bio OR an ENGR class at 200 or higher)	5.0
CS 171	Computer Programming I	3.0
General Education		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
UNIV S101	The Drexel Experience	1.0
Liberal electives		9.0
Technical elective ***		3.0
Business elective		4.0
Free electives		25.0
Total Credits		180.0-181.0

* At least 6 credits must have a PHYS subject code

** Except for PHYS 480, courses at the 400 level and above will also be accepted.

*** Technical electives can be any course in BIO, CHEM, ENVS, GEO, MATH, PHYS, or any course from the College of Engineering.

Sample Plan of Study

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 121	Calculus I	4.0
PHYS 113	Contemporary Physics I	5.0
PHYS 223 [WI]	Modern Physics Laboratory	3.0
UNIV S101	The Drexel Experience	1.0
	Term Credits	**16.0**
Term 2		
CS 171	Computer Programming I	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
MATH 122	Calculus II	4.0
PHYS 114	Contemporary Physics II	5.0
	Term Credits	**15.0**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
MATH 123	Calculus III	4.0
PHYS 105	Computational Physics I	3.0
PHYS 115	Contemporary Physics III	5.0
	Term Credits	**15.0**
Term 4		
CHEM 101	General Chemistry I	3.5
MATH 201 or 261	Linear Algebra Linear Algebra	4.0
MATH 200	Multivariate Calculus	4.0
PHYS 217	Thermodynamics	4.0
	Term Credits	**15.5**
Term 5		
CHEM 102	General Chemistry II	4.5
MATH 210	Differential Equations	4.0

PHYS 311	Classical Mechanics I	4.0
Subject course*		3.0
	Term Credits	**15.5**
Term 6		
PHYS 326	Quantum Mechanics I	4.0
One of the following:		3.0-5.0
CHEM 103	General Chemistry III	
Any Biology (BIO) course		
Any ENGR course 200-level or higher		
Method course*		3.0
Free elective		3.0
	Term Credits	**13.0-15.0**
Term 7		
PHYS 327	Quantum Mechanics II	4.0
PHYS 317	Statistical Mechanics	3.0
Method course		3.0
Business elective		3.0
Liberal studies elective		3.0
	Term Credits	**16.0**
Term 8		
PHYS 321	Electromagnetic Fields I	4.0
Two Subject courses		6.0
Technical elective		3.0
Free elective		3.0
	Term Credits	**16.0**
Term 9		
PHYS 322	Electromagnetic Fields II	4.0
PHYS 328	Advanced Laboratory	3.0
Method course		3.0
Liberal studies elective		3.0
Business elective		3.0
	Term Credits	**16.0**
Term 10		
PHYS 408	Physics Seminar	1.0
PHYS 491	Senior Research I	3.0
Subject course		3.0
Liberal studies elective		3.0
Free elective		4.0
	Term Credits	**14.0**
Term 11		
PHYS 408	Physics Seminar	1.0
PHYS 492	Senior Research II	3.0
Subject course		3.0
Free electives		7.0
	Term Credits	**14.0**
Term 12		
PHYS 408	Physics Seminar	1.0
PHYS 493 [WI]	Senior Research III	3.0
Method course		3.0
Free electives		7.0
	Term Credits	**14.0**
Total Credit: 180.0-182.0		

* See degree requirements (p. 70).

Co-op/Career Opportunities

Students who complete a degree in physics have many options. Some enter graduate school with the intention of obtaining a master's or a PhD. Others attend medical school. Engineering is yet another option, and graduates of an undergraduate physics program can enter this field with an unusually solid background in fundamental physical principles, mathematics, and computation. It is also possible for physics graduates to work in business and finance; for example, Wall Street employs many analysts trained in such "hard sciences" as physics.

Many Drexel physics graduates proceed directly into graduate schools, or medical or other professional programs. Physics graduates have attended some of the best graduate programs in the United States, including Columbia, Harvard, and CalTech. Other graduates have found jobs in engineering and business, and with such government agencies as the National Bureau of Standards.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) for more detailed information on co-op and post-graduate opportunities.

Minor in Physics

Physics is a science that studies the natural phenomena at all scales, from that of the universe to elementary particles. This minor exposes the students to some of the basic principles of physics and would easily complement any other discipline—from engineering to other sciences.

The minor in physics requires a total of 10.0 credits from the elective list, in addition to the prerequisite and core courses.

Because of the overlap in requirements between the astrophysics minor (p. 84) and the physics minor, students cannot minor in both.

Required Prerequisite Courses *		
PHYS 113	Contemporary Physics I	
PHYS 114	Contemporary Physics II	
PHYS 115	Contemporary Physics III	
Required Courses		
PHYS 311	Classical Mechanics I	4.0
PHYS 321	Electromagnetic Fields I	4.0
PHYS 217	Thermodynamics	4.0
PHYS 326	Quantum Mechanics I	4.0
Electives		
Select at least 10 credits from PHYS courses at the 300 level or above		10.0
Total Credits		26.0

* PHYS 101, PHYS 102 and PHYS 201 will also satisfy the prerequisite requirements.

Political Science

Bachelor of Arts Degree: 182.0 quarter credits
Bachelor of Science Degree: 182.0 quarter credits

About the Program

The political science program in the Department of History & Politics (http://www.drexel.edu/histpol) helps students cultivate perspective, develop critical thinking and communication skills, and understand the economic, social, and political systems within which we live and work. This flexible program allows students to shape a curriculum that meets their needs, whether they are preparing for the business world, graduate school in political science, an MBA or other business program, or law school.

Degrees Offered

The department offers both a Bachelor of Science (BS) and a Bachelor of Arts (BA) in political science. Students may choose the program that best fits their needs and future goals.

The Bachelor of Science (BS) provides a framework for those students who prefer specific course requirements, including sequences in mathematics and the natural sciences.

The Bachelor of Arts (BA) provides a more flexible course of study, which includes foreign language and allows for options in the fulfillment of humanities, social science, math, and science requirements.

Whether they are preparing to enter law school, the business world, or graduate school, students can shape a curriculum that meets their needs.

In addition, the department also offers minors in American Studies (p. 83), European Studies (p. 85), History (p. 55), Science, Technology and Human Affairs (p. 88), Politics (p. 88), and World History and Politics (p. 89).

Degree Requirements (BA)

General Education Requirements		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
UNIV H101	The Drexel Experience	2.0
Two Math courses		6.0-8.0
Two Science courses [*]		6.0-8.0
Foundation Requirements		
Two Studies in Diversity electives		6.0
Two Consecutive Foreign Language courses (must complete level 201)		8.0
Four Humanities/Fine Arts electives		12.0
Four Social Science electives		12.0
Two International Studies electives		6.0
Core Political Science Requirements		
PSCI 110	American Government I	4.0
PSCI 120	History of Political Thought	4.0
PSCI 130	Research Methods in Political Science I	4.0
PSCI 140	Introduction to Comparative Political Analysis	4.0
PSCI 150	International Politics	4.0
PSCI 211	American Government II	4.0
PSCI 220	Constitutional Law I	3.0
PSCI 230	Research Methods in Political Science II	4.0
PSCI 240	Comparative Government	3.0
PSCI 250	American Foreign Policy	3.0
PSCI 270	Problems of Individual Liberty and Government Authority	3.0
Three History electives [**]		9.0
Political Science Electives [***]		30.0
Free Electives		33.0-37.0
Total Credits		182.0

[*] Any Biology (BIO), Chemisitry (CHEM), Nutrition (NFS), Physics (PHYS) or Environmental Science (ENVS) course.

[**] Only 200-level and above HIST courses will fulfill this requirement.

[***] Only 300-level and above PSCI courses will fulfill this this requirement.

Sample Plan of Study (BA)

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
PSCI 110	American Government I	4.0
PSCI 150	International Politics	4.0
UNIV H101	The Drexel Experience	1.0
Foreign Language course (103-level or higher)		4.0
	Term Credits	**16.0**
Term 2		
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
PSCI 140	Introduction to Comparative Political Analysis	4.0
UNIV H101	The Drexel Experience	2.0
Foreign Language course (201-level or higher)		4.0
Mathematics course		3.0-4.0
Social and Behavioral Sciences elective		3.0
	Term Credits	**19.0-20.0**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
PSCI 120	History of Political Thought	4.0
PSCI 130	Research Methods in Political Science I	4.0
Mathematics course		3.0-4.0
Free elective		2.0
	Term Credits	**16.0-17.0**
Term 4		
PSCI 230	Research Methods in Political Science II	4.0
History elective (200-level and above HIST course)		3.0
Humanities/Fine Arts elective		3.0
Diversity Studies elective		3.0

Science elective[*]		3.0-4.0
	Term Credits	**16.0-17.0**
Term 5		
PSCI 240	Comparative Government	3.0
Political Science elective (300-level and above PSCI course)		3.0
History elective (200-level and above HIST course)		3.0
Humanities/Fine Arts elective		3.0
Science elective [*]		3.0-4.0
Free elective		2.0-3.0
	Term Credits	**17.0-19.0**
Term 6		
PSCI 211	American Government II	4.0
History elective (200-level and above HIST course)		3.0
International Studies elective		3.0
Diversity Studies elective		3.0
Social and Behavioral Sciences elective		3.0
	Term Credits	**16.0**
Term 7		
PSCI 220	Constitutional Law I	3.0
International Studies elective		3.0
Humanities/Fine Arts elective		3.0
Social and Behavioral Sciences elective		3.0
Free elective		3.0
	Term Credits	**15.0**
Term 8		
PSCI 250	American Foreign Policy	3.0
Social and Behavioral Sciences elective		3.0
Humanities/Fine Arts elective		3.0
Political Science elective (300-level and above PSCI course)		3.0
Free elective		3.0
	Term Credits	**15.0**
Term 9		
PSCI 270	Problems of Individual Liberty and Government Authority	3.0
Political Science electives (300-level and above PSCI courses)		6.0
Free electives		5.0
	Term Credits	**14.0**
Term 10		
Political Science electives (300-level and above PSCI courses)		6.0
Free electives		9.0
	Term Credits	**15.0**
Term 11		
Political Science electives (300-level and above PSCI courses)		6.0
Free electives		6.0
	Term Credits	**12.0**
Term 12		
Political Science electives (300-level and above PSCI courses)		6.0
Free electives		6.0
	Term Credits	**12.0**
Total Credit: 183.0-188.0		

[*] See degree requirements (p. 73).

Degree Requirements (BS)

General Education Requirements		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
UNIV H101	The Drexel Experience	2.0
Math Sequence [*]		8.0
Select one of the following:		
Analysis Sequence		
MATH 101	Introduction to Analysis I	
MATH 102	Introduction to Analysis II	
Calculus Sequence		
MATH 121	Calculus I	
MATH 122	Calculus II	
Science Sequence [**]		8.0
Select one of the following:		
Biology Sequence		
BIO 107	Cells, Genetics & Physiology	
BIO 108	Cells, Genetics and Physiology Laboratory	
BIO 109	Biological Diversity, Ecology & Evolution	
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	
Chemistry Sequence		
CHEM 111	General Chemistry I	
CHEM 112	General Chemistry II	
Physics Sequence		
PHYS 103	General Physics I	
PHYS 104	General Physics II	
Literature		
Nonwestern Literature Requirement		
Select one of the following:		3.0
ENGL 203 [WI]	Post-Colonial Literature I	
ENGL 204	Post-Colonial Literature II	
Western Literature Requirement		
Select one of the following:		3.0
ENGL 200 [WI]	Classical to Medieval Literature	
ENGL 201	Renaissance to the Enlightenment	
ENGL 202 [WI]	Romanticism to Modernism	
ENGL 205 [WI]	American Literature I	
ENGL 206 [WI]	American Literature II	
ENGL 207 [WI]	African American Literature	

ENGL 211 [WI]	British Literature I	
ENGL 212	British Literature II	
Additional General Requirements		
ANTH 101	Introduction to Cultural Diversity	3.0
or ANTH 110	Human Past: Anthropology and Prehistoric Archeology	
COM 150	Mass Media and Society	3.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0
MUSC 130	Introduction to Music	3.0
PSY 101	General Psychology I	3.0
SOC 101	Introduction to Sociology	3.0
PHIL 105	Critical Reasoning	3.0
Any 4-credit Statistics (STAT) course		4.0
Core Political Science Requirements		
PSCI 110	American Government I	4.0
PSCI 120	History of Political Thought	4.0
PSCI 130	Research Methods in Political Science I	4.0
PSCI 140	Introduction to Comparative Political Analysis	4.0
PSCI 150	International Politics	4.0
PSCI 211	American Government II	4.0
PSCI 220	Constitutional Law I	3.0
PSCI 230	Research Methods in Political Science II	4.0
PSCI 240	Comparative Government	3.0
PSCI 250	American Foreign Policy	3.0
PSCI 270	Problems of Individual Liberty and Government Authority	3.0
Three History electives (Only 200-level and above HIST courses will fulfill this requirement.)		9.0
Political Science electives (Only 300-level and above PSCI courses will fulfill this requirement.)		30.0
Free electives		40.0
Total Credits		182.0

* Additional math sequence options are available. Students should check with the Department.

** Additional science sequence options are available. Students should check with the Department.

Sample Plan of Study (BS)

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
MATH 101	Introduction to Analysis I	4.0
PSCI 110	American Government I	4.0
PSCI 150	International Politics	4.0
UNIV H101	The Drexel Experience	1.0
	Term Credits	**16.0**
Term 2		
COM 150	Mass Media and Society	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
MATH 102	Introduction to Analysis II	4.0
PHIL 105	Critical Reasoning	3.0
PSCI 140	Introduction to Comparative Political Analysis	4.0
UNIV H101	The Drexel Experience	2.0
	Term Credits	**19.0**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
PSCI 120	History of Political Thought	4.0
PSCI 130	Research Methods in Political Science I	4.0
PSY 101	General Psychology I	3.0
	Term Credits	**14.0**
Term 4		
MUSC 130	Introduction to Music	3.0
PSCI 230	Research Methods in Political Science II	4.0
SOC 101	Introduction to Sociology	3.0
Western Literature Survey course*		3.0
Science Sequence course 1*		4.0
	Term Credits	**17.0**
Term 5		
PSCI 240	Comparative Government	3.0
ENGL 204 or 203 [WI]	Post-Colonial Literature II Post-Colonial Literature I	3.0
Science Sequence Course 2*		4.0
History elective (200-level and above HIST course)		3.0
Free elective		2.0
	Term Credits	**15.0**
Term 6		
ECON 201	Principles of Microeconomics	4.0
PSCI 211	American Government II	4.0
ANTH 110 or 101	Human Past: Anthropology and Prehistoric Archeology Introduction to Cultural Diversity	3.0
History elective (200-level and above HIST course)		3.0
Free elective		3.0
	Term Credits	**17.0**
Term 7		
ECON 202	Principles of Macroeconomics	4.0
PSCI 220	Constitutional Law I	3.0
History elective (200-level and above HIST course)		3.0
Statistics elective		4.0
Free elective		2.0
	Term Credits	**16.0**
Term 8		
PSCI 250	American Foreign Policy	3.0
Political Science electives (300-level and above PSCI courses)		6.0
Free electives		5.0
	Term Credits	**14.0**
Term 9		
PSCI 270	Problems of Individual Liberty and Government Authority	3.0
Political Science electives (300-level and above PSCI courses)		6.0

Free electives	6.0
Term Credits	**15.0**
Term 10	
Political Science electives (300-level and above PSCI courses)	6.0
Free electives	9.0
Term Credits	**15.0**
Term 11	
Political Science electives (300-level and above PSCI courses)	6.0
Free electives	6.0
Term Credits	**12.0**
Term 12	
Political Science electives (300-level and above PSCI courses)	6.0
Free electives	6.0
Term Credits	**12.0**

Total Credit: 182.0

* See degree requirements (p. 74).

Accelerated BS/BA in Political Science and MS in Science, Technology & Society

About the Program

Drexel University Permits undergraduate students in 5-year programs to apply for graduate programs while completing their undergraduate programs, allowing students to complete their master's degrees in a shorter amount of time.

The accelerated-degree program provides an opportunity to simultaneously earn both a BA or BS degree and an MS degree in Science, Technology & Society (p. 114) (two diplomas are awarded) in the time normally required to finish a bachelor's degree alone.

Students entering the program must:

- have and maintain a minimum of 3.0 grade point average throughout the program
- have no fewer than 90.0 earned credits
- have no more than 120.0 registered credits
- complete only 2 co-ops if in a BS/MS program.

The Department of History and Politics would especially like to encourage its own majors to consider the accelerated degree program in Science, Technology & Society.

For more information about the accelerated BA-BS/MS program, contact:

MSTS Program Director
Macalister Hall, 3025
215.895.2463

Recommended Plan of Study

Students should work closely with faculty advisors in the Science, Technology & Society program to schedule an individualized plan of study for their accelerated degree completion.

The following is a sample plan of study for a student starting in pre-junior year, with 108.0 credit hours completed (based on a 5-year program in which the last co-op was dropped):

Dual Bachelor's Degree & MSTS Degree

222.0 minimum credits

Term 7		**Credits**
Undergraduate Courses		13.0
Two Science, Technology & Society Courses*		6.0
Term Credits		**19.0**
Term 8		
Undergraduate Courses		13.0
Two Science, Technology & Society Courses		6.0
Term Credits		**19.0**
Term 9		
Undergraduate Courses		10.0
Two Science, Technology & Society Courses		6.0
One Graduate Elective**		3.0
Term Credits		**19.0**
Term 10		
Undergraduate Courses		10.0
Two Science, Technology & Society Courses		6.0
HIST 696	Seminar in Science, Technology, and Society	3.0
Term Credits		**19.0**
Term 11		
Undergraduate Courses		13.0
One Graduate Elective**		3.0
HIST 697	Practicum: Science and Technology in Action	3.0
Term Credits		**19.0**
Term 12		
One Graduate Elective		10.0
Undergraduate Courses**		3.0
HIST 698	Master's Thesis	6.0
Term Credits		**19.0**

Total Credit: 114.0

* HIST 501 recommended as the first course.

** Graduate electives may be taken as graduate-level courses in History-Politics or from other departments/Colleges within the University

Co-Op/Career Opportunities

Political science majors have a wide variety of co-op experiences from which to choose. Business and public utilities offer many lucrative possibilities, and local, state, and federal governments; museums and archives; and law firms present many additional interesting co-op placements. Pre-law students, for example, are especially eager to see the inside of a law office, whether the co-op job they receive is clerical or a more challenging paralegal assignment. These practical experiences in the "real" world can reinforce the lessons of the classroom, sharpen skills, and establish important contacts. Sample co-op positions include:

- Law clerk/paralegal, Joe Davidson, Attorney-at-Law, Philadelphia
- Research analyst, Legislative Office for Research Liaison, Harrisburg, PA

- Legislative intern, Corporate Public Affairs Division, Philadelphia Electric Company
- Assistant lobbyist, Government Relations Office, Drexel University
- Education intern, Philadelphia Museum of Art
- Researcher, Philadelphia Chamber of Commerce
- Assistant, Office of the Governor, Harrisburg, PA

Career Opportunities

The flexible programs allow students to shape a curriculum that meets their needs, whether they are preparing for the business world, graduate school in history or political science, the Department's Masters Program in Science, Technology, and Society (http://drexel.edu/histpol/academics/graduate), an MBA or other business program, or law school.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on co-op and post-graduate opportunities.

Psychology

Bachelor of Science Degree: 182.0 quarter credits

About the Program

Psychology seeks the answers to a broad variety of questions regarding the behavior, thoughts, and emotions of individuals. These questions range from the biochemical basis of memory and the effects of stress on health to understanding the causes of emotional problems or such experiences as falling in love. These questions are studied by using scientific research techniques both in the laboratory and the "real" world. The answers are applied in fields such as business, the health sciences, law, education, counseling, and the design of useful and usable technologies.

One strength of the psychology program at Drexel is its emphasis on psychological statistics and research methodology. Psychology majors are well trained in research data analysis and find employment opportunities in research and corporate settings more readily. One other opportunity available to Drexel psychology undergraduates is the co-operative education/internship programs, through which students mix periods of full-time, career-related employment with their academic studies. This allows students to have "hands on" experience in a variety of clinical settings throughout the Philadelphia metropolitan region, and makes them more competitive for employment after graduation.

Combined Bachelors/Masters Degree

There is an accelerated MS program entitled the Psychology BS/MS Scholars program to which undergraduates may apply. For more information, visit the Drexel University Department of Psychology (http://psychology.drexel.edu) homepage.

Additional Information

To schedule an appointment with a Psychology faculty advisor, students should contact the Psychology department's academic coordinator:

Tara McNair
Academic Coordinator
Psychology Department
3141 Chestnut Street
215-895-0487
tym22@drexel.edu

Degree Requirements

College Requirements		
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
CS 161	Introduction to Computing	3.0
Select one of the following:		8.0
MATH 101 & MATH 102	Introduction to Analysis I and Introduction to Analysis II	
MATH 121 & MATH 122	Calculus I and Calculus II	
PSCI 100	Introduction to Political Science	4.0
UNIV H101	The Drexel Experience	3.0
Economics elective		4.0
Fine Arts elective		3.0
History electives		6.0
Philosophy elective		3.0
Two English (ENGL) courses, 200-level or above		6.0
Select one of the following sequences:		8.0
Biology		
BIO 107	Cells, Genetics & Physiology	
BIO 108	Cells, Genetics and Physiology Laboratory	
BIO 109	Biological Diversity, Ecology & Evolution	
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	
Chemistry		
CHEM 111	General Chemistry I	
CHEM 112	General Chemistry II	
Physics		
PHYS 103 & PHYS 104	General Physics I and General Physics II	
Other Courses		
Free electives		53.0
Departmental Requirements		
General Psychology Requirements		
PSY 111	Pre-Professional General Psychology I *	3.0
PSY 112	Pre-Professional General Psychology II *	3.0
Sociology/Anthropology Requirements		
Sociology (SOC) course		3.0
Anthropology (ANTH) course		3.0
100-Level Requirements		
Select two of the following:		6.0
PSY 120	Developmental Psychology	
PSY 140	Approaches to Personality	
PSY 150	Introduction to Social Psychology	
Required Psychology Courses		
PSY 212	Physiological Psychology	3.0

PSY 325	Psychology of Learning	3.0
PSY 240 [WI]	Abnormal Psychology	3.0
PSY 280	Psychological Research I	3.0
PSY 264	Computer-Assisted Data Analysis I	3.0
PSY 265	Computer-Assisted Data Analysis II	3.0
PSY 290	History and Systems of Psychology	3.0
PSY 330	Cognitive Psychology	3.0
PSY 360 [WI]	Experimental Psychology	3.0
PSY 380	Psychological Testing and Assessment	3.0
Advanced Psychology Electives		
Select four of the following:		12.0
PSY 210	Evolutionary Psychology	
PSY 213	Sensation and Perception	
PSY 225	Child Psychopathology	
PSY 245 [WI]	Sports Psychology	
PSY 250 [WI]	Industrial Psychology	
PSY 252	Death and Dying	
PSY 310	Drugs & Human Behavior	
PSY 322	Advanced Developmental Psychology	
PSY 332	Human Factors and Cognitive Engineering	
PSY 337	Human-Computer Interaction	
PSY 342	Counseling Psychology	
PSY 350	Advanced Social Psychology	
PSY 355	Health Psychology	
PSY 356	Women's Health Psychology	
PSY 410	Neuropsychology	
PSY 440	Advanced Personality Seminar	
PSY 442	Theories & Practices in Clinical Psychology	
Senior Seminar Sequence **		
PSY 490 [WI]	Psychology Senior Thesis I	4.0
PSY 491 [WI]	Psychology Senior Thesis II	4.0
PSY 492 [WI]	Psychology Senior Thesis III	4.0
Total Credits		182.0

* Students with AP psychology, or transfer students with PSY 101 credit, should check the AP Student Placement Exam Crosswalk (http://www.drexel.edu/provost/policies/pdf/supporting/ap_crosswalk.pdf) or check with their advisor.

** Students who do not wish to elect the research seminar sequence are required to take four additional advanced psychology electives instead.

Sample Plan of Study

Term 1		**Credits**
ENGL 101	Composition and Rhetoric I: Inquiry and Exploratory Research	3.0
PSY 111	Pre-Professional General Psychology I	3.0
MATH 121 or 101	Calculus I Introduction to Analysis I	4.0
UNIV H101	The Drexel Experience	2.0
Select one of the following:		4.0
CHEM 111	General Chemistry I	
PHYS 103	General Physics I	
BIO 107 & BIO 108	Cells, Genetics & Physiology	
	Term Credits	**16.0**
Term 2		
ENGL 102	Composition and Rhetoric II: The Craft of Persuasion	3.0
PSY 112	Pre-Professional General Psychology II	3.0
MATH 102 or 122	Introduction to Analysis II Calculus II	4.0
UNIV H101	The Drexel Experience	2.0
Select one of the following:		4.0
BIO 109	Biological Diversity, Ecology & Evolution	
CHEM 112	General Chemistry II	
PHYS 104	General Physics II	
Select one of the following:		3.0
PSY 120	Developmental Psychology	
PSY 140	Approaches to Personality	
PSY 150	Introduction to Social Psychology	
	Term Credits	**19.0**
Term 3		
ENGL 103	Composition and Rhetoric III: Thematic Analysis Across Genres	3.0
PSY 240 [WI]	Abnormal Psychology	3.0
Select one of the following:		3.0
PSY 120	Developmental Psychology	
PSY 150	Introduction to Social Psychology	
PSY 140	Approaches to Personality	
Sociology/Anthropology elective (SOC or ANTH)		3.0
Fine Arts elective		3.0
	Term Credits	**15.0**
Term 4		
PSCI 100	Introduction to Political Science	4.0
PSY 264	Computer-Assisted Data Analysis I	3.0
PSY 290	History and Systems of Psychology	3.0
Sociology/Anthropology elective (SOC or ANTH)		3.0
English (ENGL) course, 200-level or above		3.0
	Term Credits	**16.0**
Term 5		
COM 150 or 230	Mass Media and Society Techniques of Speaking	3.0
PSY 265	Computer-Assisted Data Analysis II	3.0
PSY 330	Cognitive Psychology	3.0
PSY 212	Physiological Psychology	3.0
English (ENGL) course, 200-level or above		3.0
Philosophy (PHIL) elective		3.0
	Term Credits	**18.0**
Term 6		
PSY 212	Physiological Psychology	3.0
PSY 280	Psychological Research I	
PSY 360 [WI]	Experimental Psychology	3.0
UNIV H101	The Drexel Experience	1.0
Psychology elective		3.0

Economics (ECON) elective		4.0
	Term Credits	**14.0**
Term 7		
PSY 325	Psychology of Learning	3.0
PSY 380	Psychological Testing and Assessment	3.0
History elective		3.0
Free electives		9.0
	Term Credits	**18.0**
Term 8		
Advanced Psychology course*		3.0
History elective		3.0
Free electives		9.0
	Term Credits	**15.0**
Term 9		
Advanced Psychology course*		3.0
Free electives		9.0
	Term Credits	**12.0**
Term 10		
PSY 490 [WI]	Psychology Senior Thesis I (or adv. PSY elective (If electives are chosen, 12.0 credits in total are required.))	4.0
Advanced Psychology elective		3.0
Free electives		6.0
	Term Credits	**13.0**
Term 11		
PSY 491 [WI]	Psychology Senior Thesis II	4.0
Free electives		9.0
	Term Credits	**13.0**
Term 12		
PSY 492 [WI]	Psychology Senior Thesis III (or adv. PSY elective (If electives are chosen, 12.0 credits in total are required.))	4.0
Free electives		9.0
	Term Credits	**13.0**

Total Credit: 182.0

* See degree requirements (p. 77).

Co-op/Career Opportunities

Some graduates seek employment immediately after receiving their bachelor's degrees.They are well trained to work as research assistants in consulting firms and medical settings or to provide front-line services in mental health and educational settings. Other graduates go on to professional schools in law, business, medicine, and other health professions. Still others pursue graduate training in psychology and related fields. Students build skills and knowledge that provide a foundation for advanced study, create opportunities for future growth, and can be used to improve the quality of life for others.

Co-Op Experiences

Drexel University has long been known for its co-operative education programs, through which students mix periods of full-time, career-related employment with their studies. Co-op/internship employment is an option for psychology majors. Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on co-op and post-graduate opportunities.

Minor in Psychology

The minor in psychology is intended to meet the needs of students who recognize that an understanding and analysis of individual psychological processes is an important component of their education. The minor may also be of interest to students who have an interest in a double major but are unable to satisfy all of the requirements in two major fields.

Entry into the minor requires that PSY 101 General Psychology (or an equivalent introductory course) be taken as a prerequisite. Students who have completed and who are interested in a minor in Psychology are expected to meet with a Psychology Department faculty member to discuss the selection of courses appropriate to their major and their own personal interests. No more than three courses that are required for a student's major can count towards fulfilling requirements for the minor.

Required Prerequisite		
PSY 101	General Psychology I (or equivalent)	
Required Courses		
Select eight of the following:		24.0
PSY 120	Developmental Psychology	
PSY 140	Approaches to Personality	
PSY 150	Introduction to Social Psychology	
PSY 210	Evolutionary Psychology	
PSY 212	Physiological Psychology	
PSY 213	Sensation and Perception	
PSY 240 [WI]	Abnormal Psychology	
PSY 245 [WI]	Sports Psychology	
PSY 250 [WI]	Industrial Psychology	
PSY 252	Death and Dying	
PSY 264	Computer-Assisted Data Analysis I	
PSY 265	Computer-Assisted Data Analysis II	
PSY 290	History and Systems of Psychology	
PSY 310	Drugs & Human Behavior	
PSY 322	Advanced Developmental Psychology	
PSY 325	Psychology of Learning	
PSY 330	Cognitive Psychology	
PSY 332	Human Factors and Cognitive Engineering	
PSY 337	Human-Computer Interaction	
PSY 340	Psychological Testing and Assessment	
PSY 350	Advanced Social Psychology	
PSY 360 [WI]	Experimental Psychology	
PSY 380	Psychological Testing and Assessment	
PSY 410	Neuropsychology	
PSY 442	Theories & Practices in Clinical Psychology	
PSY 480	Special Topics in Psychology	
Total Credits		24.0

Sociology

Bachelor of Arts Degree: 182.0 quarter credits

About the Program

The sociology major at Drexel University has three components: theory, methods, substantive coursework and features specialized coursework relating to social justice issues.

Sociology is the systematic study of societies. Society is the sum total of individual and group interaction and relations, from small groups and families to global networks and complex social organizations. The discipline covers a wide variety of fields of inquiry. Sociologists examine structural relations—how human society is organized from small groups to large institutions—and is committed to developing a *critical understanding* of these relationships. Thus the sociology major stresses theory, research methods, quantitative and qualitative data analysis as applied to a wide variety of substantive areas including but not limited to social inequality, political power, gender, class, race, ethnicity, family, crime, technology and environmental change as well as a wide variety of social and political movements connected with social change. The stress on *critical understanding* means that sociology majors will strive not only to develop strong analytic abilities but an intellectual and ethical engagement reflected in sociologically informed thinking and action.The research and analytical skills developed in our program are sought after by a wide variety of professions.

Specialized social justice coursework is typically carried out in connection with community groups and organizations. It is a way through which the Sociology Program and Drexel University as a whole seeks to become practically engaged with the wider community while promoting social justice.

For more information about the sociology major, visit the Department of Culture and Communication's Sociology (http://www.drexel.edu/culturecomm/academics/undergraduate/sociology) page.

Degree Requirements

General Requirements		
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
UNIV H101	The Drexel Experience	3.0
Four Humanities/Fine Arts Courses		12.0
Two Mathematics Courses		6.0-8.0
Two Science Courses		6.0-8.0
Two Consecutive Foreign Language Courses *		8.0-16.0
Social and Behavioral Sciences		
COM 150	Mass Media and Society	3.0
SOC 101	Introduction to Sociology	3.0
Two Additional Social and Behavioral Sciences Courses		6.0
International Studies		
Two International Studies Courses		6.0
Studies in Diversity		
ANTH 101	Introduction to Cultural Diversity	3.0
One Additional Studies in Diversity Course		3.0
Sociology Core Requirements		
Required Major Seminar		
SOC 395	Seminar in Sociology (3-credit course, taken 4 or 5 terms)	12.0-15.0
Theory Sequence		
COM 210	Theory and Models of Communication	3.0
SOC 260 [WI]	Classical Social Theory	3.0
ANTH 410	Cultural Theory	3.0
SOC 460 [WI]	Contemporary Social Theory	3.0
Methods Sequence		
ANTH 370	Ethnographic Methods	3.0
COM 220	Qualitative Research Methods	3.0
SOC 250	Research Methods I	3.0
SOC 364	Computer-Assisted Data Analysis	3.0
Core Courses		
Select five of the following:		15.0
SOC 210	Race and Ethnic Relations	
SOC 230	Women & Men in a Changing Society	
SOC 220	Wealth and Power	
SOC 240	Urban Sociology	
SOC 320	Sociology of Deviant Behavior	
SOC 330	Developing Nations and the International Division of Labor	
Other Program Requirements		
Select ten of the following:		30.0
ANTH 110	Human Past: Anthropology and Prehistoric Archeology	
ANTH 120	Biblical Archaeology: The Archaeology of Israel and Jordan	
ANTH 212	Topics in World Ethnography	
ANTH 220	Aging In Cross-Cultural Perspective	
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	
ANTH 312	Approaches to Intercultural Behavior	
ANTH 380	Special Topics in Anthropology	
CJ 360	Juvenile Justice	
COM 230	Techniques of Speaking	
COM 270 [WI]	Business Communication	
COM 280	Public Relations Principles and Theory	
SOC 110	Sociology of the Future	
SOC 115	Social Problems	
SOC 120	Sociology of the Family	
SOC 125	Sociology of Aging	
SOC 215	Industrial Sociology	
SOC 235	Sociology of Health	
SOC 230	Women & Men in a Changing Society	
SOC 240	Urban Sociology	
SOC 270	Theory of Applied and Community Sociology	
SOC 310	Topics in Political Sociology	
SOC 311	Topics in Sociology of Religion	
SOC 312	Topics in Sociology of Science and Technology	
SOC 315	HIV/AIDS and Africa	
SOC 325	Introduction to Urban and Environmental Planning	
SOC 335	Sociology of Education I	
SOC 341	Environmental Movements in America	
SOC 344	Social Movements	
SOC 345	Sociology of the Environment	

SOC 349	Sociology of Disasters	
SOC 350	Research Methods II	
SOC 370	Practicum in Applied and Community Sociology	
SOC 365	Computer-Assisted Data Analysis II	
SOC 380	Special Topics in Sociology	
SOC 470	Social Change & Planning	
SOC 490	Sociology Research Seminar I	
SOC 491	Sociology Research Seminar II	
SOC 492	Sociology Research Seminar III	
PSY 150	Introduction to Social Psychology	
PSY 252	Death and Dying	
PSY 350	Advanced Social Psychology	
UNIV 380	Special Topics-University Wide	
Free Electives		33.0
Total Credits		182.0-197.0

* At least one foreign language course must be at the 200-level. In addition, the department recommends students take 2 additional foreign language courses as free electives.

Sample Plan of Study

Term 1		**Credits**
ENGL 101	Expository Writing and Reading	3.0
SOC 101	Introduction to Sociology	3.0
SOC 395	Seminar in Sociology	3.0
UNIV H101	The Drexel Experience	1.0
Mathematics Course		3.0-4.0
Foreign Language Course		4.0
	Term Credits	**17.0-18.0**
Term 2		
COM 150	Mass Media and Society	3.0
ENGL 102	Persuasive Writing and Reading	3.0
Foreign Language Course		4.0
Mathematics Course		3.0-4.0
	Term Credits	**13.0-14.0**
Term 3		
ANTH 101	Introduction to Cultural Diversity	3.0
ENGL 103	Analytical Writing and Reading	3.0
SOC 260 [WI]	Classical Social Theory	3.0
Science Elective*		3.0-4.0
Foreign Language Course		4.0
	Term Credits	**16.0-17.0**
Term 4		
COM 220	Qualitative Research Methods	3.0
SOC 210	Race and Ethnic Relations	3.0
SOC 250	Research Methods I	3.0
SOC 395	Seminar in Sociology	3.0
Foreign Language Course		4.0
	Term Credits	**16.0**
Term 5		
ANTH 370	Ethnographic Methods	3.0
COM 210	Theory and Models of Communication	3.0
SOC 240	Urban Sociology	3.0
Free Elective		3.0
Science Elective*		3.0-4.0
	Term Credits	**15.0-16.0**
Term 6		
SOC 364	Computer-Assisted Data Analysis	3.0
Diversity Studies Elective		3.0
Social and Behavioral Sciences Elective		3.0
Other Program Requirement*		3.0
Free Elective		3.0
	Term Credits	**15.0**
Term 7		
SOC 220	Wealth and Power	3.0
SOC 230	Women & Men in a Changing Society	3.0
Social and Behavioral Sciences Elective		3.0
Other Program Requirement*		3.0
Free Elective		3.0
	Term Credits	**15.0**
Term 8		
SOC 320	Sociology of Deviant Behavior	3.0
SOC 330	Developing Nations and the International Division of Labor	3.0
SOC 395	Seminar in Sociology	3.0
Other Program Requirement*		3.0
Free Elective		3.0
	Term Credits	**15.0**
Term 9		
Humanities/Fine Arts Elective		3.0
Free Elective		3.0
International Studies Elective		3.0
Other Program Requirements*		6.0
	Term Credits	**15.0**
Term 10		
ANTH 410	Cultural Theory	3.0
SOC 395	Seminar in Sociology	3.0
Other Program Requirements*		6.0
Humanities/Fine Arts Elective		3.0
	Term Credits	**15.0**
Term 11		
SOC 460 [WI]	Contemporary Social Theory	3.0
Other Program Requirements*		6.0
International Studies Elective		3.0
Free Elective		4.0
	Term Credits	**16.0**
Term 12		
Other Program Requirement*		3.0
Sociology Core Course*		3.0

Humanities/Fine Arts Electives	6.0
Term Credits	**12.0**

Total Credit: 180.0-184.0

* See degree requirements (p. 80).

Co-op/Career Opportunities

An undergraduate degree in sociology is excellent preparation for law school, medical school, or for graduate work in such fields as sociology, history, gerontology, or political science.

Outside of academics, sociologists work in a wide variety of settings. Some serve as statistical analysts for market research firms, health care agencies, and government. Others are involved in urban planning, survey research, public relations, agency management, trend analysis, or criminal justice.There are sociologists of religion working for national church organizations, and sociologists specializing in gerontology who are engaged in research or administration for agencies concerned with the aged.

Co-Op Experiences

Some recent co-op positions held by sociology students include the following:

- Research Coordinator, West Philadelphia Community Center
- Counselor, Camden Youth Program
- Research Analyst, Philadelphia Stock Exchange
- Case Investigator, Howard County Police Department
- Assistant Copy Editor, Philadelphia Newspapers, Inc.

Visit the Drexel Steinbright Career Development Center (http://www.drexel.edu/scdc) page for more detailed information on co-op and post-graduate opportunities.

Minor in Sociology

The sociology minor is designed to give students specializing in other fields a broader knowledge of contemporary social issues and the ability to analyze them in a reasoned fashion. For students majoring in such fields as business and engineering, the minor helps develop skills in critical thinking that go beyond the acquisition of specialized, professional techniques. For students majoring in another area of the liberal arts, the minor offers the opportunity to place the issues raised in the major discipline within a larger social context.

Required Courses

SOC 250	Research Methods I	3.0
SOC 260 [WI]	Classical Social Theory	3.0
SOC 460 [WI]	Contemporary Social Theory	3.0
Select five of the following:		15.0
ANTH 220	Aging In Cross-Cultural Perspective	
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	
CJ 362	Gender, Crime and Justice	
SOC 110	Sociology of the Future	
SOC 115	Social Problems	
SOC 120	Sociology of the Family	
SOC 125	Sociology of Aging	
SOC 205	Criminology & Criminal Justice	
SOC 210	Race and Ethnic Relations	
SOC 215	Industrial Sociology	
SOC 220	Wealth and Power	
SOC 225	Sociology of Technology & Aging	
SOC 230	Women & Men in a Changing Society	
SOC 235	Sociology of Health	
SOC 310	Topics in Political Sociology	
SOC 320	Sociology of Deviant Behavior	
SOC 330	Developing Nations and the International Division of Labor	
SOC 335	Sociology of Education I	
SOC 336	Sociology of Education II	
SOC 340	Globalization	
SOC 350	Research Methods II	
SOC 470	Social Change & Planning	
Total Credits		24.0

Minor in Africana Studies

The minor in Africana studies was created to provide the opportunity for undergraduate students throughout the University gain an understanding of and background in the history and cultures of peoples of African descent in North and South America, the Caribbean, and Africa.

This interdisciplinary minor includes courses in anthropology, history, literature, music, political science, and sociology, and provides an opportunity for directed study in areas of particular interest to the students. The Africana studies minor has intrinsic intellectual value and helps prepare individuals to become contributors to an increasingly pluralistic society. At the same time, this minor allows students interested in business, the sciences, engineering, government, and social services to present to prospective employers a unique academic background.

Required Courses

AFAS 101	Introduction to Africana Studies	3.0
AFAS 201	Cross Currents in Africana Studies	3.0
Select six of the following: *		18.0
AFAS 250	African American Herstories	
AFAS 260	Race, Politics and Religion	
AFAS 295	Special Topics in Africana Studies	
AFAS 298	Independent Study for Minors	
AFAS 301	Politics of Hip Hop	
AFAS 385	Rum, Rice and Revolution: Caribbean History	
AFAS 395	Special Topics in Africana Studies	
AFAS 401	Urban Social Justice Practicum I	
AFAS 402	Urban Social Justice Practicum II	
ANTH 101	Introduction to Cultural Diversity	
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World	
ENGL 203 [WI]	Post-Colonial Literature I (WI)	
ENGL 204	Post-Colonial Literature II	
ENGL 325	Topics in World Literature **	
HIST 216	Freedom in America	
HIST 215	American Slavery	
MUSC 107	Jazz Ensembles	
MUSC 333	Afro-American Music USA	
PSCI 354	United States & the Third World	
PSCI 372	City in United States Political Development	
WMST 240	Women and Society in a Global Context	
WMST 280	Special Topics in Women's Studies ***	
Total Credits		24.0

* Students take an additional 18.0 credits including-but not limited to-the following courses. (Students must check with the Program Director for approval prior to making substitutions.)

** With a focus on the Caribbean, Latin America or the Diaspora.

*** With a focus on race or the Diaspora.

Minor in American Studies

American studies is an interdisciplinary approach to studying American life and culture. Drawing on the expertise and methodologies of a variety of subjects, American studies offers students the opportunity to examine their world critically and understand their place in it. American studies is an ideal minor for students planning for graduate work or professional careers in business, engineering, and law because it grounds these practical fields in a strong humanistic tradition.

Required Courses

PSCI 110	American Government I *	4.0
Select one of the following:		3.0
HIST 201	United States History to 1815	
HIST 202	United States History, 1815-1900	
HIST 203	United States History since 1900	
Two US History courses		
Some examples of US History courses include the following:		6.0
HIST 214	United States Civil Rights Movement	
HIST 215	American Slavery	
HIST 216	Freedom in America	
HIST 218	Race and Film in United States History	
HIST 220	History of American Business	
HIST 222	History of Work & Workers in America	
HIST 223	Women and Work in America	
HIST 224	Women in American History	
HIST 234	The United States Civil War	
Two US Government or US Politics courses		
Some examples of US Government or US Politics courses include the following:		6.0
PSCI 211	American Government II	
PSCI 220	Constitutional Law I	
PSCI 313	State & Local Government	
PSCI 330	Public Opinion & Propaganda	
PSCI 363	Constitutional Law II	
PSCI 364	Constitutional Law III	
PSCI 365	Politics, Law, & Justice	
PSCI 366	Supreme Court and American Politics	
Select two of the following:		6.0
ENGL 205 [WI]	American Literature I	
ENGL 206 [WI]	American Literature II	
MUSC 336	History of Jazz	
MUSC 338 [WI]	American Popular Music	
SOC 210	Race and Ethnic Relations	
SOC 341	Environmental Movements in America	
Total Credits		25.0

* Or, if a History or Political Science major, PSCI 110 may be substituted with a third course from the PSCI courses listed.

Minor in Astrophysics

Astrophysics brings together many disparate areas of physics—gravitational physics govern the evolution of galaxies and clusters, nuclear physics dominates the cores of stars, electromagnetism governs the radiation that we use to observe these objects. Students majoring in mathematics and computer Science, as well as other disciplines, are often fascinated by the questions raised by astrophysics. The minor in astrophysics requires a total of 26.0 credits in addition to the required prerequisite courses.

Because of the overlap in requirements between the astrophysics minor and the physics minor, (p. 72) students cannot minor in both.

Required Prerequisite Courses *		
PHYS 113	Contemporary Physics I	
PHYS 114	Contemporary Physics II	
PHYS 115	Contemporary Physics III	
Required Courses		
PHYS 217	Thermodynamics	4.0
PHYS 311	Classical Mechanics I	4.0
PHYS 231	Introductory Astrophysics	3.0
PHYS 232	Observational Astrophysics	3.0
PHYS 321	Electromagnetic Fields I	4.0
PHYS 409	Astrophysics Seminar **	2.0
PHYS 431	Galactic Astrophysics	3.0
PHYS 432	Cosmology	3.0
Total Credits		26.0

* PHYS 101, PHYS 102, or PHYS 201 will also satisfy the prerequisite requirements.

** Two terms, one credit each term.

Minor in Bioinformatics

The bioinformatics minor examines the application of computer technology and programming to biological fields such as genomics or proteomics. This multidisciplinary program is designed for students majoring in biomedical engineering, bioscience, computer science, information systems, or mathematics. Combination with other majors is possible through consultation with the program director. The minor is divided among courses in biology, programming and computation, human-computer interface design, databases, and statistics.

Students must complete a minimum of 24 credits of coursework as follows:

Core Courses		
BIO 331	Bioinformatics I	3.0
BIO 332	Bioinformatics II	3.0
Two Senior Research Project Courses *		

* Until research project courses are developed specifically for this minor, the department will accept whatever research project(s) the student has taken as part of their major under the number for that major.

Area-specific courses

In each of the following five areas, the requirements of a student's major cover some of the competencies for Bioinformatics, while the remaining requirements will be fulfilled within the minor itself.

A plan of study is determined by an Advisor in the Department of Biology based on the student's major field of study. Thus, the requirements for completing the minor are determined on a case-by-case basis. Possible options for area-specific courses include the following:

Bioscience		
BIO 107	Cells, Genetics & Physiology	3.0
BIO 108	Cells, Genetics and Physiology Laboratory	1.0
BIO 109	Biological Diversity, Ecology & Evolution	3.0
BIO 110	Biological Diversity, Ecology and Evolution Laboratory	1.0
BIO 449	Recombinant DNA Laboratory	5.0
Programming and Computation		
CS 171	Computer Programming I	3.0
CS 172	Computer Programming II	3.0
CS 260	Data Structures	3.0
INFO 102	Introduction to Information Systems	3.0
Human/Computer Interface Design		
CS 337	The Psychology of Human-Computer Interaction	3.0
INFO 110	Human-Computer Interaction I	3.0
Databases		
CS 461	Database Systems	3.0
INFO 200	Systems Analysis I	3.0
INFO 210	Database Management Systems	3.0
Statistics		
MATH 310	Probability and Statistics	4.0
MATH 311	Probability and Statistics I	4.0
MATH 312	Probability and Statistics II	4.0
MATH 410	Scientific Data Analysis I	3.0
MATH 411	Scientific Data Analysis II	3.0

Minor in Computer Crime

Computers have created new opportunities for crime and have affected the requisite capacity to commit criminal acts. The minor in computer crime provides students with an overview of the behavioral, legal, technical, and administrative issues faced by the criminal justice system and security communities in addressing crime involving computers and related networking technologies. The curriculum exposes students to state-of-the-art solutions used within the public and private sectors to respond to and prevent computer crime

Required Courses		
CJ 204	Criminology	3.0
CJ 206	Criminal Justice	3.0
CJ 274	Sex, Violence & Crime on the Internet	3.0
CJ 276	Introduction to Computer Crime	3.0
CJ 365	Computer Investigation and the Law	3.0
CJ 377	Intellectual Property Theft in the Digital Age	3.0
Additional Elective Courses		
Select two of the following:		6.0

CJ 265	Criminal Investigation	
CJ 266	Crime Prevention Planning	
CJ 267	Introduction to Security Studies	
CJ 273	Surveillance, Technology and the Law	
CJ 362	Gender, Crime and Justice	
CJ 375	Criminal Procedure	
CJ 380	Special Topics	
Total Credits		24.0

Minor in Ecology

The minor in ecology meets the needs of engineering, science, arts, applied arts, information, and business students interested in environmental science. Prior to taking ENVS 230 General Ecology, students are minimally expected to have had one term to a year of both general biology and general chemistry.

Required Courses

ENVS 212	Evolution	4.0
ENVS 230	General Ecology	3.0
ENVS 260	Environmental Science and Society	3.0
ENVS 284 [WI]	Physiological and Population Ecology	3.0
ENVS 285 [WI]	Population Ecology Laboratory	2.0
ENVS 286	Community and Ecosystem Ecology	3.0
ENVS 287	Community Ecology Laboratory	2.0
ENVS 328	Conservation Biology	3.0
Environmental Science elective		3.0-4.0
Total Credits		26.0-27.0

Minor in European Studies

This minor provides students with exposure to the historical, political, social, and cultural development of European civilization. The program focuses on the modern period, but students gain an awareness of the deep historical roots and currents on which the modern experience has been built.

Required Courses

HIST 162	Themes in World Civilization II	3.0
HIST 163	Themes in World Civilization III	3.0
PSCI 120	History of Political Thought	4.0
or PSCI 140	Introduction to Comparative Political Analysis	

European History Courses

Select three European History courses some examples are:		9.0
HIST 235	The Great War, 1914-1918	
HIST 236	World War II	
HIST 241	Modern France	
HIST 242	Modern Italy	
HIST 243	Germany & World of Hitler	
HIST 244	Twentieth Century Russia & the USSR	
HIST 246	England from Elizabeth to Waterloo, 1558-1815	
HIST 247	Modern England, 1815 - present	
HIST 250	European Revolutionary Movements and Ideology, 1815-1914	
HIST 251	Fascism	
HIST 252	Europe between Wars, 1919-1939	
HIST 258	History of Europe in the 19th Century	
HIST 259	History of Europe in the 20th Century	
Select two of the following:		6.0
ARTH 101	History of Art I: Ancient to Medieval	
ARTH 102	History of Art II: High Renaissance to Modern	
ARTH 103	History of Art- Early to Late Modern	
ENGL 200 [WI]	Classical to Medieval Literature	
ENGL 201	Renaissance to the Enlightenment	
ENGL 202 [WI]	Romanticism to Modernism	
ENGL 310 [WI]	Period Studies	
ENGL 315 [WI]	Shakespeare	
MUSC 231 [WI]	Music History I	
MUSC 232 [WI]	Music History II	
Total Credits		25.0

Minor in Greek Studies

The minor in Greek studies is designed to be interdisciplinary, with concentration on Mediterranean issues, focusing on and starting from the island of Crete. The minor consists of a minimum of 24.0 credits, 17.0 of which are elective courses chosen with a focus on Greek studies. Because the scope of the minor embraces Hellenism from antiquity to today, students may select their electives depending on the aspect of Greek studies they desire to focus on (for example, mythology, philosophy, performance).

Required Courses

ANTH 212	Topics in World Ethnography (When Offered as Anthropology of the Mediterranean)	3.0
or GREC 212	Introduction to Greek Folklore	
Select one of the following:		4.0
GREC 101	Modern Elementary Greek I	
GREC 102	Modern Elementary Greek II	
GREC 103	Modern Elementary Greek III	
GREC 201	Intermediate Modern Greek I	

Greek Studies Electives

Select 17.0 credits from the following:

ANTH 212	Topics in World Ethnography (When offered as Anthropology of the Mediterranean.) *
ANTH 380	Special Topics in Anthropology (When offered as Archaeology of the Eastern Mediterranean.)
ARTH 101	History of Art I: Ancient to Medieval
ENGL 200 [WI]	Classical to Medieval Literature
ENGL 323	Literature and Other Arts (When offered as Iphigenia to Arta)
ENGL 325	Topics in World Literature (When offered as Greek Literature/Poetry)

ENGL 335	Mythology
GREC 101	Modern Elementary Greek I *
GREC 102	Modern Elementary Greek II *
GREC 103	Modern Elementary Greek III *
GREC 201	Intermediate Modern Greek I *
GREC 212	Introduction to Greek Folklore *
GREC 225	Introduction to Greek Music & Dance
GREC 380	Special Topics in Greek Studies
GREC 399	Independent Study in Greek
HIST 280	History of Science: Ancient to Medieval
INTB 338	Regional Studies in Economic Policies and International Business (When offered as Mediterranean Economy)
MUSC 380	Special Topics in Music (When offered as Mediterranean Ensemble)
PHIL 212	Ancient Philosophy
PHIL 421 [WI]	Seminar in Ancient Philosophy
Drexel in Crete Study Abroad Program Course Offerings	
IAS 360	Special Topics in World Civilization
ANTH 380	Special Topics in Anthropology (When offered as Crete Through the Looking Glass)
GREC 280	Communicate in Greek: Philoxenia
GREC 313	Greek History, Economy & Society
Total Credits	7.0

* Students may only select this course as a Greek Studies elective if it was not already chosen as fulfilling one of the required course options.

Study Abroad in Crete

The Drexel in Crete Program is open to Drexel students scheduled for class during the summer term. This 12-credit program consists of four 3-credit courses. Visit the Drexel in Crete Study Abroad Program website for additional information.

Additional Information

For more information about the Minor in Greek Studies, contact the program director:

Maria Hnaraki, PhD
Program Director
Department of Culture & Communication
College of Arts and Sciences, Drexel University
mh439@drexel.edu
grkstud@drexel.edu
215.895.6143

Minor in Human Factors and Ergonomics

This minor is intended to meet the needs of the students who have an interest in any type of design and who recognize the importance of taking account of human characteristics, both strengths and weaknesses, in the design of artifacts intended for human use (e.g., equipment, computer software, consumer products, and even entire work environments).

The minor should also be of particular interest to students who have an interest in doing graduate work in human factors, ergonomics, industrial design, etc.

Entry into the minor requires that general psychology (or an equivalent introductory course) be taken as a prerequisite. Students who have completed PSY 101 and who are interested in a minor in Psychology are expected to meet with a Psychology Department faculty member to discuss the selection of appropriate courses. No more than three courses that are required for a student's major can count towards fulfilling requirements for the minor.

Required Prerequisite		
General Psychology course (PSY 101 or equivalent)		
Required Courses		
PSY 212	Physiological Psychology	3.0
PSY 213	Sensation and Perception	3.0
PSY 250 [WI]	Industrial Psychology	3.0
PSY 330	Cognitive Psychology	3.0
PSY 332	Human Factors and Cognitive Engineering	3.0
PSY 337	Human-Computer Interaction	3.0
PSY 360 [WI]	Experimental Psychology	3.0
BMES 330	Biological Rhythm in Pharmacology and Toxicology	3.0
Select one course from the following:		
BMES 350	Med & Bio Effects Of Light	
BMES 411	Chronoengineering I: Biological Rhythms in Health and Performance	
BMES 412	Chronoengineering II: Sleep Functions in Health and Performance	
PSY 150	Introduction to Social Psychology	
PSY 230	Psychology of Learning	
PSY 310	Drugs & Human Behavior	
PSY 340	Psychological Testing and Assessment	
PSY 350	Advanced Social Psychology	
Total Credits		24.0

The Louis Stein Minor in Judaic Studies

The Louis Stein Minor in Judaic Studies program, housed within the College of Arts and Sciences, is designed to give students the opportunity to explore and understand the history, culture, politics, and religion of the Jewish people. Through interdisciplinary coursework and directed field study, students investigate the Jewish experience from both a contemporary and a historical perspective.

The Louis Stein Minor in Judaic Studies program requires 24.0 credits: 9.0 from required courses, and 15.0 from electives. Students can apply a maximum of 6.0 credits toward the minor from field study under the supervision of the academic advisor.

Required Courses		
JUDA 201	Jewish Literature and Civilization *	3.0
JUDA 202	Jewish Life and Culture in Middle Ages **	3.0

JUDA 203	Modern Jewish History †	3.0
Minor electives		15.0
Total Credits		24.0

* Offered concurrently with ENGL 350 Jewish Literature and Civilization.

** Offered concurrently with HIST 253 Jewish Life and Culture in the Middle Ages.

† Offered concurrently with HIST 249 Modern Jewish History.

Courses offered as electives have included:

- JUDA 211 American Jewish Experience
- JUDA 212 Contemporary Jewish Life
- JUDA 213 Jewish Cultural Tapestry
- JUDA 214 Language and Cultural Diversity in the USA
- JUDA 215 Reconstructing History After Genocide
- JUDA 216 Yiddish Literature and Culture
- JUDA 280 Special Topics in Judaic Studies
- JUDA 298 Field Work in Judaic Studies
- ANTH 120 Independent Study in Judaic Studies
- ANTH 120 Biblical Archeology
- ANTH 380 Archeology of the Middle East
- HBRW 101 Introduction to Hebrew I
- HBRW 102 Introduction to Hebrew II
- HBRW 103 Introduction to Hebrew III
- HBRW 201 Intermediate Hebrew IV
- HBRW 202 Intermediate Hebrew V
- HBRW 203 Intermediate Hebrew VI
- ENGL 395 [WI] Jewish Women in Literature and History
- ENGL 323 Holocaust Testimonies
- ENGL 345 Jewish American Writers
- ENGL 325 Israeli Literature & Culture
- LANG 180 Yiddish Language I
- LANG 180 Yiddish Language II

Kathleen Carll
Associate Director
Judaic Studies Program
215-895-6388
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Professor Rakhmiel Peltz
Director of Judaic Studies
215-895-1499
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The Judaic Studies Program offices are located in Room 331 of Hagerty Library.

Minors in Modern Languages

24.0 quarter credits of language study above the 103 level.

Minors in Arabic, Chinese, French, German, Italian, Japanese, Korean, Russian, and Spanish are offered. All beginner and intermediate courses are oral-intensive, with additional hours required with online coursework. Advanced courses focus on writing skills and do not always require lab work. Arabic, Chinese, Japanese, Korean and Russian include individual oral examinations at the end of each term.

In Western languages, enrollments are limited to 15 to 18 students in the first two years of study; third and fourth-year courses use a seminar format, with a usual enrollment of four to eight students. Arabic, Chinese, Japanese, Korean, and Russian are taught in a tutorial or "self-instructional" format, with enrollments limited to three to six students. Examinations in these languages are primarily oral and are administered by external examiners appointed by the University. All instructors in Arabic, Chinese, Japanese, Korean, and Russian, and most instructors in Western languages are native speakers.

Language study is open to all undergraduate students in the University, and validation of minimal language competence is required for co-operative education placement abroad in countries where English is not the national language. Study for two or three consecutive terms at or above 201 is the minimum requirement for the BA degree, as a total of 8 credits must be completed, but additional language course work is required by most departments offering this degree.

Students are placed in language courses in accordance with language placement testing administered during freshman orientation and at the beginning of each quarter. Students who do not take advantage of this option must comply with the department's enrollment guidelines.

Course Descriptions

- Arabic (http://catalog.drexel.edu/coursedescriptions/quarter/undergrad/arbc)
- Chinese (p. 135)
- French (p. 158)
- German (p. 160)
- Greek (p. 162)
- Hebrew (p. 162)
- Italian (p. 169)
- Japanese (p. 171)
- Korean (p. 173)
- Russian (p. 199)
- Spanish (p. 203)

Certification of Proficiency

Drexel offers an advanced-level Certification of Proficiency for students who have successfully completed 24 credits of coursework and passed the series of written Proficiency examinations and an extensive FSI/ACTFL oral examination with at least an FSI "2" or ACTFL "Advanced" rating. Certification is listed on the student transcript. The different Proficiency exams can be taken once the student has satisfactorily passed the Achievement Test. They are also the prerequisite before starting a minor thesis.

Western languages

- 24 credits of language study above the 103 level
- Certification of Proficiency
- Minor thesis in the target language (1.0-4.0 credits possible)
- Oral defense of the minor thesis

Advanced Conversation and Composition	
201-203	
Stylistics, Advanced Stylistics	

311 WI	
312 WI	
411	
Literature, Advanced Studies in Literature	
332	
333	
Business and the Professions	
351	
Advanced Topics in Business and Professions: European Union	
451	
Advanced Studies in Civilization	
371	
471 WI	
Special Topics: Business and Civilization (may be repeated for credit.)	
399 WI	
499 WI	

Non-western languages

- 24 credits of language study above the 103 level
- Minor thesis in the target language (1.0-4.0 credits possible)
- Oral defense of the minor thesis

Course options (subject to placement level)

Advanced reading, writing, and speaking. Levels IV-VI		
201-203		
Stylistics, Levels VII-IX		
301-303		
Advanced Independent Study		
399 WI		
Introduction to Stylistics, Literature		
411 WI		
431 WI		
Introduction to Business		
451		
FREN 451	Special Studies in Advanced Business and Professional French	4.0
RUSS 499	Independent Study in Russian	12.0

Additional Information

For more information about all language minors, contact the Program Director:
Dr. Simone Schlichting-Artur
215.895.2443
schlichs@drexel.edu

Minor in Paralegal Studies

The minor in paralegal studies will no longer be accepting students, beginning fall term of 2013.

The minor in paralegal studies provided instruction in legal research and writing, a background in the structure of the courts and government agencies, as well as additional preparation for the paralegal profession. The minor consisted of four required courses and four electives. While most employers do not require certification, students completing the program can sit for the two-day National Association of Legal Assistants (NALA) examination. Those passing this examination are entitled to use the certified Legal Assistant (CLA) designation.

Required Courses

BLAW 201	Business Law I	4.0
CJ 381	Legal Research and Writing I	3.0
CJ 382	Legal Research and Writing II	3.0
CJ 276	Introduction to Computer Crime	3.0
Additional Elective Courses		
Select four of the following:		12.0-14.0
BLAW 202	Business Law II	
BLAW 330	Real Estate (pre-req BLAW 202)	
CJ 274	Sex, Violence & Crime on the Internet	
CJ 377	Intellectual Property Theft in the Digital Age	
COM 345	Intercultural Communication	
PSCI 220	Constitutional Law I	
PSY 370	Forensic Psychology	
Total Credits		25.0-27.0

Minor in Politics

Required Courses

Select three of the following:		12.0
PSCI 100	Introduction to Political Science	
PSCI 110	American Government I	
PSCI 120	History of Political Thought	
PSCI 130	Research Methods in Political Science I	
PSCI 140	Introduction to Comparative Political Analysis	
PSCI 150	International Politics	
Political Science Electives		
12.0 credits of any additional 200-level or higher PSCI courses.		12.0
Total Credits		24.0

Minor in Science, Technology and Human Affairs

This minor affords students the opportunity to obtain in-depth exposure to the political and social issues related to modern science and technology. The program provides knowledge and skills useful in many areas of professional employment or as preparation for graduate and professional study.

Required Courses

HIST 280	History of Science: Ancient to Medieval	3.0
HIST 281	History of Science: Enlightenment to Modernity	3.0
Select three History or Politics courses in science or technology		9.0
Some examples of HIST or PSCI courses in this category include:		
HIST 220	History of American Business	
HIST 222	History of Work & Workers in America	
HIST 282	History of Science: Medieval to Enlightenment	
HIST 285	Technology in Historical Perspective	

HIST 286	Exploration in Technology and Gender	
HIST 292	Technology in American Life	
PSCI 331	Environmental Politics	
PSCI 370	Topics in Public Policy	
PSCI 372	City in United States Political Development	
Select three of the following:		9.0
ANTH 210 [WI]	Worldview: Science, Religion and Magic	
ANTH 240	Urban Anthropology	
ANTH 355	Anthropology of Cyberspace	
ENGL 300 [WI]	Literature & Science	
ENGL 302	Environmental Literature	
PHIL 311	Computer Ethics	
PHIL 351	Philosophy of Technology	
PHIL 361	Philosophy of Science	
SOC 110	Sociology of the Future	
SOC 215	Industrial Sociology	
Total Credits		24.0

Minor in Women's Studies

The minor in women's studies is intended to give students a broad, interdisciplinary understanding of the ways in which gender interacts with race, age, class, and sexual orientation to shape human consciousness and the social, political, and cultural organization of society. In addition, the minor is intended to enrich the educational experience of students. It may also provide both men and women with tools for understanding and coping with the larger societal systems in which they must operate as both students and professionals. Because business and industry are increasingly sensitive to issues such as sex discrimination, sexual harassment, equal pay for comparable work, parental leave, and day care, students with a minor in women's studies will have a definite edge over other applicants for managerial and policy-making positions.

Required Courses

WMST 101	Introduction to Women's Studies	3.0
WMST 301	Seminar in Feminist Theory	3.0
Approved Electives *		
Select six of the following:		18.0
CJ 274	Sex, Violence & Crime on the Internet	
CJ 275	Issues in Domestic Violence	
CJ 362	Gender, Crime and Justice	
ENGL 355 [WI]	Women and Literature	
HIST 224	Women in American History	
HIST 586	Explorations in Technology and Gender **	
PSCI 573	Gender, Race and Science **	
PSY 356	Women's Health Psychology	
SOC 230	Women & Men in a Changing Society	
WMST 230	Arab Women Writers	
WMST 235	African Francophone Women Writers	
WMST 240	Women and Society in a Global Context	
WMST 250	African American Herstories	
WMST 275	Women's Health & Human Rights	
WMST 280	Special Topics in Women's Studies	
WMST 299	Independent Study in Women's Studies	
WMST 308	Queer Theory	
WMST 320	Masculinities	
Total Credits		24.0

* Chosen from an approved list including departmentally cross-linked courses and WMST 280 (Special Topics) courses.

** By permission only.

Minor in World History and Politics

This minor introduces students to the historical and political development of societies beyond the American and European context. The 20th-century experiences of decolonization, modernization, and development in Africa, Asia, Latin America, and the Islamic world are given special attention.

Required Courses

Select one of the following:		3.0
HIST 162	Themes in World Civilization II	
HIST 163	Themes in World Civilization III	
HIST 267	Twentieth Century World I	
HIST 268	Twentieth Century World II	
Two Upper-Level World History Courses		6.0
Some examples of upper-level World History courses are:		
HIST 238	The Vietnam War	
HIST 244	Twentieth Century Russia & the USSR	
HIST 254	Russian History Before 1900	
HIST 263	The World and China	
HIST 264	East Asia in Modern Times	
HIST 270 [WI]	Introduction to Latin American History	
HIST 271	History of Mexico	
HIST 272	Ancient and Colonial Mexico	
HIST 273	Modern Mexico	
HIST 274	Conquest of Mexico	
Three International Political Science Courses		9.0-10.0
Some examples of international Political Science courses are:		
PSCI 150	International Politics	
PSCI 240	Comparative Government	
PSCI 323	Comparative Political Thought	
PSCI 340	Politics of Developing Nations	
PSCI 344	Introduction to 20th Century Middle East	
PSCI 345	Comparative Politics of the Middle East	
PSCI 351	International Organizations	
PSCI 352	Ethics and International Relations	
PSCI 353	International Human Rights	
PSCI 358	Political Economy of Japan	
PSCI 377	Politics of Latin America	
Additional Requirements		
Two courses, one course each from two of the following areas:		6.0

English	
ENGL 203 [WI]	Post-Colonial Literature I
ENGL 204	Post-Colonial Literature II
ENGL 325	Topics in World Literature
Economics	
ECON 342	Economic Development
Anthropology, International Area Studies, Sociology	
ANTH 101	Introduction to Cultural Diversity
ANTH 210 [WI]	Worldview: Science, Religion and Magic
ANTH 310	Societies In Transition: The Impact of Modernization and the Third World
IAS 360	Special Topics in World Civilization
SOC 330	Developing Nations and the International Division of Labor
Music	
MUSC 331	World Musics
Art History	
Any Appropriate Art History (ARTH) course	
Total Credits	24.0-25.0

Certificate in Medical Humanities

The Certificate Program in Medical Humanities is designed for students majoring in any of the biological sciences, health professions including biomedical engineering, nursing and public health,the humanities, and the social sciences, with the aim of promoting dialogue and mutual appreciation for various approaches to health related issues.

The wide range of applicable courses within designated disciplines fosters an interdisciplinary context for investigating the many challenges within medicine and caregiving. This format ,in turn,encourages students to explore illness, disability, dying and healing as *human* experiences and to evaluate some of the limitations of an exclusively scientific perspective on medical practice and research.

A three credit introductory seminar (HUM 315) and a concluding Capstone Seminar (ENGL 470) further provide intellectual cohesiveness and a sense of community among students enrolled in the program. Both co-directors of the program and other student advisors will help students choose courses best suited for their personal and professional interests.Note that most courses applicable to the program also fulfill humanities electives for other majors and that courses may change as departments offer more options.

Opportunities

Those students who successfully complete the program will receive a certificate in medical humanities. This certificate highlights the student's proficiency in an interdisciplinary approach to health related issues not easily attainable through isolated courses.

Additional information

For additional information, contact the program directors:

Emilie S. Passow, PhD
Department of English and Philosophy
College of Arts and Sciences, Drexel University
ep43@drexel.edu

Stacey Ake, PHD (biology), PHD (philosophy)
Department of English and Philosophy
College of Arts and Sciences, Drexel University
sea29@drexel.edu

Required Courses

HUM 315	Perspectives in Medical Humanities	3.0
ENGL 470	Capstone Seminar in Medical Humanities	3.0
Select one of the following literature courses:		3.0
ENGL 360 [WI]	Literature and Society (Portrayals of Mental Disorders)	
ENGL 370	Topics in Literature and Medicine (Illness and Healing in Literature)	
ENGL 370	Topics in Literature and Medicine (The Physician in Literature and Film)	
ENGL 370	Topics in Literature and Medicine (Health Matters in Drama)	
Select one of the following philosphy courses:		3.0
PHIL 251	Ethics	
PHIL 321	Biomedical Ethics	
PHIL 355	Philosophy of Medicine	
PHIL 361	Philosophy of Science	
Select two courses from the following:		6.0
AFAS 395	Special Topics in Africana Studies (Race, Disease, and History)	
AFAS 395	Special Topics in Africana Studies (HIV/Aids in Africa)	
ANTH 210 [WI]	Worldview: Science, Religion and Magic	
ANTH 220	Aging In Cross-Cultural Perspective	
ARTH 320	Art in the Age of Technology	
ARTH 465 [WI]	Special Topics in Art History	
BIO 212	Biotechnology	
BMES 338	Biomedical Ethics and Law	
ENVS 321	Environmental Health	
HIST 280	History of Science: Ancient to Medieval	
HIST 285	Technology in Historical Perspective	
PSY 242	Psychology of Disability	
PSY 244	Culture and Personality	
PSY 252	Death and Dying	
PSY 356	Women's Health Psychology	
SOC 120	Sociology of the Family	
SOC 125	Sociology of Aging	
SOC 225	Sociology of Technology & Aging	
SOC 235	Sociology of Health	
Total Credits		18.0

Philosophy in Science and Technology Certificate

The Philosophy in Science and Technology Certificate is open to all students. It provides an option for those who do not have room to minor or double-major in philosophy, and who wish to explore the philosophical dimensions of the sciences and technology in particular.

Required Courses

PHIL 101	Introduction to Western Philosophy	3.0
PHIL 105	Critical Reasoning	3.0
PHIL 107	Philosophy and Knowledge Organization	3.0
PHIL 351	Philosophy of Technology	3.0
PHIL 355	Philosophy of Medicine	3.0
Select one of the following:		3.0
PHIL 361	Philosophy of Science	
PHIL 371	Philosophy of Social Sciences	
Total Credits		18.0

Philosophy in Arts & Humanities Certificate

The Philosophy in the Arts & Humanities Certificate is open to all students. It provides an option for those who do not have room to minor or double-major in philosophy, but who wish to explore the philosophical dimensions of the arts and humanities in particular.

Required Courses		
PHIL 101	Introduction to Western Philosophy	3.0
PHIL 105	Critical Reasoning	3.0
PHIL 107	Philosophy and Knowledge Organization	3.0
PHIL 231	Aesthetics	3.0
PHIL 381 [WI]	Philosophy in Literature	3.0
Select one of the following:		3.0
PHIL 385	Philosophy of Law	
PHIL 391	Philosophy of Religion	
Total Credits		18.0

Certificate in Writing and Publishing

About the program

The certificate in writing and publishing (CWP) offers the opportunity for both professional and personal development through a combination of available courses in professional writing, creative writing and publishing. The certificate enhances employment opportunities, opening a broad range of professional choices in cooperative employment and in the post-degree job market as skills are acquired. The CWP improves on-the-job performance, as the student develops writing skills and associated professional knowledge.

The program develops core competencies through the synergy of writing and publishing courses. The courses develop the student's skills in writing and publishing both through theory and practical application.
The program has three tracks, each of which leads to a certificate:

- The certificate in professional writing and publishing
- The certificate in creative writing and publishing
- The comprehensive certificate in writing and publishing

Working with an advisor, students will choose not only the track but the courses within the track to develop an individually tailored program. Students can choose courses that will meet the general requirements of the program, while also satisfying their own professional and personal requirements.

Those students who have successfully completed this program will receive a certificate in writing and publishing. The transcript will indicate the completion of the CWP. This certification will indicate proficiency in written communication and familiarity with techniques in publishing in a variety of venues. The certificate program in writing and publishing highlights the student's acquisition of skills more than they would be in a list of courses on a transcript.

The completion of the certificate demonstrates the student's commitment to writing and publishing skills. It highlights writing skills of students majoring in business and technical areas; similarly, for students in the humanities and social sciences, it certifies writing and publishing skills, either in creative writing or professional writing.

General requirements

The certificate in writing and publishing allows students to achieve certification in one or more of the following tracks:

- professional writing and publishingc
- creative writing and publishing
- comprehensive writing and publishing

Each track requires the completion of a minimum of six courses (18.0 credits). Tracks can be designed to meet the professional needs and personal interests of the individual student. Students meet with one of the two program co-directors to determine their track:

Harriet Levin Millan
Director, Certificate in Writing and Publishing
harriet.levin.millan@drexel.edu

Henry Israeli
Associate Director, Certificate in Writing and Publishing
hpi22@drexel.edu

Track Requirements

The professional writing and publishing track offers three options: business communication and publishing; technical communication and publishing; and journalism. This track is useful for business majors or students in technical or science areas who want to highlight their acquisition of writing skills. For students majoring in the humanities it provides an opportunity to develop areas of writing and publishing competencies in the professional arena. The creative writing and publishing track, is useful to all students as it encourages personal and professional development through creative writing and a knowledge of publishing. The comprehensive track is for students who do not wish to specialize in either of the other two tracks.

Note: Many majors already require one or more of the courses leading to the certificate in writing and publishing or list these courses as recommended electives

Professional Writing and Publishing Track

18.0 quarter credits

The professional writing and publishing track is useful for business majors or students in technical or science areas who want to highlight their acquisition of writing skills. For students majoring in the humanities it provides an opportunity to develop areas of writing and publishing competencies in the professional arena.

This track offers three focus options:

- business communication and publishing: for students interested in a career in business.
- technical communication and publishing: for students interested in engineering, science, information science and technology and careers in higher education.
- journalism: for students interested in global journalism and international affairs.

Business Communication and Publishing

Required Courses		
COM 270 [WI]	Business Communication	3.0
COM 350 [WI]	Message Design and Evaluation	3.0
or COM 375	Grant Writing	
Select one of the following:		3.0
COM 320 [WI]	Science Writing	
COM 420	Technical Editing	
COM 380	Special Topics in Communication Theory	
Select one of the following:		3.0

WRIT 400	Writing in Cyberspace	
WRIT 310	Literary Editing & Publication	
COM 335	Electronic Publishing	
COM 340	Desktop Publishing	
Select two of the following:		6.0
COM 260 [WI]	Fundamentals of Journalism	
COM 300 [WI]	On-line Journalism	
COM 315	Investigative Journalism	
COM 390 [WI]	Global Journalism	
WRIT 220 [WI]	Creative Nonfiction Writing	
WRIT 225 [WI]	Creative Writing	
WRIT 301 [WI]	Writing Poetry	
WRIT 302	Writing Fiction	
WRIT 303	Writing Humor and Comedy	
WRIT 304 [WI]	Special Topics in Writing	
WRIT 306	Writing About the Media	
Total Credits		18.0

Technical Communication and Publishing

Required Courses

COM 310 [WI]	Technical Communication	3.0
COM 375 [WI]	Grant Writing	3.0
Select one of the following:		3.0
COM 320 [WI]	Science Writing	
COM 350 [WI]	Message Design and Evaluation	
COM 380	Special Topics in Communication Theory	
COM 420	Technical Editing	
Select one of the following:		3.0
WRIT 310	Literary Editing & Publication	
WRIT 400	Writing in Cyberspace	
COM 335	Electronic Publishing	
COM 340	Desktop Publishing	
Select any two additional Certificate in Writing and Publishing courses, including but not limited to the following:		6.0
COM 260 [WI]	Fundamentals of Journalism	
COM 300 [WI]	On-line Journalism	
COM 390 [WI]	Global Journalism	
COM 315	Investigative Journalism	
WRIT 220 [WI]	Creative Nonfiction Writing	
WRIT 301 [WI]	Writing Poetry	
WRIT 302	Writing Fiction	
WRIT 303	Writing Humor and Comedy	
WRIT 304 [WI]	Special Topics in Writing	
WRIT 306	Writing About the Media	
Total Credits		18.0

Journalism

Required Courses

COM 260 [WI]	Fundamentals of Journalism	3.0
Select two of the following:		6.0
COM 300 [WI]	On-line Journalism	
COM 315	Investigative Journalism	
COM 390 [WI]	Global Journalism	
Select one of the following:		3.0
WRIT 310	Literary Editing & Publication	
WRIT 400	Writing in Cyberspace	
COM 335	Electronic Publishing	
COM 340	Desktop Publishing	
Select any two additional Certificate in Writing and Publisning courses, including but not limited to the following:		6.0
COM 270 [WI]	Business Communication	
or COM 310	Technical Communication	
COM 320 [WI]	Science Writing	
COM 375 [WI]	Grant Writing	
COM 420	Technical Editing	
WRIT 220 [WI]	Creative Nonfiction Writing	
WRIT 225 [WI]	Creative Writing	
WRIT 301 [WI]	Writing Poetry	
WRIT 302	Writing Fiction	
WRIT 303	Writing Humor and Comedy	
WRIT 304 [WI]	Special Topics in Writing	
WRIT 306	Writing About the Media	
Total Credits		18.0

Creative Writing and Publishing track

18.0 quarter credits

This track is designed for students who want to develop their creative writing skills either for personal development and expression, or because they recognize that creative writing develops imagination; sharpens clarity of expression; and enhances sensitivity to other people. Creative writing is a good pre-professional concentration for pre-law, pre-med, and the social sciences. The importance of creative writing has been recognized for engineering and for business.

Select three of the following (one of which must be a 200-level course):		9.0
WRIT 220 [WI]	Creative Nonfiction Writing	
WRIT 225 [WI]	Creative Writing	
WRIT 301 [WI]	Writing Poetry	
WRIT 302	Writing Fiction	
WRIT 303	Writing Humor and Comedy	
WRIT 304 [WI]	Special Topics in Writing	
WRIT 306	Writing About the Media	
Select one of the following:		3.0
WRIT 310	Literary Editing & Publication	
WRIT 400	Writing in Cyberspace	
WRIT 405	Internship in Literary Publishing *	
COM 335	Electronic Publishing	
COM 340	Desktop Publishing	
COM 350 [WI]	Message Design and Evaluation	
Select any two additional Certificate in Writing and Publishing courses, including but not limited to the following:		6.0
COM 260 [WI]	Fundamentals of Journalism	
COM 300 [WI]	On-line Journalism	
COM 390 [WI]	Global Journalism	

COM 315	Investigative Journalism	
COM 270 [WI]	Business Communication	
COM 310 [WI]	Technical Communication	
COM 320 [WI]	Science Writing	
COM 350 [WI]	Message Design and Evaluation	
COM 420	Technical Editing	
COM 375 [WI]	Grant Writing	
Total Credits		18.0

* WRIT 405 must be taken twice if no other publishing course is taken.

Comprehensive Certificate track

18.0 quarter credits

The Comprehensive Track is designed for students whose majors and minors include writing courses (either as electives or required courses) and whose schedules allow for the additional credits to obtain certification.

Select two of the following:		6.0
WRIT 310	Literary Editing & Publication	
WRIT 400	Writing in Cyberspace	
WRIT 405	Internship in Literary Publishing *	
COM 335	Electronic Publishing	
COM 340	Desktop Publishing	
Select two of the following: **		12.0
Creative Writing		
Track A		
WRIT 220 [WI]	Creative Nonfiction Writing	
Any 300-level writing (WRIT) course		
Track B		
WRIT 225 [WI]	Creative Writing	
Any 300-level writing (WRIT) course		
Professional Writing		
Track A		
COM 310 [WI]	Technical Communication	
COM 420	Technical Editing	
or COM 375	Grant Writing	
Track B		
COM 270 [WI]	Business Communication	
COM 375 [WI]	Grant Writing	
or COM 350	Message Design and Evaluation	
Journalism		
COM 260 [WI]	Fundamentals of Journalism	
Select one of the following:		
COM 300 [WI]	On-line Journalism	
COM 315	Investigative Journalism	
COM 390 [WI]	Global Journalism	
Total Credits		18.0

* WRIT 405 Must be taken twice.

** Students select two of the following course sequences from at least two different categories

About the College of Arts and Sciences: Graduate

About the College

The College of Arts and Sciences is committed to providing high-quality education in the humanities, social sciences, natural sciences and mathematics.

By pursuing excellence in research and scholarship, we train our graduate students to become ethical professionals with expertise in particular areas of inquiry and an appreciation for the fundamental interactions among disciplines in a fast-changing, challenging, and diverse world.

The College of Arts and Sciences (http://drexel.edu/coas) was established in 1990, with the merger of the College of Sciences and the College of Humanities and Social Sciences. The college's educational objectives encompass a wide range of goals: to provide interdisciplinary study in the arts and sciences for our Bachelor of Science and Bachelor of Arts majors; to provide general educational courses for the University's undergraduates; to offer Master of Science and Doctoral programs in selected areas of faculty and research strength; to promote research, teaching, and creative activities that cross disciplinary boundaries and enhance faculty expertise and the quality of the University's instruction; and to improve the quality of life for the University's community through co-curricular research and programming in the arts and sciences.

Majors

- Biological Sciences (MS, PhD) (p. 95)
- Chemistry (MS, PhD) (p. 96)
- Communication (MS) (p. 98)
- Communication, Culture and Media (PhD) (p. 98)
- Environmental Policy (MS) (p. 101)
- Environmental Science (MS, PhD) (p. 102)
- Mathematics (MS, PhD) (p. 103)
- Physics (MS, PhD) (p. 104)
- Psychology (MS, PhD) (p. 107)
- Psychology-Law (PhD/JD) (p. 111)
- Public Policy (MS) (p. 112)
- Publication Management (MS) (p. 113)
- Science, Technology and Society (MS) (p. 114)

English Language Center

As part of the College of Arts and Sciences, Drexel's English Language Center (http://www.drexel.edu/elc) offers an intensive English program throughout the year. In addition to classes in academic skills such as essay writing and oral presentations, the Center offers courses in business English, English for academic purposes, computer skills in English, TOEFL preparation, and other subjects. Many graduate students begin their studies at Drexel in the English Language Center, particularly if they do not meet minimum TOEFL requirements (see the Special Language Enhancement Program, described below).

Interested applicants may contact the English Language Center at 215-895-2022; fax: 215-895-6775; e-mail: elc@ drexel.edu

The Special Language Enhancement Program

Students who have good academic qualifications but whose TOEFL scores are below the minimum required by their department may be accepted to Drexel through the Special Language Enhancement Program (SLEP). The program includes English language study, Drexel courses, and academic advising.

Biological Sciences

Master of Science: 45.0 quarter credits
Doctor of Philosophy: 90.0 (post-bachelor's) or 45.0 (post-master's) quarter credits

About the Program

The Department of Biology (http://www.drexel.edu/biology) offers graduate programs in biological sciences leading to the doctorate degree and to the thesis or non-thesis master of science degree. The curricula and research programs are designed to help students achieve success in their degree programs and pursue positions of leadership in their respective fields of research.

The intellectual life of the department relies heavily on the participation, creativity and the energy of graduate students, therefore the department expects students to be vigorously involved in courses, seminars, journal clubs, research, informal discussions, and departmental function.

MS in Biological Sciences

Degree Requirements

Soon after matriculation the student completes a plan of study with the advisor, outlining his or her specific program. Both thesis and non-thesis options are available. Conducting formal research necessary for the thesis is dependent upon the student finding a faculty member whom will serve as their faculty advisor and supervise a mutually agreed upon research project.

Students wishing to pursue PhD candidacy are encouraged to elect the MS with thesis. After all other requirements are completed, the research MS student defends the thesis at a final oral examination. The non-thesis student takes a comprehensive examination.

Requirements for the MS Curriculum with Thesis

BIO 500	Biochemistry I	3.0
BIO 532	Advanced Cell Biology	3.0
BIO 540	Readings in Molecular and Cellular Bioscience and Biotechnology	3.0
BIO 601	Research Methods	3.0
BIO 635	Advanced Genetics and Molecular Biology	3.0
BIO 679	Issues in Scientific Research	3.0
BIO 997	Research in Bioscience	9.0
ENVS 506	Biostatistics	3.0
Five Bioscience (BIO) or Environmental Science (ENVS) electives		15.0
Total Credits		45.0

Requirements for the Non-thesis MS Curriculum

BIO 500	Biochemistry I	3.0
BIO 532	Advanced Cell Biology	3.0
BIO 635	Advanced Genetics and Molecular Biology	3.0
BIO 679	Issues in Scientific Research	3.0
ENVS 506	Biostatistics	3.0
Bioscience (BIO) or Environmental Science (ENVS) electives *		30.0
Total Credits		45.0

* *Non-thesis students may elect to take up to 4 credits of BIO 997 Research in Bioscience.

Bioscience Electives Include:

BIO 530	Microbial Genetics	5.0
BIO 566	Endocrinology	4.0
BIO 610	Biochemistry of Metabolism	3.0
BIO 615	Proteins	3.0
BIO 620	Biomembranes	3.0
BIO 625	Nucleic Acids	3.0
BIO 631	Bioinformatics I	3.0
BIO 644	Human Genetics	3.0
BIO 646	Stem Cell Research	3.0
BIO 649	Recombinant DNA Laboratory	5.0
BIO 650	Virology	3.0
BIO 663	Molecular Mechanisms of Neurodegeneration	3.0
BIO 670	Medical Microbiology	3.0
BIO 675	Advanced Immunology	3.0
BIO 680	Special Topics	9.0

PhD in Biological Sciences

The Doctor of Philosophy in Biological Sciences program is conferred in recognition of breadth of scholarship and scientific attainment plus demonstrated ability to complete original research.

The following general requirements must be satisfied in order to complete the PhD program in Biological Sciences:

- 90 (post-bac) or 45 (post-MS) credit hours total
- establishing a plan of study
- 7 core courses
- additional courses dependent on advisor or committee recommendations
- candidacy exam/approval of dissertation proposal
- dissertation/thesis
- defense of dissertation/thesis
- a graduate research seminar presentation once a year for second, third, and fourth-year students.

Thesis Advisor/Plan of Study

For students admitted without an identified thesis advisor, the thesis advisor must be selected by the end of winter term in the first year. All students are asked to submit a plan of study (that has been agreed upon by the thesis advisor and student) by the end of winter term first year. It is anticipated that the graduate coursework will be completed during the first two years or less.

Students should check with the department for a list of available electives.

Core Requirement Courses:

BIO 500	Biochemistry I	3.0
BIO 532	Advanced Cell Biology	3.0
BIO 540	Readings in Molecular and Cellular Bioscience and Biotechnology	3.0
BIO 601	Research Methods	3.0
BIO 635	Advanced Genetics and Molecular Biology	3.0
BIO 679	Issues in Scientific Research	3.0
ENVS 506	Biostatistics	3.0
Total Credits		21.0

Sample Sequence/Sample Plan of Study

First Year		
Fall		**Credits**
BIO 500	Biochemistry I	3.0
BIO 532	Advanced Cell Biology	3.0
	Term Credits	**6.0**
Winter		
BIO 540	Readings in Molecular and Cellular Bioscience and Biotechnology	3.0
BIO 635	Advanced Genetics and Molecular Biology	3.0
	Term Credits	**6.0**
Spring		
BIO 601	Research Methods	3.0
ENVS 506	Biostatistics	3.0
	Term Credits	**6.0**
Second Year		
Fall		
BIO 679	Issues in Scientific Research	3.0
Elective		3.0
	Term Credits	**6.0**
Winter		
BIO 620	Biomembranes	3.0
	Term Credits	**3.0**
Spring		
BIO 620	Biomembranes	3.0
	Term Credits	**3.0**
Total Credit: 30.0		

Contact the Department of Biology (http://www.drexel.edu/coas/bioscience) at (215) 895-2624 for more information.

Chemistry

Master of Science: 45.0 quarter credits
Doctor of Philosophy: 90.0 quarter credits

About the Program

The Chemistry Department (http://www.drexel.edu/coas/chemistry) offers graduate programs in analytical chemistry, atmospheric chemistry, inorganic chemistry, organic chemistry, materials chemistry, physical

chemistry, educational chemistry, and polymer chemistry. The curriculum is designed to prepare students for the research and practical application of chemistry to challenges facing mankind.The department also encourages interdisciplinary activities. Faculty members are active participants in the environmental engineering and science and biomedical science and engineering programs; others work with physicists and biologists in areas such as atmospheric science, biochemistry, and biophysical chemistry.

The chemistry faculty wants graduate students to understand the purpose of, and need for, fundamental research while working on problems of practical interest and application to the challenges facing mankind in the modern world. Areas of research include the use of digital electronic methods to analyze trace constituents of air and water, a study of the molecules of living systems, the effects of toxic chemicals and carcinogens, synthesis and characterization of compounds of medicinal and industrial interest, methods for studying macromolecules, and characterization of transient species using lasers.

The Chemistry Department strives to maintain a community of research scholars (faculty, postdoctoral fellows, and graduate and undergraduate students) that is large enough to provide a variety of experiences within chemistry, yet small enough to give each student individual attention. Both full- and part-time study are available.

Admission/Financial Assistance

Requirements for Admission

For admission to graduate study, the department requires a BS in chemistry or the equivalent. This requirement applies to full-time and part-time students working toward either the MS or the PhD degree. All entering MS and PhD students are required to take a series of two-hour exam in analytical, inorganic, organic, and physical chemistry to help assess their preparation for graduate work in chemistry. The scores obtained on these exams are used as a basis for course selection.

It is strongly recommended that students submit Graduate Record Examination (GRE) results with their application. GRE scores are helpful to the Chemistry Department and the Office of Admissions, and are required for those students requesting financial support, i.e., a teaching assistantship (TA) and/or would like to be considered for a Dean's Scholarship or a Provost's Fellowship.

Financial Assistance

Graduate students at Drexel can obtain two main types of financial support: teaching assistantships and research assistantships. Teaching assistantships are available on a competitive basis to incoming students and are normally renewable for several years. All those requesting financial assistance must submit GRE scores.

Forms, details about requirements, and information about application deadlines are all available on the Chemistry (http://www.drexel.edu/grad/programs/coas/chemistry) page of Drexel's Graduate Admissions website.

Master of Science in Chemistry

Degree Requirements

The MS degree is awarded after satisfactory completion of a minimum of 45.0 credit hours in chemistry and related fields, at least 30.0 credits of which must be taken at Drexel. Both thesis and nonthesis options are available.

Course Requirements

The course requirements for both thesis and nonthesis options are one complete sequence in the major area of interest; one of the sequence courses from each of analytical, organic, polymer, and inorganic chemistry; and two courses in physical chemistry. The remaining credits may be chosen from graduate courses within the department or from other departments offering courses related to the student's major areas.

Major Sequence		9.0
Select one of the following sequences:		
Inorganic Chemistry		
CHEM 521	Inorganic Chemistry I	
CHEM 522	Inorganic Chemistry II	
CHEM 523	Inorganic Chemistry III	
Analytical Chemistry		
CHEM 530	Analytical Chemistry I	
CHEM 531	Analytical Chemistry II	
CHEM 755	Mass Spectrometry	
Organic Chemistry		
CHEM 541	Organic Chemistry I	
CHEM 542	Organic Chemistry II	
CHEM 543	Organic Chemistry III	
Physical Chemistry		
CHEM 557	Physical Chemistry I	
CHEM 558	Physical Chemistry II	
CHEM 555	Quantum Chemistry Of Molecules I	
Polymer Chemistry		
CHEM 561	Polymer Chemistry I	
CHEM 562	Polymer Chemistry II	
CHEM 563	Polymer Chemistry III	
Additional Sequence Courses*		15.0
Electives		21.0
Total Credits		45.0

* One of which must be chosen from the following: CHEM 555 Quantum Chemistry Of Molecules I or CHEM 557 Physical Chemistry I.

Thesis Option

Up to 9 credits of coursework may be replaced by either CHEM 997 or by sections of CHEM 680 involving laboratory research. No later than the spring term of the first year of coursework, a student should choose a research advisor with whom to work in carrying out an original investigation in chemistry. The results will be written up in thesis form and submitted to an MS thesis committee consisting of the research advisor and two other departmental faculty appointed by the advisor. The acceptance by this committee of the MS thesis completes the thesis option requirements for the MS degree. Students in the MS program receiving financial aid from the department must elect the thesis option if they do not pursue the PhD program at Drexel.

PhD in Chemistry

Degree Requirements

The PhD degree is awarded in any of eight main areas of chemistry: analytical, atmospheric, inorganic, organic, materials, physical, educational or polymer chemistry. The degree recipient must demonstrate scholastic breadth in chemistry and contribute significantly to scientific advancement in a chosen major area. Requirements of the program include coursework, candidacy examinations, a chemical information retrieval or technical writing course, and successful completion of a publishable PhD thesis.

Course Requirements

Ninety credits of graduate-level work must be completed for the PhD degree. The Chemistry Department requires 30 credits of coursework in chemistry (outlined in the Course Requirements (p. 97) section of the MS program). The balance can be made up of advanced special topics courses and research credits.

Candidacy Requirements

To become a candidate for the PhD in chemistry at Drexel, a student must pass a prescribed set of cumulative examinations.

Cumulative Examinations

Written examinations designed to test a student's background in his or her major area are given monthly during the academic year and occasionally during the summer at the discretion of the faculty. Students should begin taking these examinations after having completed three courses in the major area (usually the main sequence courses), though beginning these exams earlier is possible for well-prepared students. Students normally begin taking these examinations in the fall term of their second year.

Research Seminar

The thesis proposal seminar is designed to help the student conduct his/her research more efficiently by (i) promoting a greater fundamental understanding about the student's own specific research project and (ii) providing context and perspective about previous accomplishments in the field by other research groups as well as her/his own. The subject of the seminar will be a literature review and a description/defense of the student's research project including results of experiments and investigations already conducted as well as future work. The examination at which the thesis proposal is defended is held no later than the end of the ***winter*** term of the ***second*** year for ***full-time*** students or the end of the ***spring*** term of the ***second*** year for ***part-time*** students. A written report is submitted to the committee no later than two weeks before the examination. A passing grade on this examination is required for continuation in the PhD program.

Thesis

A PhD thesis — the heart of the PhD degree — must be written, accepted by the research supervisor, presented to a PhD Thesis Examining Committee, and defended orally to the satisfaction of the Examining Committee. It is the responsibility of the student, not the research supervisor, to submit an acceptable thesis. It is expected that the students will have at least one peer-reviewed research article accepted for publication by the time of the thesis defense.

Facilities

There are seven undergraduate teaching laboratories in the department: three freshman Chemistry labs, an advanced Organic Chemistry lab, a Physical Chemistry lab, an Analytical Instrumentation Laboratory and a combined Analytical/Inorganic Chemistry lab.

Mass Spectrometry Laboratory

A Waters Autospec M high resolution mass spectrometer, a Sciex API triple quadrupole mass spectrometer, and a Bruker Autoflex III MALDI Time-of-Flight mass spectrometer.

Magnetic Resonance Laboratory

Varian INNOVA 300 MHz superconducting FT-NMR spectrometer, Varian INNOVA 500 MHz superconducting FT-NMR spectrometer, and a Varian X-band 12" EPR spectrometer.

Analytical Instrumentation Laboratory

The open-access departmental Analytical Instrumentation Laboratory includes two Perkin-Elmer (PE) Spectrum One Fourier-transform infrared absorption spectrometers each with a universal diamond ATR accessory, a PE Lambda-35 UV/visible spectrometer, a PE Lambda-950 UV/visible/NIR spectrometer with a 60-mm-diameter diffuse reflectance integrating sphere, a PE model 343 polarimeter, a PE LS55B luminescence spectrometer, a PE Clarus 500 capillary-column GC with dual FID detectors, a Clarus 500 capillary-column GC/MS system (with electron impact capability), a PE Series 200 Quaternary HPLC development system with UV/visible photodiode array detector, a PE Series 200 binary HPLC system interfaced to a Sciex 2000 triple quadrupole MS detector, a PE Series 2000 binary gel permeation chromatography system with refractive index detector, and a Varian AA240FS flame atomic absorption spectrometer equipped with a GTA 120 graphite furnace accessory.

Atomic Force Microscopy

The department has a Veeco multimode Atomic force microscopy (AFM) for research and education. AFM, also called scanning force microscopy (SFM), is one of the foremost tools for imaging, measuring, and manipulating matter at the nanoscale. It is when a fine tip is scanned across a surface the tip-surface force is measured to provide topographic, frictional, and adhesion information of a surface. With the ability to perform non-invasive, high-resolution surface imaging and force measurement, AFM has become an essential characterization tool in multiple disciplines in life science, biomedical engineering, nanoengineering, chemistry, materials science, and other related fields.

Other Departmental Facilities

The department has a VEECO INNOVA N3 Multimode scanning probe microscope and also maintains a computational chemistry laboratory equipped with nine Dell Optiplex 620 computers running Hyperchem v 8.0. Research laboratories for each of the department faculty members are located in Disque and Stratton Halls. Instrumentation available in the research laboratories is described on individual faculty web pages. Additional full-time support includes an instrument specialist (for NMR and MS), a glassblower (Chemistry Department), two electronics specialists (College of Arts & Sciences Electronics Shop), and four machinists (Drexel University Machine Shop).

Culture and Communication

Master of Science: 45.0 quarter credits
Doctor of Philosophy: 90.0 (Post-Bachelor's) or 45.0 (Post-Master's) quarter credits

About the Program

The MS in Communication program, with a hands-on approach, prepares students for careers in technical communication, science communication, and public communication. We also offer a scholarly track in communication, culture and media.

The PhD program in Communication, Culture and Media, having a more scholarly orientation, is designed to develop innovative scholar-teachers who know how to impart theories and studies on the interaction of social forces and communication. The program is designed to train socially committed researchers in quantitative and qualitative approaches to communication study.

Additional Information

Visit the Department of Culture and Communication (http://www.drexel.edu/culturecomm) website for more information.

Admission Requirements

MS in Communication

Applicants must meet the general requirements for admission to graduate studies. Applicants with a GPA below 3.0 must provide scores from the Graduate Record Examination. Prospective students must also submit with their applications a 1,500-word statement explaining why they want to enter the program. The program's screening committee carefully reads the essays to evaluate each applicant's writing skills and sense of purpose.

The program accommodates students from various backgrounds. For students without appropriate prior work experience, the program features a 6-month internship. For students applying with appropriate work experience, the internship requirement may be waived at the discretion of the Department's Graduate Committee.

PhD in Culture, Communication and Media

Applicants will be evaluated by the Department's Graduate Committee for admission to the program. Prospective students must submit with their application:

- a 1,500 word statement of purpose
- three letters of recommendation
- transcripts of all college-level coursework
- GRE scores
- for international students where English is not the official language, TOEFL or other English language proficiency scores are also required. For more information regarding international applicant requirements, view the International Students Admissions Information (http://drexel.edu/isss/NewStudent.html) page.

Minimum criteria include:

- Completion of a BA or BS degree in an appropriate field
- GPA of 3.0 or higher (preferred GPA 3.5 for courses in the major)
- For international students, a TOEFL score of 700 (100 iBT) or equivalent.

Students entering the program with a Master's degree or with some graduate credit will be evaluated by the Graduate Committee as to how many of their courses could possibly be counted toward the PhD.

Students entering with an MS in an appropriate field are required by the university to take a minimum of 15 credit hours in the PhD program before being eligible to take qualifying exams.

For additional information on how to apply to either of these programs, visit the Drexel University Requirements for Admissions (http://www.drexel.edu/grad/programs/coas) page.

Master of Science in Communication

Drexel's Master of Science in Communication program prepares students for careers in a wide range of professional activities. The program specializes in four areas:

- public communication
- communication, culture, and media
- technical communication
- science communication

Technical communication is for those seeking employment as technical writers, computer documentation specialists, and training specialists. Science communication has much to offer those who aspire to medical, science, and pharmaceutical writing. A concentration in public communication leads to careers in journalism and public relations. In addition, the program provides a strong foundation in theoretical approaches to communication. This theoretical basis is designed to ensure that, as the field changes, students will continue to have an intellectual framework for evaluating and implementing new technology and changing media. The communication, culture and media concentration parallels requirements in Drexel's PhD program, and prepares students for doctoral level work in the field.

Throughout the curriculum, in all the concentration options, students may use electives to increase communication skills, to broaden theoretical backgrounds, or to further develop areas of specialization.

Students can attend full time or part time, they can begin the program in any academic quarter, and they can complete all coursework in the evening. The program emphasizes flexibility, encouraging each student, in consultation with a faculty advisor to fashion a particular course of study.

The program accommodates students from widely varying educational backgrounds: Many have backgrounds in science and mathematics; an equal number come from humanities-related areas. Some students pursue their degrees while already at work at demanding jobs.

Requirements

The MS degree requires 45.0 credits of coursework, a professional portfolio of three to five items developed by the student, and six months of internship for those who lack significant experience in communication related fields. For students in the communication, culture and media track, the internship may be a research internship done with a graduate faculty member.

Portfolio

As a final graduation requirement, each student must submit a professional exit portfolio. Based on coursework and professional assignments, the portfolio undergoes a rigorous process of review by faculty members and by a professional outside the university.

Internship

An internship is required and may be completed at any time during the student's tenure at Drexel. Students who need professional experience consult with their advisors and the program director to develop a suitable internship. Normally, this placement begins after the student has completed at least half the required coursework. Students who already have the equivalent of six months of professional experience or who gain the equivalent by working part time during their course of study can request exemption from this requirement.

Required Courses		
COM 500	Reading & Res Communication	3.0
COM 610	Theories of Communication and Persuasion	3.0
Electives *		24.0
Required Concentration Courses		15.0
Students must select and complete one of the following concentration options:		
Technical Communication		
COM 510	Technical Writing	
COM 570	Technical and Science Editing	
COM 612	Ethics for Science and Technical Communication	
COM 620	Message Design and Evaluation	
COM 630	Software Documentation	
Science Communication		
COM 520	Science Writing	
COM 570	Technical and Science Editing	
COM 612	Ethics for Science and Technical Communication	
COM 620	Message Design and Evaluation	
COM 670	Medical Writing	
Public Communication		
COM 613	Ethics for Public Communication	
COM 635	Electronic Publishing	
COM 650	Telecommunications Policy in the Information Age	
COM 660	Investigative Journalism	
COM 680	Public Relations Writing and Strategies	
Communication, Culture, and Media		
COM 710	Mass Communication and American Social Thought	
COM 715	Media, Advocacy and Public Spaces	
COM 725	Political Communication	
Select 2 of the following:		
COM 720	Critical Theory	
COM 801	Seminar in Contemporary Theory	
COM 802	Seminar in Discourse and Semiotics	
COM 803	Seminar in Structural and Cultural Dynamics	
COM 804	Seminar in Research Methodology	
COM 805	Seminar in Communication Ethics	
Total Credits		45.0

* Any appropriate graduate course offered in the University can serve as an elective if the student has sufficient background to take the course. In addition, the program offers its own elective courses including special topics (COM 690). Qualified students may also pursue independent study for elective credit in special cases.

PhD in Communication, Culture and Media

The PhD requires a minimum of 90.0 credits beyond a Bachelor's degree, including 45.0 credit hours of coursework prior to taking qualifying exams, 15.0 credit hours of coursework after exams, and 30.0 hours of research credits.

The PhD coursework is structured around a set of required core courses, a set of required seminars with rotating topics, and electives in graduate communication lecture courses, independent study work, and dissertation credit.

All students in the program take five common core courses. They then take no less than five courses chosen from the Culture and Communications (COM) seminar offerings. Students are encouraged to take additional seminars after meeting that requirement, since seminar courses enable collaborative relationships with professors and introduce students to the scholarly community.

After completing the core requirements and a sequence of seminars, students are expected to take a minimum of 10 additional courses from existing graduate level lecture courses (depending on their interests and research needs). Students may take up to two graduate courses (six credits) outside the department. Additional credits to meet the 90.0 credit requirements will come from independent study and dissertation credits.

Student advising will include appointments with both graduate director and an assigned mentor during the first two weeks of fall courses, where an individualized plan of study (University form D1) will be completed and approved by the program director.

Core Courses		
COM 701	Contemporary Social Theory	3.0
COM 702	Communication Theory I	3.0
COM 703	Communication Theory II	3.0
COM 704	Research Methods in Communication	3.0
COM 705	Data Analysis in Communication	3.0
Seminars		
Students select 15 credits from the five categories of seminars *		
COM 801	Seminar in Contemporary Theory	3.0
COM 802	Seminar in Discourse and Semiotics	3.0
COM 803	Seminar in Structural and Cultural Dynamics	3.0
COM 804	Seminar in Research Methodology	3.0
COM 805	Seminar in Communication Ethics	3.0
Communication Lecture Electives		30.0
Ten courses are required, for a total of 30.0 credit hours of electives. These may be chosen from COM 500 to 800 level courses, including 800 level seminars that are a different topic from earlier courses taken.		
Dissertation Credits/Additional Electives **		30.0

COM 799	Independent Project in Technical and Science Communications	
For the dissertation, students work with a principal advisor, one of the Culture and Communication Department faculty, and no less than two additional faculty from within the department. Students must find one additional outside reader, and students may bring in up to two outside readers.		
Total Credits		90.0

* There are five categories of seminar: one in which students learn advanced work and influences on a specific theorist or theoretical school; one in which students learn about theories of language, discourse and the sign; one that teaches the paradigm of structural dynamics central to social sciences theory and research; one in which students study a research methods approach; and one that deals with approaches to research ethics. Students must take a seminar in each area (COM 801, COM 802, COM 803, COM 804, COM 805). Seminars can be repeated, with a maximum of three courses taken in each area, as long as the subject covered is different each time.

** Students may take up to two graduate-level courses outside of the Department of Culture and Communication.

Qualifying Examinations

After students have completed 45.0 credits, which will usually be at the end of their 6th term, they will be required to take a qualifying examination. The qualifying exam will be offered at the end of June will be composed of three parts, theory, methods and a content area. Students will be given the grade of fail, pass or high pass on the exam. A grade of pass in all three sections of the exam will be required to qualify for the PhD Students who do not pass one out of three sections of the exam on the first attempt may retake the section that they failed one time to qualify for the PhD If they do not pass the second time they take the failed section of the exam they will be dismissed from the program. When a student passes all three sections of the exam, the proper paperwork will be filed with the university graduate office and they will be advanced to candidacy.

Dissertation Defense

Students should defend the dissertation and graduate towards the end of their fifth or sixth year, during either the spring or summer quarters.

Visit the Department of Culture and Communication (http://www.drexel.edu/culturecomm) website for more information.

Master of Science in Environmental Policy

Master of Science Environmental Policy (MSEP): 45.0 quarter credits

About the Program

The Master of Science in Environmental Policy program provides a comprehensive, multi-disciplinary approach to the development, implementation, and evaluation of environmental policy. The program prepares students for careers as policy analysts who have a strong commitment to environmental values, are scientifically and methodologically competent, and can work effectively in the democracy policy process with the various groups and institutions engaged in environmental issues.

To meet these requirements, students must complete a range of coursework designed to teach:

- knowledge of how policies are developed and implemented
- scientific and engineering basis of effective environmental policies
- an understanding of who the key players are in environmental politics, and how to work with them to accomplish environmental improvements.

For more information about this program, visit the College's MS in Environmental Policy (http://drexel.edu/sts/academics/msEnviroPolicy) page, or contact:

Christian Hunold, PhD
Associate Professor of Political Science
Coordinator, Environmental Studies Program
5014 MacAlister
215.895.6089
hunoldc@drexel.edu

Admission Requirements

In addition to the general entrance requirements for all applicants, entrance to the MS Program in Environmental Policy requires a Bachelor's degree in Environmental Science, or in the natural, physical, or social sciences, or related engineering disciplines, along with additional course work as specified in the table below. Students entering from other programs at Drexel University or other institutions may be required to complete additional course work to meet the course prerequisites for the required courses.
For additional information on how to apply, visit Drexel's Admissions page for Environmental Policy (http://www.drexel.edu/grad/programs/coas/environmental-policy).

Degree Requirements

Core Courses		
ENVS 501	Chemistry of the Environment	3.0
ENVS 506	Biostatistics	3.0
ENVS 511	Evolutionary Ecology	3.0
or ENVS 521	Environmental Health	
Required Specialization Courses in Environmental Policy		
ENVP 522	Environmental Law	3.0
ENVP 523	Environmental Regulations	3.0
ENVP 650	Resource & Environmental Economics	3.0
ENVP 720	Environmental Cost-Benefit Analysis	3.0
ENVP 760	Social Change & Environment	3.0
ENVP 771	Theory and Practice of Environmental Policy Analysis	3.0
ENVP 772	Methods of Environmental Policy Analysis	3.0
ENVP 773	Environmental Policy Analysis Practicum	3.0
ENVP 774	Environmental Policy Economic Analysis	3.0
Recommended Electives		
ENVP 570	International Environmental Policy	3.0
ENVP 880	Environment and Society	3.0

ENVP 865	Special Topics	3.0
Total Credits		45.0

Plan of Study

Within the first quarter of study, a student must meet with an assigned advisor and work out a plan of study.

Environmental Science

Master of Science Environmental Science (MSES): 45.0 quarter credits
Doctor of Philosophy: 90.0 quarter credits

About the Program

Environmental science is a multidisciplinary field in which we try to understand environmental problems and find solutions to them. This field requires understanding of a number of disciplines.

The program's areas of focus include: ecology, biodiversity, conservation, environmental assessment, and paleoecology-geology. A student may alternatively craft a specialized plan of study outside of these strength areas under the guidance of an academic advisor.

The master's degree may be completed with either a thesis or non-thesis option. Those choosing to prepare a thesis must complete 45.0 credits (up to 12.0 credits may be research). Students choosing the non-thesis option must complete coursework totaling 45.0 credits (6.0 of which may be research). Most courses carry three credits.

Part-time Study

The MS degree may be completed on a part-time basis. Most courses are scheduled in the late afternoon and evening, usually on a rotating basis from year to year. Part-time students should plan to take courses in the appropriate sequence to comply with the necessary prerequisites. Scheduling of course is dependent on student demand and faculty resources; however, most prescribed courses are offered at least once every other year (schedules are published each term). Required courses should be taken at the first opportunity.

Additional Information

For more information, visit the Department of Biodiversity, Earth & Environmental Science (http://www.drexel.edu/bees) website.

Susan Cole is the Graduate Coordinator for Environmental Science. Susan Cole can be reached by telephone at 215.895.2905 or e-mail at coless@drexel.edu.

Admission Requirements

In addition to the general entrance requirements for all applicants, entrance to the MS Program in Environmental Science requires a bachelor of acience degree in science, mathematics, or engineering. Minimally, students must have completed a year each of calculus, general biology, general chemistry, physics, and, preferably, a semester of organic chemistry.

PhD Program

Applicants to the doctoral program are judged on the basis of academic excellence and the alignment of their research interests with those of the faculty in the department. Prospective PhD students are welcome to contact the program to discuss their research interests.

Additional information about how to apply is available on the Graduate Admissions at Drexel University (http://www.drexel.edu/grad/programs/coas/environmental-science) website.

Degree Requirements: MS in Environmental Science

The Master of Science in Environmental Science (MSES) program requires three core courses that form the basis for further specialization. Students choose to complete the remainder of the program with elective courses based on interest.

Core Courses		
ENVS 501	Chemistry of the Environment	3.0
ENVS 506	Biostatistics	3.0
ENVS 511	Evolutionary Ecology	3.0

Elective Areas

Please see Course Descriptions for a list of Environmental Science (ENVS) electives. Students may also take Environmental Policy (ENVP) and Environmental Engineering (ENVE) courses with prerequisites. Other departmental courses with approval.

Degree Requirements: PhD in Environmental Science

The following general requirements must be satisfied in order to complete the PhD program in Environmental Science:

- 90.0 (post-bachelor's) or 45.0 (post-master's) quarter credits
- qualifying exam
- establishing a plan of study
- 3 core courses recommended, not required
- additional courses dependent on advisor or committee recommendations
- candidacy exam/approval of dissertation proposal
- dissertation/thesis
- defense of dissertation/thesis
- a graduate research seminar presentation once a year for second, third, and fourth-year students.

Thesis Advisor/Plan of Study

For students admitted without an identified Thesis Advisor, the Thesis Advisor must be selected by the end of Winter term in the first year. All students are asked to submit a Plan of Study (that has been agreed upon by Thesis Advisor and student) by the end of Winter term first year. It is anticipated that the graduate coursework will be completed during the first two years or less. Generally there is no prescribed coursework -- students must take courses needed to complete their research under guidance of an faculty advisor.

Curriculum

The following courses are *recommended,* but not required:

ENVS 501 Chemistry of the Environment

ENVS 506 Biostatistics
ENVS 511 Evolutionary Ecology

Candidacy Examination

The function of the Candidacy Examination is to test the breadth and the depth of the student's capabilities in their chosen area of study. The graduate student becomes a PhD c*andidate* only after successfully completing the Candidacy Examination and completing 15 or 45 credits (for post-master's or post-bachelor's degree students, respectively). The candidacy exam is comprised of three parts whose order will be determined by the Candidacy Committee: written examination (or qualifying exam), dissertation research proposal, and oral examination.

Students entering the program with a master's degree are expected to complete the candidacy examination by the end of the summer quarter of their first year. Students entering the PhD program with a bachelor's degree are expected to complete this examination by the end of the summer quarter of their second year.

Thesis/Dissertation and Defense of Thesis/ Dissertation

The student will finalize their dissertation only after approval to write is granted by the Dissertation Research Committee. Approval is based upon an evaluation of the breadth and depth of original research being conducted by the student. The dissertation must follow the format specifications set forth in the Drexel's Office of Research and Graduate Studies (http://www.drexel.edu/graduatestudies). Research conducted for the dissertation must be presented in a lecture open to the public and then defended, privately, before the student's Dissertation Research Committee.

Facilities

Facilities include fully equipped research laboratories in microbiology, ecology, hydrology, and chemistry. Field ecology research augments lab facilities with field-specific equipment, including two boats (14- and 25-foot) and vans with towing capacity. Some additional research facilities in environmental biotechnology and atmospheric engineering are located in other locations on Drexel's campus.

Among the equipment available for student research are atomic absorption spectrophotometers, UV-visible spectrophotometers, gas-liquid chromatographs, ion chromatograph, ICP-Mass Spectrometer, GC-Mass Spectrometer, high performance liquid chromatographs, total organic carbon analyzer with sludge/sediment sampler, high-speed refrigerated centrifuge, ozone generators, and UV photochemical reactor.

Drexel University is a national leader in the use of computers for educational and research functions. Several facilities on campus are available for student use.

Mathematics

Master of Science: 45.0 quarter credits
Doctor of Philosophy: 90.0 quarter credits

About the Program

The Department of Mathematics is a broadly based academic unit offering instructional programs and carrying on research activities in mathematics. Doctor of Philosophy and Master of Science degrees are offered.

Areas of research specialty among the faculty include applied mathematics, algebraic combinatorics, biomathematics, discrete mathematics, optics, analysis, number theory, numerical analysis, probability and statistics, matrix and operator theory, fluid mechanics, and partial differential equations.

Additional Information

For more information about theses graduate programs, visit Drexel University's Mathematics (http://www.drexel.edu/math) webpage.

Admission Requirements

Applicants should hold a BS degree in mathematics or the equivalent and meet the University's graduate admission standards. In particular, the student should have had intensive exposure to proof oriented courses, such as real analysis and abstract algebra. Students requesting financial aid are required to take the Graduate Record Examination General Test. Because many of the core courses are two- or three-term sequences beginning in the fall, new students are typically admitted to the programs only in the fall term. Admissions standards for the MS and PhD programs are equivalent.
For additional information on how to apply, visit Drexel University's Graduate Admissions (http://www.drexel.edu/grad/programs/coas/mathematics) website.

Master of Science in Mathematics

Students must complete a minimum of 45.0 graduate credits for the MS degree. Of these 15 courses, the following six are required:

Required Courses

MATH 504	Linear Algebra & Matrix Analysis	3.0
MATH 505	Principles of Analysis I	3.0
MATH 506	Principles of Analysis II	3.0
MATH 533	Abstract Algebra I	3.0
MATH 630	Complex Variables I	3.0
MATH 633	Real Variables I	3.0

The remaining 9 courses may be any graduate mathematics courses. In some cases, course substitutions may be made with courses from other departments. Elective courses taken outside the department must receive prior departmental approval in order to be counted toward the degree.

There are no thesis, language, or special examination requirements for the master's degree.

Students seeking a dual MS must satisfy core requirements for both degree programs.

Students should note that some departmental courses, such as Advanced Engineering Mathematics, are foundation courses and do not contribute to the departmental requirements for the degree. They do count toward the University requirements for a degree.

PhD in Mathematics

Students must complete a minimum of 45 graduate credits for the PhD degree, in addition to the 45.0 required by the MS program for a total of

90.0 credits. Of the 45.0 credits of MS program courses, the following six are required:

Required Courses		
MATH 504	Linear Algebra & Matrix Analysis	3.0
MATH 505	Principles of Analysis I	3.0
MATH 506	Principles of Analysis II	3.0
MATH 533	Abstract Algebra I	3.0
MATH 630	Complex Variables I	3.0
MATH 633	Real Variables I	3.0

The remaining 9 courses comprising the MS segment of the PhD program, may be any graduate mathematics courses. In some cases, course substitutions may be made with courses from other departments. Elective courses taken outside the department must receive prior departmental approval in order to be counted toward the degree.

The student must pass a written qualifying exam. The student is allowed two attempts. Students must take exam at the end of their first year, and have a second opportunity in September of their second year.

Students must take a PhD candidacy exam at the end of their second year. Additional coursework to reach the 90.0 credits required for the PhD will be agreed upon with the student's Graduate Advisor. Students should note that some departmental courses, such as MATH 544 Advanced Engineering Mathematics, are foundation courses and do not contribute to the departmental requirements for the degree. They do count toward the University requirements for a degree.

Facilities

Department computers are accessible from residence halls over the campus network, and from off-campus via modem or an Internet Service Provider (ISP). Departmental and university networks provide access to the Internet and the Pennsylvania Education Network (PrepNET). Departmental research computers have a connection to the campus backbone at 100 Mbps and are also on the vBNS via a campus OCS ATM connection.

The computing resources of the Mathematics Department include:

- Math Resource Center (Korman 247): 6 Dell Optiplex (Core 2 Duo 2.8 Ghz, 3GB RAM) running Windows XP Professional SP3.
- Faculty Center (Korman 207): 2 Lenovo ThinkCentre (Pentium 4 3.0 Ghz, 1 GBRAM) running Windows XP Professional SP3.
- Computer Server: One Penguin Server (Dual 2.2. GHz Opteron, 8 GB RAM) running Ubuntu Linux.
- File/Print/Mail/Web Server: 2 Penguin Servers (Dual 2.8 GHz Zeon, 1GB RAM) running Ubuntu Linux and connected to 600GB RAID 5 Disk over a fully switched gigabit Ethernet network, 2TB mirrored RAID.

Physics

Master of Science: 45.0 quarter credits
Doctor of Philosophy: 90.0 quarter credits

About the Program

The Department of Physics offers opportunities for students to study with leading researchers in astrophysics, biophysics, nonlinear dynamics, particle physics, and solid state physics, as well as to participate in international collaborations. Coursework for the MS and PhD degrees includes advanced training in core areas of physics and in the topics of current research. PhD students begin research early in the program, commencing thesis work in their second year of study.

To learn more about the graduate program in physics visit the Physics Department (http://www.drexel.edu/physics) webpage.

Admission Requirements

For admission to the graduate programs, a bachelor's degree in an approved program is required with a minimum undergraduate GPA of 3.0/4.0 specified.

The GRE Subject Test is required for PhD applicants to be considered for assistantships.

- minimum Quantitative Score = 150 (650 on previous 800-point scale)
- minimum Verbal Score = 150 (450 on previous 800-point scale).

Students from non-English speaking countries are required to demonstrate proficiency in English via the TOEFL exam. TOEFL scores are required for international applicants or applicants who earned a degree outside the US (minimum scores: 100/600/250). Scores will be reviewed based on section scores and total scores. IELTS scores may be submitted in lieu of TOEFL scores. The minimum IELTS band score is 7.0. Teaching assistants educated in non-English speaking countries must complete a special English program.

Visit the Graduate Admissions (http://www.drexel.edu/grad/programs/coas/physics) website for more information about requirements and deadlines, as well as instructions for applying online.

Master of Science in Physics

Students who wish to complete only the master's degree are welcomed, and will find that the learning environment will allow them to broaden their professional understanding by exploring current topics and trends of physics in an interdisciplinary setting.

There are no thesis, language, or special examination requirements for the master's degree.

The degree requires 45.0 graduate credits, with at least 30.0 credits from the following:

PHYS 501	Mathematical Physics I	3.0
PHYS 502	Mathematical Physics II	3.0
PHYS 506	Dynamics I	3.0
PHYS 511	Electromagnetic Theory I	3.0
PHYS 512	Electromagnetic Theory II	3.0
PHYS 516	Quantum Mechanics I	3.0
PHYS 517	Quantum Mechanics II	3.0
PHYS 518	Quantum Mechanics III	3.0

PHYS 521	Statistical Mechanics I	3.0
PHYS 522	Statistical Mechanics II	3.0

PhD in Physics

90.0 quarter credits

The Department of Physics offers opportunities for students to study with leading researchers in astrophysics, biophysics, nonlinear dynamics, particle physics, and solid state physics, as well as to participate in international collaborations. Coursework for the PhD degree includes advanced training in core areas of physics and topics of current research. PhD students begin research early in the program, commencing thesis work in their second year of study.

The usual schedule for physics graduate students consists of two years of coursework, qualifying exams, and research training, followed by dissertation research. All PhD students follow a common set of ten core courses during their first two years of study. In addition to these core courses, students also take four special topics courses.

PhD students Admitted with Post-Master's Status

Students who are admitted for PhD study with "post-masters" status must take 15 credits of graduate coursework with a minimum GPA of 3.0 to become doctoral candidates. Courses are to be chosen in consultation with the Director of Graduate Studies. Post-masters students are expected to pass the written and oral qualifying exams by the end of the Spring quarter of their first year of study. Ordinarily, this means taking the written qualifying exam in September before the start of classes. To be prepared for the oral exam, post-masters students should begin research as soon as possible.

Program Requirements

Doctoral candidates are required to complete a minimum of 45.0 credits of coursework and research work beyond the master's requirement of 45.0 credits while maintaining a minimum of 3.0 GPA.

Core Courses		
First Year		
PHYS 501	Mathematical Physics I	3.0
PHYS 506	Dynamics I	3.0
PHYS 502	Mathematical Physics II	3.0
PHYS 516	Quantum Mechanics I	3.0
PHYS 521	Statistical Mechanics I	3.0
PHYS 517	Quantum Mechanics II	3.0
Second Year		
PHYS 522	Statistical Mechanics II	3.0
PHYS 518	Quantum Mechanics III	3.0
PHYS 511	Electromagnetic Theory I	3.0
PHYS 512	Electromagnetic Theory II	3.0
Select four of the following:		12.0
PHYS 531	Galactic Dynamics	
PHYS 532	Cosmology	
PHYS 561	Biophysics	
PHYS 553	Nanoscience	
PHYS 562	Computational Biophysics	
PHYS 563	Single Molecule Methods	
PHYS 571	Nonlinear Dynamics	
PHYS 576	Nuclear and Particle Physics	
PHYS 626	Solid State Physics I	
PHYS 750	Special Topics	
Total Credits		42.0

Research Training

Students begin research in the first year with two small projects. In the spring quarter, this project culminates in a talk presented to the other students and Director of Graduate Studies. In the summer quarter, the project requires a written report to the research advisor. Research during the second year is toward the oral qualifying exam, described below.

Candidacy Examination

PhD candidates must pass a Candidacy Examination, which consist of two parts: written and oral:

- The written portion of the qualifying examination is given twice a year, during the week before the fall quarter begins and during the first week of classes of the winter term. Students must pass the written qualifying examination no later than the winter quarter of their second year. At most two attempts may be made at passing the exam. The qualifying examination covers four general areas at the advanced undergraduate level: classical mechanics, electricity and magnetism, quantum mechanics, and statistical physics.
- The oral portion of the qualifying exam is based on original research performed by the student, which consists in an oral presentation and a written report of no less than 15 pages, submitted to the examination committee and the Director of Graduate Studies at least one week prior to the exam. Immediately after the public presentation, the Examination Committee will privately conduct an oral examination. This exam must be passed by the end of the second year of study.

Dissertation Defense

This dissertation defense includes a final public presentation and defense of the dissertation. The dissertation must be submitted to the Examination Committee at least two weeks prior to the oral defense. The oral presentation involves a public 45-60 minute presentation by the candidate followed by an unspecified period during which the Examination Committee will ask questions. All doctoral dissertations, in addition to originality and scholarly content, must conform to University format requirements.

Plan of Study (PhD)

The following sample plan of study contains the required courses for full-time PhD students entering without a previous Master's degree. Post-master's students should consult the Director of Graduate Studies.

First Year		
Fall		**Credits**
PHYS 501	Mathematical Physics I	3.0
PHYS 506	Dynamics I	3.0
Special Topics Course*		3.0
	Term Credits	**9.0**

Winter		
PHYS 502	Mathematical Physics II	3.0
PHYS 516	Quantum Mechanics I	3.0
Special Topics Course*		3.0
	Term Credits	**9.0**
Spring		
PHYS 521	Statistical Mechanics I	3.0
PHYS 517	Quantum Mechanics II	3.0
	Term Credits	**6.0**
Second Year		
Fall		
PHYS 522	Statistical Mechanics II	3.0
PHYS 518	Quantum Mechanics III	3.0
Special Topics Course*		3.0
	Term Credits	**9.0**
Winter		
PHYS 511	Electromagnetic Theory I	3.0
Special Topics Course*		3.0
	Term Credits	**6.0**
Spring		
PHYS 512	Electromagnetic Theory II	3.0
PHYS 997	Research	1.0-12.0
	Term Credits	**4.0-15.0**

Total Credit: 43.0-54.0

* Special topics courses are an introduction to current topics of experimental and theoretical interest. They are offered in alternate years.

Academic Year 2013/2014 (odd)

Fall		**Credits**
PHYS 531	Galactic Dynamics	3.0
PHYS 561	Biophysics	3.0
	Term Credits	**6.0**
Winter		
PHYS 532	Cosmology	3.0
PHYS 562	Computational Biophysics	3.0
	Term Credits	**6.0**
Spring		
PHYS 563	Single Molecule Methods	3.0
PHYS 750 (Quantum Field Theory)	Special Topics	3.0
	Term Credits	**6.0**

Total Credit: 18.0

Academic Year 2013/2013 (even)

Fall		**Credits**
PHYS 626	Solid State Physics I	3.0
PHYS 576	Nuclear and Particle Physics	3.0
	Term Credits	**6.0**
Winter		
PHYS 553	Nanoscience	3.0
PHYS 571	Nonlinear Dynamics	3.0
	Term Credits	**6.0**
Spring		
To be announced		
	Term Credits	**0.0**

Total Credit: 12.0

Additional information for graduate students is available at the Department of Physics (http://www.physics.drexel.edu).

Facilities

Astrophysics Facilities

- Numerical Astrophysics Facility, primarily networked LINUX workstations emphasizes theoretical and numerical studies of stars, star clusters, the early universe, galaxy distributions, cosmology modeling and gravitational lensing. Large file server provides access to Sloan Digital Sky Survey data. The facility also employs special purpose high performance computers, such as the Gravity Pipeline Engine (GRAPE), a new Beowulf cluster (128 processors, 128G RAM, 2TB RAID disk), and a system using Graphics Processing Units to achieve computational speeds of up to trillion floating point operations per second.
- The Joseph R. Lynch Observatory houses a 16 inch MEAD Schmidt-Cassegrain telescope equipped with SBIG CCD camera. Drexel is a participant in the Sloan Digital Sky Survey, which operates a 2.5m telescope at Apache Point, NM, and the Large Synoptic Survey Telescope to be built in Chile (first light 2020).

Biophysics Facilities

- Modulated excitation kinetics laboratory uses frequency domain techniques to follow internal dynamics of biological molecules.
- Energy Materials Research Laboratory including Variable Temperature UHV Scanning Probe Microscope, installed in STC-50 rated acoustic chamber.
- Spatially resolved kinetics laboratory uses simultaneously resolved spatio-temporal data at microscopic resolution to follow biological self-assembly processes, such as polymerization of sickly hemoglobin.
- Atomic Force Microscope (AFM) facility to study the structure and interaction of macromolecule via imaging, and to investigate the mechanical and kinetic properties of individual protein molecules via nanomanipulation.
- Computational Biophysics facility including two Beowulf clusters (44-node dual-core Xeon, 43-note dual quad-core Xeon [344 cores]), 24TB RAID disk server, and ten Linux workstations connected through a gigabit network (3).
- Preparative laboratory provides facilities for biological sample purification and characterization.

Condensed Matter Facilities

- Ultra-low temperature laboratory has a dilution refrigerator, 3He and 4He cryostats and microwave sources to study quantum phenomena in nano and microscale devices, superconducting qubits, nanostructures and quantum fluids and solids.
- Magnetic material laboratory conducts research on amorphous magnetic thin films, fiber optical sensors.

- Surface science laboratory has scanning probe microscopy to study surface structure interfaces at the atomic level.

Particle Physics Facilities

- Detector development laboratory provides experimental support for an international research program in nonaccelerator particle and nuclear physics performing tests of invariance principles and conservation laws, and neutrino oscillations.

General Support Facilities

- Include an electronics shop capable of custom design and fabrication of electronics and computer components, and a machine shop to assist in the design, construction, and repair of mechanical components.

Programs in Psychology and Clinical Psychology

Master of Science: 45.0 quarter credits
Doctor of Philosophy: 90.0 quarter credits

About the Programs

The MS in Psychology program is designed for students interested in advanced education in scientific psychology in order to obtain further educational or career opportunities.

The PhD in Psychology with the specialization in Clinical Psychology program places equal emphasis on clinical research and the application of scientific principles.

The PhD in Psychology with a specialization in Applied Cognitive and Brain Science program is designed for students who wish to pursue a research based career in human experimental psychology with a concentration in applied cognitive and brain science.

For more information, visit the Department of Psychology (http://www.drexel.edu/psychology) website.

Master of Science in Psychology

The master of science degree in the Department of Psychology, College of Arts & Sciences, is ideal for students interested in pursuing an advanced education in scientific psychology and research methods.

The program is an opportunity for students to take their first step into graduate education, and to begin a path toward further educational and career opportunities. These opportunities include further graduate-level training leading to a PhD, a career in research, or other educational and administrative opportunities. The curriculum is focused on training in a range of research experience in neurocognitive and behavioral sciences. In addition to required coursework, students are required to complete a minimum of 8 hours per week with a research mentor in laboratory activities. These activities culminate with the successful completion of an empirical thesis.

Requirements for Admission

Applicants must meet the general University requirements for admission, including a minimum 3.0 GPA (on a 4.0 scale) for the last two years of undergraduate study. Applicants to the graduate program in psychology are also required to submit scores from the Graduate Record Examination (GRE) general tests. Only applications for full-time status are considered.

Various factors are considered in choosing students. These include background in psychology, undergraduate (and, if applicable, graduate) GPA, GRE scores, and letters of recommendation. The minimum expected combined GRE score is 302, with scores 150 on each section (verbal, quantitative) of the GRE.

For additional information on how to apply, visit Drexel's Admissions Requirements for Psychology (http://www.drexel.edu/grad/programs/coas/psychology) page.

Degree Requirements

The general requirements for earning the MS degree in psychology are as follows:

- Completion of all required coursework with a minimum grade point average of 3.0, with no grade lower than a B in any required (non-elective) course and no more than two course grades of C or lower.
- Successful completion of a minimum of 45.0 course credits.
- Successful completion of required research laboratory hours.
- Completion of an empirical thesis.
- Research laboratory: 8 hours/week for two years; 6.0 additional credits of independent study will pertain to the student's laboratory research.

For more information on specific requirements, consult the Master's of Science in Psychology (http://www.drexel.edu/psychology/academics/graduate/masters) website.

Required Courses		
PSY 510	Research Methods I	3.0
PSY 511	Research Methods II	3.0
PSY 512	Cognitive Psychology	3.0
PSY 530	Principles of Neuroscience	3.0
PSY 610	Data Analysis in Psychology	3.0
PSY 624	Behavior Analysis	3.0
PSY 690	Master of Science Research I	3.0
PSY 691	Master of Science Research II	3.0
PSY 692	Master of Science Research III	3.0
To enhance individual plans of study, students select additional electives to reach a minimum of 45.0 credits		18.0
Total Credits		45.0

PhD in Psychology: Clinical Psychology

The Ph.D. Program in Clinical Psychology program is a scientist-practioner-oriented program that is fully accredited by the American Psychological Association (APA). It encompasses five years of full-time study and provides graduate students with a strong foundation in relevant psychological theory, experience in the practice of psychological assessment and intervention, experience in conducting meaningful clinical research, and opportunities to develop teaching competencies. See the Clinical Psychology Program's website (http://www.drexel.edu/psychology/academics/graduate/clinical) for more information.

Requirements for Admission

All students are admitted with the expectation that they intend to complete the PhD degree. However, before advancing to doctoral-level studies, students must earn the MS, including completion of a master's thesis. Admitted students who hold a bachelor's degree are expected to

complete both the master's degree and post-master's portions of the Drexel curriculum. Applicants who already hold a master's from another university may be admitted with post-master's status if their graduate-level preparation is deemed equivalent to the master's portion of the Drexel curriculum.

Requirements for Students Enrolling with a Bachelor's Degree
For those entering with a bachelor's degree, the PhD program requires approximately five years to complete. The first two years of training correspond to the master's-level studies: focusing on clinical areas such as entry-level assessment and intervention skills, psychopathology, and specialized study in cognitive-behavior therapy, neuropsychology, health psychology, and/or forensic psychology. These two years also include a major focus on research skills, involving statistics, research design, and supervised research experience with the mentor. Entry-level assessment, intervention, and teaching skills are also developed.

By the end of the first two years of study, students should have completed 45.0 credits of coursework, maintained a GPA of at least 3.5, developed and defended a thesis, passed comprehensive examinations and completed 800 hours of practicum experience in the form of a clinical practicum. Students demonstrating satisfactory performance in these areas will be admitted to post-master's status.

Requirements for Students Who Already Hold a Master's Degree
Students entering with a master's degree from another university complete the PhD requirements in 4-5 years. The master's degree should have included an experimental thesis. Students lacking this prerequisite will still be considered for admission, but such students will be required to complete a research project equivalent to the Drexel master's thesis. In addition, students must demonstrate a GPA of at least 3.5 in master's-level courses in order to be accepted for post-master's status.

For additional information on how to apply, visit Drexel's Admissions Requirements for Psychololgy (http://www.drexel.edu/grad/programs/coas/apply/requirements/p_clps) page.

Curriculum

The program in Clinical Psychology curriculum follows the scientist-practitioner model and APA guidelines on accreditation of doctoral clinical psychology programs. It also considers state licensing guidelines and various publications that have been written on the topic of doctoral education, training, and credentialing in clinical psychology, as well as the specialty areas of cognitive-behavior therapy, forensic psychology, health psychology, and neuropsychology.

The following section outlines the courses required for graduation for entering Bachelor's-level students. The PhD program curriculum requires the student to earn a minimum of 90.0 credits. Typically, students enroll in 27.0 credits during the first year, 22.0 credits during the second and third years, 12.0 credits in the fourth year, and 8.0 credits during the fifth/final internship year. Drexel University operates on a calendar of four eleven-week terms. Students in the program do not take courses during summer term in order to complete research projects and continue clinical practicum training.

All coursework can be divided into two major components: (1) foundations of psychology, which is the evolving body of knowledge in the discipline of psychology, and (2) clinical and professional training, which focuses on the application of theory and empirical research to the practice of psychology. Listed below are all required and elective courses offered within the Drexel psychology curriculum followed by specific requirements for each concentration. Credit levels listed are set at the minimum required.

Required Courses		
Foundations of Psychology		
PSY 712	History and Systems	3.0
PSY 516	Developmental Psychology	3.0
Statistics/Research Methods		
PSY 510	Research Methods I	3.0
PSY 610	Data Analysis in Psychology	3.0
PSY 710	Data Analysis II	3.0
PSY 711	Data Analysis III: Advanced Topics	3.0
PSY 898	Master's Thesis in Psychology	3.0
PSY 998	Ph.D. Dissertation in Psychology	4.0
Biological Bases of Behavior		
PSY 630	Biological Basis of Behavior and Treatment	3.0
Select one of the following:		3.0
PSY 530	Neuroanatomy and Behavior	
PSY 865	Special Topics in Psychology (Neuroimaging and Physiology of Behavior)	
Cognitive/Affective Bases of Behavior		
PSY 812	Cognitive Neuroscience	3.0
Select one of the following:		3.0
PSY 512	Cognitive Psychology	
PSY 612	Psychology of Human-Computer Interaction Design	
PSY 614	Problem Solving & Creativity	
Social Bases of Behavior		
PSY 550	Multicultural Perspectives in Psychology	3.0
PSY 518	Social Psychology	3.0
Clinical and Professional Training General Foundations of Practice		
PSY 560	Teaching and Consultation (1.0 credit course taken 3 times)	3.0
PSY 520	Psychopathology	3.0
PSY 524	Professional Issues and Ethics	3.0
Foundations of Psychological Evaluation/Measurement		
PSY 522	Psychological and Intellectual Assessment	3.0
PSY 620	Personality Assessment	3.0
PSY 515	Clinical Case Conceptualization	3.0
Foundations of Intervention		
PSY 721	Principles of Psychotherapy	3.0
PSY 722	Theories of Intervention	3.0
PSY 820	Cognitive-Behavioral Therapy	3.0
PSY 897	Clinical Psychology Practicum Seminar	3.0
PSY 899	Practicum	1.0
PSY 999	Internship	4.0
Advanced Professional Training Electives		
Select five of the following:		15.0
PSY 552	Proseminar in Diversity	
PSY 542	Neuropsychological Assessment	
PSY 642	Neuropsychological Case Analysis and Integration	
PSY 646	Neuropsychological Assessment of Children and Adolescents	

PSY 648	Forensic Assessment I
PSY 649	Forensic Assessment II
PSY 650	Child Psychopathology & Treatment
PSY 720	Health Psychology
PSY 730	Criminal Law and Psychology
PSY 734	Social Science Applications to the Law
PSY 822	Pediatric Psychology
PSY 823	Substance Use
PSY 811	Introduction to Hierarchical Linear Models and Longitudinal Data Analysis
PSY 827	Behavioral Stress Management
PSY 830	Advanced Topics in Health Psychology
PSY 840	Advanced Cognitive-Behavioral Therapy
PSY 854	Psychology of Rehabilitation
PSY 865	Special Topics in Psychology
PSY 828	Weight and Eating Disorders
Total Credits	93.0

Concentrations

Clinical Neuropsychology Concentration
The clinical neuropsychology concentration includes courses, research, and clinical experiences designed to train the students for professional practice in neuropsychology. Clinical neuropsychology involves the application of psychological assessment and intervention to the problems encountered by people with brain injury or illness. The knowledge of brain-behavior functioning and the incorporation of neuropsychological conceptualizations with traditional clinical conceptualizations of functioning are aimed at providing the student with a wider perspective regarding the range of human functioning and disability. The student is able to pursue specific interests in geriatrics, pediatrics, traumatic brain injury, and rehabilitation.

In addition to the core curriculum:

- One neuropsychology practicum (800 hours)
- A neuropsychology-focused thesis and dissertation
- Required classes: Principles of Neuropsychology, Principles of Neuroscience, Neuropsychological Assessment, Case Analysis and Integration
- At least two neuropsychology electives: Models of Memory, Rehabilitation
- Psychology, Advanced Neuropsychology Assessment and Intervention:
- Children and Adolescents, Advanced Neuropsychology Assessment and
- Intervention: The Elderly.

Forensic Psychology Concentration
Forensic psychology involves the application of assessment and intervention techniques to informing legal decision-makers and attorneys on questions in criminal, civil, and family law. Those who concentrate in forensic psychology will be trained in relevant law, behavioral science research, and assessment and intervention approaches with a particular focus on juvenile and criminal issues.

In addition to the core curriculum:

- One forensic psychology practicum (800 hours)
- A forensic psychology-focused thesis and dissertation
- At least two years of research in an area related to forensic psychology
- Required classes: Forensic Assessment I and II, Law and Mental Health
- At least two forensic psychology electives.

Clinical Health Psychology Concentration
Health psychology adopts a broad-based, biopsychosocial perspective in order to: (1) better understand the interplay among behavioral, emotional, cognitive, social, and biological factors regarding health, wellness, and physical disease; (2) promote and maintain wellness and positive physical health; (3) prevent, treat, and rehabilitate illness and disability, and (4) improve the health care delivery system. The health psychology concentration aims to provide specialty training in order to prepare graduate students for academic and/or clinical positions where the primary focus is on physical health problems.

In addition to the core curriculum:

- One health psychology practicum (800 hours)
- A health psychology-focused thesis and dissertation
- Required classes: PSY 720 Health Psychology, PSY 815 Evidence-Based Assessment and Psychotherapy
- At least three Health Psychology electives

CBT Concentration
Cognitive behavior therapy (CBT) represents a broad family of psychological interventions that are grounded in scientific theories and principles derived from psychology and related disciplines, and that stress the empirical validation of intervention methods. Various theories, principles, models, and techniques fall under the general rubric of CBT, and these approaches have been applied to the full range of human experience, from the assessment and treatment of severe psychopathology and profound developmental delays to primary prevention efforts to enhancing peak performance among athletes.

Common features of the various CBT approaches include a focus primarily on the present rather than the past, an emphasis on parsimony in theoretical explanations, grounding in learning principles (including principles related to how we interpret the world and/or how we related to our own experience), and the emphasis on epistemological empiricism. The CBT concentration aims to provide pre-specialty training in order to prepare graduate students for academic and/or clinical positions in which CBT is a primary focus.

Additional concentration requirements beyond the core curriculum include:

- One CBT-oriented practicum (800 hours)
- A CBT-focused thesis and/or dissertation
- Required classes: PSY 820 Cognitive Behavior Therapy, PSY 840 Advanced Cognitive Behavior Therapy. Behavioral Stress Management (taken in second year with Personality Assessment taken in third year)
- At least two CBT electives: Child Psychopathology and its Treatment, Seminar in Mind/Body Studies, Pediatric Psychology, Eating and its Disorders, Substance Abuse, and others as offered and approved by the Concentration Head.

For more information on the PhD program requirements,contact the Clinical Psychology PhD Program (http://www.drexel.edu/psychology/academics/graduate/clinical).

PhD in Psychology: Applied Cognitive and Brain Science (ACBS)

The Department of Psychology's program in Applied Cognitive and Brain Sciences (ACBS) program is a research-oriented, non-cliniqql program in experimental psychology and/or cognitive neuroscience. The program places equal emphasis on basic research and the application of scientific principles. Please visit the ACBS website (http://www.drexel.edu/psychology/academics/graduate/acbs) more information.

Admissions

Drexel University is seeking applicants with a strong academic record, as evidenced by their GRE scores (a quantitative plus verbal sum of 1250 or greater is desirable), strength of undergraduate institution and GPA (3.5 or greater is preferred). In addition, applicants should have outstanding letters of recommendation (from doctoral-level academic, research oriented psychologists, if possible), high-quality research experience, and include a statement of purpose that convinces Drexel that a potential student is an excellent "match" for one or more of our research groups.

For more details on how to apply to this program, please visit the Graduate Admissions Psychology (http://www.drexel.edu/grad/programs/coas/apply/requirements/p_clps) page.

Curriculum

The PhD program curriculum requires student to earn a minimum of 90.0 credits. Students completing the concentration in Applied Cognitive and Brain Science take all or most of their core courses within the first two years. The third and fourth years, following the receipt of the master's degree, successful passing of the qualifying examinations, and advancement to doctoral candidacy, will be spent in enrichment or specialization courses negotiated with their research supervisor and in research activities.

The following section outlines the courses required for graduation for entering Bachelor's-level students.

First Year		
Fall		**Credits**
BMES 510	Biomedical Statistics	4.0
PSY 512	Cognitive Psychology	3.0
PSY 530	Principles of Neuroscience	3.0
PSY 560	Teaching and Consultation	1.0
	Term Credits	**11.0**
Winter		
BMES 515	Experimental Design in Biomedical Research	4.0
PSY 560	Teaching and Consultation	1.0
PSY 812	Cognitive Neuroscience	3.0
PSY 898	Master's Thesis in Psychology	3.0
	Term Credits	**11.0**
Spring		
BMES 518	Interpretation of Biomedical Data	3.0
PSY 560	Teaching and Consultation	1.0
PSY 614	Problem Solving & Creativity	3.0
PSY 865	Special Topics in Psychology	3.0
	Term Credits	**10.0**

Second Year

For the second year and beyond the student's academic schedule will be determined jointly by the student and their primary mentor/advisor. Pre and Post Master's coursework will be partly shaped to suit the student's goals and may be drawn from the following list of courses. (Additional courses may be added as appropriate and with the approval of the program director.)

	Term Credits	**0.0**

Total Credit: 32.0

Sample Electives

PSY 510	Research Methods I	
PSY 511	Research Methods II	
PSY 516	Developmental Psychology	
PSY 517	Social Cognition	
PSY 562	Consciousness	
PSY 610	Data Analysis in Psychology	
PSY 612	Psychology of Human-Computer Interface Design	
PSY 616	Motivation and Emotion	
PSY 617	Empirical Unconscious Process	
PSY 621	Theories of Personality	
PSY 630	Psychopharmacology	
PSY 632	Sensory and Motor Systems	
PSY 648	Forensic Assessment I	
PSY 649	Forensic Assessment II	
PSY 710	Data Analysis II	
PSY 711	Data Analysis III: Advanced Topics	
PSY 712	History and Systems	
PSY 720	Health Psychology	
PSY 730	Criminal Law and Psychology	
PSY 746	Neuropsychological Evaluation and Intervention of Children and Adolescents	
PSY 812	Cognitive Neuroscience	
PSY 840	Advanced Cognitive-Behavioral Therapy	
PSY 865	Special Topics in Psychology	
PSY 898	Master's Thesis in Psychology	
PSY 998	PhD Dissertation in Psychology	
Enrichment Courses from other Disciplines		
Computer Science		
CS 510	Introduction to Artificial Intelligence	3.0
CS 530	Developing User Interfaces	3.0
CS 610	Advanced Artificial Intelligence	3.0
Information Systems		
INFO 608	Human-Computer Interaction	3.0
INFO 610	Analysis of Interactive Systems	3.0
INFO 611	Design of Interactive Systems	3.0
Biomedical Engineering and Sciences		
BMES 531	Chronobioengineering I	3.0
BMES 532	Chronobioengineering II	3.0

BMES 551	Biomedical Signal Processing	3.0
BMES 710	Neural Signals	3.0

For more information on the PhD program requirements, consult Department of Psychology's (http://psychology.drexel.edu) web site.

Facilities

Computers
Computer resources for student use include more than 20 personal computers (IBM, Macintosh) available in the library and 10 IBM PCs available in the computer laboratory. Both facilities are near the department. In both locations, word processing and biostatistics software is available.

By using computers from their homes or in the library, students have free access to e-mail and a wide array of online services (e.g. , the Internet, World Wide Web, and literature databases such as PsychLit and Medline).

Library
Psychology books and journals are located at the Center City Hahnemann Campus library, Moore Campus Library on Henry Avenue, Queen Lane Library on the Queen Lane Campus, and the W. W. Hagerty Library on the University City Campus. The combined holdings represent one of the best psychology libraries on the East Coast.

Equipment
Testing equipment for classroom instruction is available to psychology graduate students. The program also has videotape and audiotape equipment available for classroom instruction and research activities.

Joint JD/PhD Law-Psychology Program

Juris Doctor (JD) = 85.0 semester credits
Doctor of Philosophy (PhD) = 91.0 quarter credits

About the Program

The Earle Mack School of Law (http://www.earlemacklaw.drexel.edu) and the Department of Psychology (http://www.drexel.edu/psychology) in the College of Arts and Sciences offer a joint and integrated JD/PhD Program in Law and Psychology. The program melds two already ongoing successful endeavors, the JD degree in the School of Law and the PhD in clinical psychology in the Department of Psychology. See the JD-PhD Program webpage (http://www.drexel.edu/psychology/academics/graduate/jdphd) for more information.

Students in the program complete all 85.0 semester credits required for graduation from the law school and all 91.0 quarter credits required to complete the doctorate. The program allows those students who wish to pursue professional degrees in both law and psychology a more efficient plan of study. The program is designed to be completed in seven (7) years, including required psychology practica, a year's internship in an American Psychological Association accredited predoctoral mental health/forensic setting, a master's thesis, a doctoral dissertation, and 20 hours per week of cooperative training and 50 hours of pro bono service in law.

Students who are accepted into the JD/PhD program will receive full tuition remission for all psychology coursework, plus a guaranteed annual stipend that is currently at least $9,000 per year for all six years they are at the university prior to completing the clinical internship. Students with outstanding LSAT scores may be eligible for full tuition remission from the Earle Mack School of Law.

For information on the Admissions process, visit the JD/PhD Application Instructions (http://www.drexel.edu/psychology/academics/graduate/jdphd/application) page.

Philosophy

The program bridges the gap between legal and psychological training. By and large, lawyers and social scientists come from different cultures, with different interests, different cognitive approaches to solving problems, different research methodologies, and different attitudes toward confrontation and argument. Each profession arrives at the "truth" in different ways, and its members are exposed to different styles of education during their post-baccalaureate training. Legal education develops an understanding of case analysis, statutory interpretation, the evolution of legal traditions, and methods for resolving disputes. Education in psychology develops research and clinical skills and understanding of behavioral theories, techniques, and statistical methods. Law, which has special rules concerning evidence and proof, relies heavily on precedent and the application of legal principles to specific facts toward the goal of settling conflicts that need immediate resolution. By contrast, psychology looks at problems through an empirical lens, using psychometrically-based tools and techniques to systematically evaluate questions, but rarely ending in a "final verdict." Because the limits of evidence and the meaning of "proof" in psychological research may differ sharply from the limits of evidence and proof in law, conflict may result when the two disciplines interact.

Goals

Within the broad framework of the program's philosophy, the JD/PhD Program in Law & Psychology has three specific goals:

- Develop scientist-practitioners who will produce legally sophisticated social science research to aid the legal system to make better empirically-based decisions;
- Produce lawyer-psychologists who will participate in the development of more empirically and theoretically sophisticated mental health policy by legislatures, administrative tribunals, and the courts; and
- Educate highly trained clinicians who can contribute to the advancement of forensic psychology in such areas as criminal law, domestic relations, and civil commitment.

In fulfilling these goals, the program trains students in an integrated and conceptually unified curriculum so they acquire a mature understanding of the interaction between the two disciplines.

Curriculum

Students attend the School of Law and the Department of Psychology simultaneously for six years, integrating course work in both disciplines each year. Students maintain continuous contact with the faculties of both schools and the developments in both disciplines over the course of each year.

In the seventh year, after obtaining the JD, students undertake a year-long supervised internship in clinical and forensic psychology and complete their doctoral dissertation. They are awarded the PhD at the end of their seventh year.

Training consists of seven elements:

- The required existing core program in law and psychology at both schools;
- Interdisciplinary courses; e.g., Law and Mental Health, Behavioral Science and the Law, Seminar in Advanced Problems in Mental Health Law, Law and the Mind Sciences, and Research in Law & Psychology;
- Supervised psycholegal research experience on teams of students' faculty mentors;
- Legal clinics and psychology practica and internships that combine knowledge from both fields in a practical setting;
- Electives in both fields, e.g., bioethics, education law, health law, health psychology, employment discrimination, neuropsychology;
- Cooperative experience and pro bono service in legal settings; and
- Employment for at least one summer in a legal setting, e.g., public interest law firm, governmental agency, private law firm, nonprofit association.

Master of Science in Public Policy

Master of Science: 45.0 quarter credits

About the Program

The Master of Science in Public Policy program is a general professional masters degree designed for people who work, or who would like to work, for government or a nonprofit organization.

The program has a required core curriculum of nine courses, specifically designed for students to:

- develop an understanding of the social, political and ethical context of policy research, and how this understanding can be applied to an applied practice of policy analysis;
- conceptionalize, design and conduct social research for policy purposes, as well as comprehensively analyze existing social research data;
- recognize the history of public policy institutions in America and the management and governance of nonprofit organizations; and
- understand the concept of sustainability as it relates to policy planning, design, and implementation.

In addition to the core courses, the program has a focus on case study research as a unifying element of the curriculum. The curriculum reinforces coursework with a series of accompanying 1-credit, online, Case Study Research co-requisites. Students are required to choose a specific case study topic that they will work on for the duration of the core curriculum. In each subsequent Case Study Research course, students continue further research and writing on their chosen case study topic. Thus by the end of the program students will have produced a polished, in-depth analysis of a specific case that they can use to demonstrate expertise in a given policy area.

With the approval and support of the program director, students can craft a specialized course of study with their three electives, or they can take courses in one of three tracks:

- Educational Policy
- Environmental Policy
- Urban Systems Management

The degree can be completed part-time in two years. Select students will also be able to apply for an intensive full-time track in which they complete the degree in a single year.

For additional information, view the Center for Public Policy (http://www.drexel.edu/publicpolicy) page on the College of Arts and Sciences' website.

Admission Requirements

Acceptance for graduate study at Drexel University requires a four-year bachelor's degree from an accredited institution in the United States or an equivalent international institution. Although admission requirements vary by program, regular acceptance typically requires a minimum grade point average (GPA) of 3.0 for the last two years of undergraduate work. The GPA for any graduate work must be at least 3.0.

The admission committee evaluates all credentials submitted by applicants to determine a student's ability and potential to succeed in graduate study. In addition, the committee is interested in the applicant's ability to contribute to his/her program of study and to the University community as a whole.

Though part-time at 8.0 credits, Drexel is extending the same scholarship opportunities to Master of Science in Public Policy students who enroll that are usually only available for full-time programs.

Visit the Graduate Admissions (http://www.drexel.edu/grad/programs/coas/apply/requirements/p_pub) website for more information about requirements and deadlines, as well as instructions for applying online.

Degree Requirements

Required Courses		
BUSN 502	Essentials of Economics	3.0
ECON 616	Public Finance and Cost Benefit Analysis	3.0
COM 705	Data Analysis in Communication	3.0
INFO 680	US Government Information	3.0
PLCY 503	Theory and Practice of Policy Analysis	3.0
PLCY 504	Methods of Policy Analysis	3.0
PLCY 506	Institutional Dynamics of the Policy Process	3.0
PLCY 507	Nonprofit Organizations	3.0
PLCY 509	Sustainability & Public Policy	3.0
Case Study Courses		9.0
The curriculum reinforces coursework with a series of accompanying 1-credit, online, Case Study Research courses. In the first, students are introduced to case study methodology and practice, and required to choose a specific case that they will work on for the duration of the core curriculum. In each subsequent Case Study Research course, students continue further research and writing on their chosen case study topic. Thus by the end of the program students have produced a polished, in-depth analysis of a specific case that they can use to demonstrate expertise in a given policy area.		
PLCY 511	Case Study Literature Review	1.0
PLCY 512	Case Study Document Review	1.0
PLCY 513	Case Study Interviews	1.0
PLCY 514	Case Study Research I	1.0
PLCY 515	Case Study Colloquium	1.0

PLCY 516	Case Study Research II (1-credit course taken 3 times)	3.0
PLCY 517	Case Study Final Project	1.0
Elective Courses		
Elective courses are taught under the PLCY 590: Special Topics in Public Policy, or by one of the participating departments.		
PLCY 590	Special Topics in Public Policy	
Total Credits		45.0

Master of Science in Publication Management

Master of Science: *45.0 quarter credits*

About the Program

Drexel's MS Degree in Publication Management prepares students for careers in the dynamic and multi-disciplinary field of publishing and includes course content in books, periodicals, e-publishing, marketing, editorial, writing, acquisitions, page design, and projections and budgeting. The program includes education in professional and scholarly, trade, and consumer publishing. Students are taught by well-known industry professionals and accomplished professors. The curriculum includes completion of an independent project focusing upon an area of publishing in which a student is most interested. Independent projects can be done in conjunction with one of the several publishers and publishing companies with which the program is affiliated. The goal of the program is to produce well-informed, skilled publishing professionals with a view to facilitate a productive career in publishing or a publishing related field or with a view to enhance a career that is already underway.

Students completing the program may find career opportunities in recognized publishing companies, publishing divisions of organizations or corporations, entrepreneurial endeavors, or independent or freelance settings. Past students have found positions in a broad range of business and educational settings.

Students come to the program from outside or inside of the publishing industry and from diverse undergraduate backgrounds including liberal arts, business, journalism, communications, science, and information studies. The program builds upon the individual's undergraduate content base by providing study of necessary publishing fundamentals and advanced publishing processes, research and scenarios. The program also serves the needs of individuals already employed in the publishing field who seek to update and broaden their knowledge and/or aspire to advance in their field.

All courses in the program are offered in the evening on a part-time or full-time basis. The curriculum is comprised primarily of courses offered through the College of Arts and Sciences, Department of Culture and Communications, and may include business courses offered through the LeBow College of Business. Students may choose from a variety of electives to heighten their academic experience. The MS Degree requires 45.0 credits for completion.

For more information, please contact:

Professor Joan Blumberg
Coordinator of the Publication Management Program
Phone: 215.895.6351 | Office: PSA 318

Email: jwb28@drexel.edu

Caroline Chmielewski
Department Administrator
Phone: 215.895.1313 | Office: PSA 47-117
Email: chmielcm@drexel.edu

Admission/Financial Aid

Requirements for Admission

After admissibility to Drexel graduate studies has been determined, applicants are selected on the basis of college transcripts, a written statement of professional goals and objectives, references, and a personal interview with the graduate advisor.

For additional information on how to apply, visit Drexel's Admissions page for Publication Management (http://www.drexel.edu/grad/programs/coas/publication-management).

Financial Assistance

Graduate assistantships are available to selected students. Assistantships provide professional experience, tuition waiver, and stipend. Contact the University Financial Aid Office for information regarding work-study arrangements and student loans.

Degree Requirements

Required Courses		
COM 510	Technical Writing	3.0
COM 570	Technical and Science Editing	3.0
PMGT 630	The Publishing Environment	3.0
PMGT 631	Page Design and Production	3.0
PMGT 635	Periodicals Publishing	3.0
PMGT 730	Book Publishing	3.0
PMGT 745	Electronic Publishing	3.0
PMGT 735	Publication Budgeting & Estimating	3.0
PMGT 740	Publications Marketing	3.0
PMGT 800	Independent Study	3.0
or PMGT 801	Independent Project	
Elective Courses *		
Select five of the following, one must be a COM elective:		15.0
COM 500	Reading & Res Communication	
COM 520	Science Writing	
COM 530	Techniques and Science of Photography	
COM 540	Technical and Science Graphics	
COM 610	Theories of Communication and Persuasion	
COM 620	Message Design and Evaluation	
COM 630	Software Documentation	
COM 640	Desktop Publishing	
COM 650	Telecommunications Policy in the Information Age	
COM 655	Ethnography of Communication	
COM 660	Investigative Journalism	
COM 665	Journalists, Courts and the Law	
COM 670	Medical Writing	
COM 675	Grant Writing for the Arts and Humanities	

COM 680	Public Relations Writing and Strategies	
COM 690	Special Topics	
ORGB 625	Leadership and Professional Development	
MKTG 601	Marketing Strategy & Planning	
MKTG 630	Global Marketing	
Total Credits		45.0

* Electives may include, but are not limited to the following.

Master of Science in Science, Technology, and Society

Master of Science: 45.0 quarter credits

About the Program

The Science, Technology, and Society (STS) program investigates the co-production of science and society; this is, the many ways cultural, economic, historical, and political contexts influence science, technology and medicine, and how science, technology and medicine influence these contexts. Questioning the taken-for-granted, students hone their skills in humanities and social science research methods to examine the interactions among among science, technology, identities, relationships, and how these are rooted in larger structural relationships. Through this program, graduate students explore the impact of new technologies and scientific knowledge, as well as their many social, ethical and legal implications. The program also provides a unique international orientation, which recognizes the crucial context of globalization in the advancement of science and technology and the broad implications of scientific research and innovation in the politics and history of the contemporary world.

The STS program takes on some of our most important questions in contemporary science, technology and medicine with a multidisciplinary toolkit. Faculty from a range of disciplines contribute to a curriculum that features a broad set of perspectives, all grounded in a foundation of critical thinking, strong research methods expertise, and clear writing and presentation skills. The STS program emphasizes three interrelated areas: environment and sustainability; health and medicine; and information, identities and networks. Working with a primary adviser, graduate students develop an individualized plan of study that allows them to pursue their interests in depth.

Prospective students for the MS in STS see this educational opportunity as an essential factor in their skill enhancement and career advancement. They are recent college graduates in the social sciences, humanities, natural sciences, and engineering; middle and high school teachers; and professionals in businesses, city and state government offices, and area hospitals. Students can attend full time or part time and complete all coursework in the evening.

For additional information, visit the Master's Program in Science, Technology, and Society (http://drexel.edu/sts/academics/ms-STS) web page.

Admission Requirements

Applicants to the program must meet the general requirements for admission to graduate studies at Drexel. Applicants whose undergraduate grade point average is below 3.0 must provide GRE scores.

Prospective students must also submit a 500-word essay explaining why they want to enter the program. These statements are read carefully by the faculty screening committee to evaluate each applicant's sense of purpose. Entering students typically begin during the fall quarter.

Visit the Graduate Admissions (http://www.drexel.edu/grad/programs/coas/science-technology-society) website for more information about requirements and deadlines, as well as instructions for applying online.

Degree Requirements

The program requires 45.0 credits of coursework. At least 36.0 credits must be in the Department of History & Politics. Required courses total 27.0 credits (including a 3-credit research seminar, a 3-credit practicum, and 6 credits of research and writing for the thesis, which may be tied to the practicum). Remaining credits are chosen from a list of electives.

Basic Requirements		
HIST 501	Introduction to Science, Technology and Society	3.0
HIST 585	Technology in Historical Perspective	3.0
HIST 586	Explorations in Technology and Gender	3.0
or PSCI 573	Gender, Race and Science	
PSCI 555	International Political Economy and Technology	3.0
Select one of the following:		3.0
PSCI 571	Science and Technology Policy	
PSCI 557	Globalization and Transition	
PSCI 541	Technology in Developing Nations	
PSCI 570	International Environmental Policy	
Advanced Requirements		
HIST 696	Seminar in Science, Technology, and Society	3.0
or PSCI 696	Seminar in Science, Technology, and Society	
HIST 697	Practicum: Science and Technology in Action	3.0
HIST 698	Master's Thesis	0.5-9.0
or PSCI 698	Science Technology and Society Thesis	
Suggested Electives		9.0
Select three of the following:		
HIST 560	History of Information Science and Technology	
HIST 583	History of Medicine and Disease	
HIST 584	Historiography of Science	
HIST 586	Explorations in Technology and Gender	
HIST 590	Themes in the History of Science	
HIST 591	Themes in the History of Technology	
PSCI 541	Technology in Developing Nations	
PSCI 555	International Political Economy and Technology	
PSCI 557	Globalization and Transition	
PSCI 570	International Environmental Policy	
PSCI 573	Gender, Race and Science	
PSCI 574	Alternative Policy Perspective	
PSCI 575	Appropriate Technology for Development	
COM 650	Telecommunications Policy in the Information Age	
COM 690	Special Topics	
MGMT 602	Managing Technology Innovation	
PSY 612	Psychology of Human-Computer Interaction Design	
Remaining Electives		9.0

Any remaining electives may be taken in the Department of History & Politics or other departments and colleges in the university, chosen in consultation with the STS faculty.	
Total Credits	45.0

Undergraduate Course Descriptions

Africana Studies

Courses

AFAS 101 Introduction to Africana Studies 3.0 Credits
Provides an overview of the experience, culture, and political practices of African descendants in the Americas and the Caribbean. The course uses a multidisciplinary approach to introduce students to the history, art, music, and literature of the African Diaspora.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

AFAS 201 Cross Currents in Africana Studies 3.0 Credits
With a temporal focus on the 20th century, this course critically explores and analyzes the cultural, political and intellectual practices of blacks in North, Central, and South America as well as in the Caribbean.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

AFAS 250 African American Herstories 3.0 Credits
Students gain insights into three distinct historical periods of African American (American) History and a cross section of African American life through the reading, analysis, and discussion of selected African American women's autobiographies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

AFAS 260 Race, Politics and Religion 3.0 Credits
An examination of race and religion as in liberal tradition. How has liberal theory purported the state will confront issues of race and religion? Have the political realities of race and religion in the modern state lived up to the promises laid out by liberalism?.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

AFAS 295 Special Topics in Africana Studies 3.0 Credits
Provides student with the opportunity to explore specific topics in Africana Studies. Courses focus on such issues as Caribbean literature, Latin American History and Political, Black Women's History in the U.S. the Harlem Renaissance, and Blacks in Science. Uses lectures, films, and discussions. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

AFAS 298 Independent Study for Minors 0.5-3.0 Credits
Independent study allows students to work one on one with professors in a specific area of Africana Studies. It is designed for minors but non-minors may ask for special permission from the director. Students' past topics have included comparative women's history, race and science, and entrepreneurship of color. May be repeated twice for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 6 credits

AFAS 301 Politics of Hip Hop 3.0 Credits
This class in an interdisciplinary, socio-historical introduction to rap music and hip hop culture. Several themes will be explored including the origins of rap music as well as the role of urban youth and their notions of race and gender. Record industry practices will also be investigated together with the impact of commercialism on hip hop. We will also consider sexism, misogyny, and violence in both the music and culture.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

AFAS 310 Women, Crime, & History 3.0 Credits
This class will examine gender, race and crime in US history. Specifically, we will explore the experience of female criminals from the colonial period to the present. We will conduct primary research into this subject at the Philadelphia City Archive (PCA), located at 3101 Market Street. Students will be responsible for a final research paper based on their research findings.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

AFAS 385 Rum, Rice and Revolution: Caribbean History 3.0 Credits
Course provides a broad, interdisciplinary and socio-historical introduction to the Caribbean. Several themes are covered including empire and the making of the Caribbean; slavery and emancipation; labor formation and race; revolution and resistance; gender oppression and women's experiences; and cultural expressions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

AFAS 395 Special Topics in Africana Studies 3.0 Credits
Provides students with the opportunity to explore specific topics in Africana Studies - but is an upper division course. Courses focus on such issues as Caribbean literature, Latin American History and Politics, Black Women's History in the US, the Harlem Renaissance, and Blacks in Science. Uses lectures, films, and discussion. May be repeated up to three times for credit if topics vary.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

AFAS 401 Urban Social Justice Practicum I 3.0 Credits
The Urban Social Justice Practicum offers Drexel students an exciting opportunity to work on-site at a variety of community based organizations that address issues relevant to the African Diaspora. Students can work as mentors, teaching assistants, and interns and inner-city schools, governmental agencies, judicial offices and health care facilities. Working 5 hours per week at a site of their choosing, students also participate in weekly seminars, maintain journals, and complete a final paper. Course runs over two quarters.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

AFAS 402 Urban Social Justice Practicum II 3.0 Credits
The Urban Social Justice Practicum offers Drexel students an exciting opportunity to work on-site at a variety of community based organizations that address issues relevant to the African Diaspora. Students can work as mentors, teaching assistants, and interns and inner-city schools, governmental agencies, judicial offices and health care facilities. Working 5 hours per week at a site of their choosing, students also participate in weekly seminars, maintain journals, and complete a final paper. Course runs over two quarters.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: AFAS 401 [Min Grade: CR]

Anthropology

Courses

ANTH 101 Introduction to Cultural Diversity 3.0 Credits
Examines the diversity that exists in human culture. Uses lectures, films, and discussions to examine and illustrate the relationship between humans and their social/cultural systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 110 Human Past: Anthropology and Prehistoric Archeology 3.0 Credits
Examines human origins from the australopithecines to the present, including both the physiological and archaeological records. Discusses new finds and new interpretations of evolution.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 120 Biblical Archaeology: The Archaeology of Israel and Jordan 3.0 Credits
Examines the archaeology of Israel and Jordan from the earliest human occupation until the Persian Conquest in 535 B.C. Discusses many places described in the Old Testament in an archaeological context.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 210 [WI] Worldview: Science, Religion and Magic 3.0 Credits
Examines anthropological and archaeological evidence of the worldviews of non-literate people, as shown in the practice of ceremony, magic, sorcery, and witchcraft, and the role of shamans and priests. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ANTH 212 Topics in World Ethnography 3.0 Credits
Examines the peoples and cultures of the selected cultural areas. Emphasizes indigenous cultures and the effects of modernization on these cultures.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ANTH 215 Anthropology of Gender 3.0 Credits
This course takes an ethnographic approach to the study of gender socializations and gender roles. We will address issues of sex roles, the cultural construction of gender categories, the forms of gender inequality, and the ways cultures engage in gender based power relationships. While these issues will be dealt with in specific and local ethnographic contexts, students will be encouraged to make comparisons across the contexts and to compare these works with their own experience.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 220 Aging In Cross-Cultural Perspective 3.0 Credits
Examines the status, roles, and treatments of elderly people in various societies throughout the world and among minority groups in the United States.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 240 Urban Anthropology 3.0 Credits
This course will give students the opportunity to familiarize themselves with the major themes in urban anthropology and how they relate to other areas of research in anthropology and the social sciences in general. Students will focus on the research methods used by urban anthropologists as well as read different ethnographic cases of urban life.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 250 Anthropology of Immigration 3.0 Credits
By examination of key ethnographical texts, the course covers basic theoretical and topical approaches to the anthropology of immigration, including: immigration and emigration; transnationalism and globalization; reception contexts; ethnic economies, enclaves and ethnic businesses; global economic strategies for migrant households; refugees, the state and immigration; culture, identity, and adaptation and assimilation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 255 Psychological Anthropology 3.0 Credits
The course is an overview of the field of Psychological Anthropology. It examines issues live nature vs. nurture; personality and "madness"; ethnopsychologies; and cognition. The attempt is to always recognize the salience and significance of culture when considering these issues.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ANTH 310 Societies In Transition: The Impact of Modernization and the Third World 3.0 Credits
Looks at the impact of 20th-century technology on traditional societies. Uses area studies from Africa, Asia, and elsewhere to explore institutions such as the family, the polity, the economy, and religion.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ANTH 312 Approaches to Intercultural Behavior 3.0 Credits
Examines theory and case studies related to working and living outside the United States. Includes topics such as culture shock, cultural relativity, and ethnocentrism. Selects specific geographic culture areas for case studies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 330 Media Anthropology 3.0 Credits
This course will introduce students to the anthropological study of media including traditional forms of mass media as well as new media such as the Internet. Students will be exposed to the theories and methodologies of media study from an anthropological perspective. Students will also engage in their own ethnographic studies of media to gain first hand experience with the methods of anthropology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 335 Anthropology of Education 3.0 Credits
This course will look at key works of anthropologists as they look at educational institutions from a cultural perspective. The course will consider some of the more critical issues of the field, such as issues of class, race and gender relations in schooling by focusing on some more contemporary ethnographies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 340 Crete Through The Looking Glass 3.0 Credits
Students are guided through the techniques of fieldwork and participant observation to attend several customs and practices through various fieldtrips. Traveling is a course requirement used toward the completion of a research project. While "at home", students reflect on their experiences through a looking-glass process.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ANTH 345 Visual Anthropology 3.0 Credits
Introduces students to the subdiscipline of visual anthropology through an overview of visual theory and a survey of ethnographic photography and film. Students will learn to evaluate ethnographic visual representation as well as develop their own skills as visual anthropologists through documenting and representing cultural phenomena.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ANTH 101 [Min Grade: D]

ANTH 350 Anthropology of Language 3.0 Credits
Explores how humans organize cultural activities though language and vice versa. After covering a short history of linguistic anthropological study and method, materials include ethnographic study of language and socialization, verbal art and linguistic performance, language and cultural categories, writing and literacy, and language ideologies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 355 Anthropology of Cyberspace 3.0 Credits
This course will focus on how the internet and new media have changed the way we think about space and time, the ways we works and engage in leisure activities. We will bring the approach of anthropology to the study of these new media in order to ask key questions about social life.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 360 Culture and the Environment 3.0 Credits
This course explores the interplay between culture and the environment by examining both ethnographic accounts from around the world and archeological materials from the last 14,000 years. Special attention is paid to the changing cultural view of the environment over the last two centuries.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 363 Sacred Traditions of the East 3.0 Credits
This course introduces the student to sacred traditions of Asia: Hinduism, Buddhism and Confucianism. It will attempt a historical-comparative investigation of these traditions. It will emphasize the practice and philosophical underpinnings of these traditions, as well as the interplay between integration of the folk or popular aspects and the abstracts or esoteric.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ANTH 365 Family and Kinship 3.0 Credits
The course investigates the concepts of family and kinship from an anthropological perspective. It looks at the family as a critical and contradictory location at the intersection of global and transnational forces. Using anthropological concepts such as status and role, it will explore changing gender relationships, sexual expression, parenting and aging.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ANTH 370 Ethnographic Methods 3.0 Credits
The course introduces students to ethnographic research methods through eight hands-on assignments: 1) selecting a site; 2) establishing rapport; 3) operationalizing hypotheses; 4) using qualitative and quantitative data gathering techniques; 5) taking field notes ; 6) analyzing data collected; 7) synthesizing these data; and 8) writing an ethnographic report.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ANTH 380 Special Topics in Anthropology 3.0 Credits
This course will explore current issues and debates in Anthropology. It will be conducted as a seminar. The topic will vary each term.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ANTH 390 Seminar in Ethnography 3.0 Credits
The Seminar in Ethnography is a course for anthropology majors. This is a peer-mentoring practicum where students are given the opportunity to present their own ethnographic fieldwork and get feedback from other students in the seminar. All anthropology majors will be in the seminar together. Juniors and seniors will be presenting mature research as well as mentoring the freshmen and sophomores.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 12 credits
Restrictions: Can enroll if major is ANTH.

ANTH 410 Cultural Theory 3.0 Credits
Explores controversial issues and questions, such as sociobiology and what it means to be human, as they have been and are being studied by those concerned with human origins and development. Reviews major thinkers in the history and theory of anthropology, including modernists and postmodernists.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ANTH 499 Directed Studies in Anthropology 12.0 Credits
Provides supervised study of special subjects in anthropology. See department for topics and terms offered.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

International Studies Abroad

Courses

AS-A 351 Study Abroad Literature/Civics/Arts 12.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

AS-A 352 Study Abroad-Psychology and Sociology 20.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

AS-A 353 Study Abroad-History/Political Science 20.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

AS-A 354 Study Abroad-European Union 12.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

AS-A 398 Independent Research Project - Study Abroad 12.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

AS-A 399 Study Abroad - Independent Study 12.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

Arts & Sciences-Interdisp Stud

Courses

AS-I 103 AIDS 101 3.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

AS-I 180 Interdisciplinary Study in the Arts & Sciences 1.0-3.0 Credit
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

AS-I 265 Special Interdisciplinary Study in Arts & Sciences 0.5-6.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

Bioscience & Biotechnology

Courses

BIO 100 Applied Cells, Genetics & Physiology 3.0 Credits
This course is designed to provide a topical and interactive introduction to biology for non-majors. Students will learn how trillions of tiny cells of our bodies work together in organ systems to use food for energy, to keep us alive, moving and healthy, and how information passes to subsequent generations. This course is identical to BIO 107.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO
Corequisite: EXAM 080

BIO 101 Applied Biological Diversity, Ecology & Evolution 3.0 Credits
An interactive course for the non-major that discusses the variety of living things and how we ended up with them and what makes them unique. This course also explores how living things affect each other and the world as well as the impacts that humans have on the living world. This course is identical to BIO 109.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO
Corequisite: EXAM 080

BIO 107 Cells, Genetics & Physiology 3.0 Credits
This course is designed to provide a topical and interactive introduction to biology for non-majors. Students will learn how trillions of tiny cells of our bodies work together in organ systems to use food for energy, to keep us alive, moving and healthy, and how information passes to subsequent generations. This course is identical to BIO 100.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO
Corequisites: BIO 108, EXAM 080

BIO 108 Cells, Genetics and Physiology Laboratory 1.0 Credit
This course is designed to be a companion course to the BIO 107 lecture. Labs are focused on providing students with a hands-on approach to science. Topics include how cells generate energy from food, how certain characteristics are genetically encoded and the physiology of human systems and diseases.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO
Corequisite: BIO 107

BIO 109 Biological Diversity, Ecology & Evolution 3.0 Credits
An interactive course for the non-major that discusses the variety of living things and how we ended up with them and what makes them unique. This course also explores how living things affect each other and the world as well as the impacts that humans have on the living world. This course is identical to BIO 101.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO
Corequisites: BIO 110, EXAM 080

BIO 110 Biological Diversity, Ecology and Evolution Laboratory 1.0 Credit
A companion course to BIO 109 that provides a hands on exploration of the diversity of life including microbes, plants and animals as well as the processes that give rise to this diversity. The labs also provide practical exploration of the impacts of human beings on the planet.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO
Corequisite: BIO 109

BIO 112 Biotechnology for Society 3.0 Credits
In Biotechnology for Society, students will become familiar with the fundamentals of genomic and cellular-based biotechnologies to begin to understand the roles that biotechnology is currently playing and is poised to play in society. Students will appreciate the complexity of those roles by investigating both the intended consequences and the potential and inadvertent ethical, legal and social implications of these technologies. This course is intended for non-science majors.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO or major is BME or major is CHEM or major is ENVS or major is HSCI

BIO 116 How Your Body Works-Or Not 3.0 Credits
How Your body Works-or Not is geared for non-major students hoping to explore the workings of their bodies. Students will explore why we evolved to have various organ systems, and how some systems accomplish their roles. We will explore how these systems can malfunction or fail, resulting in disease.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO or major is BME or major is CHEM or major is ENVS or major is HSCI

BIO 118 Basics of Cancer 3.0 Credits
This course provides an opportunity for students with little or no biology background to learn about cancer. Students can expect to learn what cancer is from a biological perspective, and how it is caused and treated. Students will also gain a basic understanding of how tumors form, and metastasize.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO or major is BME

BIO 122 Cells and Genetics 4.5 Credits
An introduction to the concepts of cell and function, cell and reproduction, cell communication, genetic inheritance, and population genetics. The relevance of genetics to society and ethical issues are included.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 080

BIO 124 Evolution & Organismal Diversity 4.5 Credits
Students will learn about the theory of evolution and the mechanisms of how organisms change. Using this knowledge, students will explore the diversity of organisms on Earth that is a hallmark of biology and the result of evolution by examining the representative members from the five major kingdoms of life.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 080

BIO 126 Physiology and Ecology 4.5 Credits
The first half of the course will survey physiological systems, including the respiratory, circulatory, homeostatic, excretory, and digestive systems in animals. The second half of the course will emphasize the relationships between organisms and the environment, including how humans impact ecosystems and the biosphere.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 080

BIO 141 Essential Biology 4.5 Credits
Introduces essential biological concepts to engineering students. Content covers five core topics: cells, genetics, evolution, ecology and physiology with application to societal concerns about biotechnology, health, conservation biodiversity and bioethics. Evolution will be woven throughout the course as a unifying theme in understanding all aspects of biology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is CS
Prerequisites: CHEM 102 [Min Grade: D]
Corequisite: EXAM 080

BIO 153 Anatomy and Physiology I 4.0 Credits
Introduction to the basics of human anatomy and physiology with an emphasis on topics of special interest to those in clinical curricula. Topics covered include organization of the body, chemical basis for life, cellular physiology, tissue types, skin as an organ system, skeletal and muscular systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (BIO 121 [Min Grade: D] or BIO 115 [Min Grade: D]) and CHEM 101 [Min Grade: D]

BIO 154 Anatomy and Physiology II 4.0 Credits
Introduction to the basics of human anatomy and physiology with an emphasis on topics of special interest to those in clinical curricula. Systems covered included blood/lymph, Immune, stress, GI tract, respiratory and cardiovascular systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 153 [Min Grade: D]

BIO 155 Anatomy and Physiology III 4.0 Credits
Introduction to the basics of human anatomy and physiology with an emphasis on topics of special interest to those in clinical curricula. Systems to be covered include urinary anatomy and physiology, central, peripheral and autonomic nervous systems, special senses, endocrinology, reproduction, development and heredity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 154 [Min Grade: D]

BIO 161 General Biology I 3.0 Credits
Covers structure and function of the cell and the organ-system plan of organization of the human body. Fall.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

BIO 162 General Biology II 3.0 Credits
Continues BIO 161. Covers the mechanics of heredity, including growth, differentiation, and development. Winter.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 161 [Min Grade: D]

BIO 163 General Biology III 3.0 Credits
Continues BIO 162. Covers the plant and animal kingdoms, radiobiology, evolution, and ecology. Spring.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 162 [Min Grade: D]

BIO 164 General Biology Laboratory I 1.0 Credit
In this course students will perform computer simulations of laboratory exercises related to photosynthesis, enzyme activity and kinetics, the cardiovascular, muscle and bone systems, regulation of human organ systems as well as plant growth and development.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: BIO 161

BIO 165 General Biology Laboratory II 1.0 Credit
In this course students will perform computer simulations of laboratory exercises related to cell division, mendelian genetics, DNA replication, translation and mutations. They will work with simulated microscopes to observe viral and microbial specimens. Additionally, students will learn and simulate biotechnology techniques such as DNA fingerprinting.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 161 [Min Grade: D]
Corequisite: BIO 162

BIO 166 General Biology Laboratory III 1.0 Credit
Involves experiments demonstrating the key principles in ecology and evolution including: population parameters, food webs, species interactions, succession, eutriphication, natural selection, sexual selection and evolutionary trees.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 162 [Min Grade: D]
Corequisite: BIO 163

BIO 201 Human Physiology I 4.0 Credits
Intensive survey of the basic physiological mechanisms of cellular and human electrophysiology and the physiology of the muscular, cardiovascular, respiratory, renal, and gastrointestinal systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 141 [Min Grade: D] or BIO 122 [Min Grade: D]

BIO 202 Human Physiology Laboratory 2.0 Credits
Laboratory course in human physiology. Designed to accompany BIO 201 and 203 Human Physiology I and II. Uses simulation, experimenters and data acquisition techniques to provide practical experience in the design and execution of physiological experiments and analysis of physiological data. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 201 [Min Grade: D] (Can be taken Concurrently)

BIO 203 Human Physiology II 4.0 Credits
Intensive survey of the control mechanisms of cellular and human physiology including introductions to control theory, neurophysiology, endocrine control, and control mechanisms in locomotion, cardiovascular, respiratory, renal, acid/base, gastrointestinal, and reproductive physiology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 201 [Min Grade: D]

BIO 212 Biotechnology 3.0 Credits
Covers the use of recombinant DNA techniques in biotechnology. Explores the many uses of biotechnology in the biological, agricultural and medical field. Also covers the social, ethical and environmental issues involved in this discipline.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 122 [Min Grade: D]

BIO 214 Principles of Cell Biology 3.0 Credits
The course familiarizes students with the basic fundamentals and principles of cell biology. Topics include protein and enzymes as metabolic facilitators, the source and function of cellular energy, cell structure and function, cellular protein transport, cell communication, cell cycle control, apoptosis, and cell differentiation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 104 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]

BIO 215 [WI] Techniques in Cell Biology 2.5 Credits
A course designed to introduce students to the lad techniques used by cell biologists. Microscopy is used for cell structure and their organelles, phagocytosis, cytoskeletal structure, muscle contraction and cell motility. Other topics include fractional by centrifugation, protein separation and quantification, and gel electrophoresis. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 104 [Min Grade: D] or BIO 122 [Min Grade: D] or TDEC 122 [Min Grade: D] or BIO 117 [Min Grade: D] or BIO 141 [Min Grade: D]

BIO 217 Evolution 4.0 Credits
Aspects of the fact of evolution are discussed in class, including early evolutionary thought, pivotal moments in the history of life, and evidences for evolution from fossils, genetics, and living organisms. Key concepts include natural selection, speciation, adaptation, vicariance, inclusive fitness, and evodevo. Non-scientific arguments pertaining to evolution are refuted.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 218 Principles of Molecular Biology 4.0 Credits
The course is designed to familiarize students with the details and concepts revolving around molecular biology's "central dogma." Specifically the chemical nature of DNA and RNA, the molecular structure of DNA and chromosomes, the definition of a gene, how DNA is replicated, and how genes are expresses and regulated.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]

BIO 219 [WI] Techniques in Molecular Biology 2.5 Credits
Designed to familiarize student with laboratory techniques utilized in molecular biology, specifically DNA isolation, characterization, and manipulation. Students work in teams to collect and analyze data and explain results in laboratory reports. Weekly recitations preview and review theory and techniques used in the lab. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 122 [Min Grade: D] (Can be taken Concurrently)

BIO 220 Essential Microbiology 3.0 Credits
Covers morphological, physiological, and biochemical characteristics of bacteria, fungi, algae, and protozoa, and viruses. Introduces the principles of microbial genetics, disease, and control of microorganisms. This course is identical to BIO 221.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BIO
Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]

BIO 221 Microbiology 3.0 Credits
Covers morphological, physiological, and biochemical characteristics of bacteria, fungi, algae, protozoa, and viruses. Introduces the principles of microbial genetics, disease, and control of microorganisms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]
Corequisite: BIO 222

BIO 222 Microbiology Laboratory 2.0 Credits
An introduction to microbiological techniques, and culture of prokaryotic and eukaryotic organisms. Includes sterile techniques, and use of specialized microscopic techniques. Classical and molecular techniques of microbial identification are also covered.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]
Corequisite: BIO 221

BIO 223 Parasitology 3.0 Credits
Parasitology explores the most predominant lifestyle on earth, parasitism. Students will learn how parasites invade and exploit their hosts, the resultant damage to the hosts, and the mechanisms by which hosts defend and protect themselves from these invaders.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 122 [Min Grade: D] or BIO 124 [Min Grade: D]

BIO 224 Form, Function & Evolution of Vertebrates 4.0 Credits
This course is an introduction to principles of organismal biology from the perspective of form, function and evolution of fish, amphibians, reptiles, mammals and birds. Many biological principles are well known in this group of animals. Data from areas as diverse as paleontology, ecology and molecular biology will be presented.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 121 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 124 [Min Grade: D] or BIO 126 [Min Grade: D]

BIO 225 Vertebrate Biology and Evolution Laboratory 2.0 Credits
A hands-on laboratory course that complements BIO 224: Form, Function & Evolution of Vertebrates. Students use the comparative approach to learn about the anatomy, physiology and evolution of vertebrates. Laboratory work will be on campus and in the field trips to observe vertebrates in nature.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 224 [Min Grade: D] (Can be taken Concurrently)

BIO 226 Microbiology for Health Professionals 5.0 Credits
An introduction to microbiology for students in the health professions. Covers the diversity of microorganisms, their growth and how to control them. An introduction to the principles of disease and pathogenicity, host interaction and immunological response. Laboratories focus on the basic techniques to culture and student microorganisms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 227 Exploring Parasites 2.0 Credits
Exploring Parasites Laboratory will safely introduce students to hands-on experiences with a vast diversity of human parasites to understand their evolutionary adaptations. Students will learn to culture Giardia lamblia, an enteric parasite, and design a term-long research project to study an aspect of Giardia biology of student interest.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 223 [Min Grade: C] (Can be taken Concurrently)

BIO 231 Cell Physiology 3.0 Credits
Molecular biology of the cell, including regulation of function, genetic mechanisms, chemistry and structure of cellular components, and cell-to-cell interactions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 214 [Min Grade: D]

BIO 244 Genetics I 3.0 Credits
Surveys Mendelian, microbial, molecular, and population genetics. Discusses model systems and analytical methods used by geneticists to understand gene functions at cellular, organismal, and population levels.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 122 [Min Grade: D]

BIO 256 Vertebrate Morphology and Physiology 5.0 Credits
Provides comparative study of the major vertebrate groups, relationships between physiology and organismal structure, evolutionary history, comparative anatomy, and development.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 224 [Min Grade: D]

BIO 260 Plant Biology I 4.0 Credits
This course provides an understanding of phylogenetic relationships among plant families. Students see the practical results of evolution by examining and comparing the properties of existing plant families.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 101 [Min Grade: D] or BIO 104 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 123 [Min Grade: D] or BIO 124 [Min Grade: D]

BIO 262 Plant Biology II 4.0 Credits
In this course, students learn the structure and function of higher vascular plants as organisms. Plant development, growth and behavior are examined at both the molecular and structural levels to give a comprehensive view of the plant and its environment.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 260 [Min Grade: D]

BIO 264 Ethnobotany 3.0 Credits
This course explores the relation between ancient/cultural botanical knowledge and its current application in modern pharmacology and alternative forms of medicine. It provides an interdisciplinary approach to the study of plants for food, medicine, stimulation, religious rituals and death.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 270 Development Biology 3.0 Credits
Covers molecular, cellular and physiological mechanisms underlying development of animals from gametes to adults. Covers the major stages and selected aspects of vertebrate development in importance animal model systems. Particular focus in on the importance of differential gene expression and its regulation in development.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D]

BIO 271 Developmental Biology Laboratory 2.0 Credits
Includes observations into development processes in a diverse group of organisms including developmental principles in simple multicellular protests, gametogenesis in diverse animal, fertilization in sea urchins, embryonic development of vertebrates, regeneration of planarians, and the role of gene regulation in fruit fly development. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 270 [Min Grade: D] (Can be taken Concurrently)

BIO 284 Biology of Stress 3.0 Credits
This course focuses on the biological responses to the physical and psychological stress, discussing in turn stress responses in various organ systems. Emphasis is given to the analysis and evaluation of conflicting biological evidence on stress effects.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 100 [Min Grade: D] or BIO 101 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]

BIO 306 Biochemistry Laboratory 2.0 Credits
Covers biochemical techniques ranging from basic laboratory preparatory work such as making solutions to the measurement of enzyme kinetics and substrate specificity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 242 [Min Grade: D]

BIO 310 Comparative Physiology 3.0 Credits
Provides comparative study of the physiology of vertebrate and invertebrate animals. Examines physiological principles by studying cardiovascular adaptations, water balance, respiratory adaptations, and other homeostatic mechanisms in model systems, including fish, amphibians, mammals, birds, and invertebrates.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 201 [Min Grade: D] or BIO 224 [Min Grade: D] or ENVS 284 [Min Grade: D]

BIO 311 Biochemistry 4.0 Credits
Covers bioenergetics and metabolism; enzymes, substrates, products, coenzymes, transporters, pathways (catabolic and anabolic for carbohydrates, lipids, amino acids, and nucleotides). Intracellular regulation, intercellular regulation, and how all this serves to meet the need of the cell and organism.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 242 [Min Grade: D]

BIO 312 Genetically Modified Foods 2.0 Credits
Covers the application of recombinant DNA techniques in the creation of genetically modified foods. Explores the many uses of these food. Also covers the social, ethical and environmental issues involved in the use of genetically modified foods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 100 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]

BIO 313 Comparative Physiology Laboratory 2.0 Credits
Computational laboratory examining quantitative facets of vertebrate physiology through simulation experiments. Complements BIO 310 Comparative Physiology. Example systems examined include gas and solute exchangers, open vs closed circulations, and thermoregulatory controllers. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 310 [Min Grade: D] (Can be taken Concurrently)

BIO 314 Pharmacology 3.0 Credits
In this course, students will apply their studies of chemistry and biology to understand how drugs: are designed, affect the body, and are affected by the body. Students can expect to learn the fundamentals of pharmacology, and to discuss current topics and novel approaches being used to design new therapeutics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 218 [Min Grade: D]

BIO 318 Biology of Cancer 3.0 Credits
In this course, students will apply their studies of cell and molecular biology to understand cancer pathology. Starting with a fundamental knowledge of normal cellular processes, students will learn how normal processes go awry in tumor development and metastasis, and the current approaches being used to develop new cancer therapeutics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D]

BIO 320 Microbial Pathogenesis 3.0 Credits
Covers mechanisms of pathogenesis in microbial disease: transmission, prevention, public health. Also covers molecular basis of microbial pathogenesis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 218 [Min Grade: D] and BIO 221 [Min Grade: D]

BIO 322 Mycology 4.5 Credits
Covers morphology, taxonomy, and physiology of yeasts and molds, with emphasis on species of economic importance; plant and animal pathogens; industrial fermentations; toxin production; decomposition of organic materials; and fungal morphogenesis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 221 [Min Grade: D]

BIO 331 Bioinformatics I 3.0 Credits
This course uses a combination of lecture and hands-on exercises to develop computational, algorithmic, and database navigation skills utilized in the analysis of genes and genomes. Topics include genomic databases, genome annotation, sequence alignment, metagenomic analyses, and phytogenetics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]

BIO 332 Bioinformatics II 3.0 Credits
This course continues the application of computational algorithms for manipulation and analysis of biological information covered in BIO 331 (Bioinformatics I). It covers genomic and proteome informatic approaches and applications for determining evolutionary relationships, discovery of protein structure/function relationships and bioengineering of proteins by molecular modeling by homology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 331 [Min Grade: D]

BIO 333 Bioinformatics Laboratory 2.0 Credits
In this course, students develop and apply computational skills in bioinformatics to address a quarter-long research project. Topics generally focus on the ecology and evolution of microbes, which have become much easier to study thanks to the advent of molecular tools and software for the analysis of DNA sequences.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 122 [Min Grade: D] (Can be taken Concurrently) or BIO 141 [Min Grade: D]

BIO 346 Stem Cell Research 3.0 Credits
This course will focus on recent and important topics relevant to stem cell research and development. Topics will include nuclear reprogramming and epigenetics, environmental influences on stem cell differentiation, stem cells and cancer, stem-cell-based therapies for heart and neurodegenerative disorders, stem cells and ageing, and politics of stem cell research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 218 [Min Grade: D]

BIO 368 Embryology 4.0 Credits
This course surveys general features of developing systems, and focuses on the developmental history of adult structures and functions in humans. Human developmental defects are also discusses.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 214 [Min Grade: D] or BIO 224 [Min Grade: D]

BIO 370 Teratology 3.0 Credits
This course will expand on the concepts of developmental biology by examining the agents that interfere with normal development. We will be exploring these agents through presentations and discussion of current peer reviewed literature. The focus will be on an understanding of mechanisms of action and how they are influenced by dose pharmacology and genetics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 270 [Min Grade: D] or BIO 368 [Min Grade: D]

BIO 386 Gross Anatomy 3.0 Credits
This course is to give students an understanding of Human Anatomy in a clinical format. Anatomy will be studied in a regional manner with an emphasis placed on landmarks and relationships of structure within a region.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.
Prerequisites: BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D]
Corequisite: BIO 387

BIO 387 Gross Anatomy Laboratory 2.0 Credits
This course is to accompany the Gross Anatomy lecture course and complements the students study of human anatomy by allowing the student to hone their dissection skills through dissection of a preserved mammalian specimen.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.
Prerequisites: BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D]
Corequisite: BIO 386

BIO 404 Structure and Function of Biomolecules 4.0 Credits
Covers the weak interactions which govern structure and function of biomolecules, including amino acids, proteins (structural organization, isolation, and methods of analysis). Enzymes (structure, catalytic mechanisms, kinetics), lipids and biomembranes, and DNA and RNA folding.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 242 [Min Grade: D]

BIO 406 Computational Biochemistry Laboratory 2.0 Credits
This course uses kinetic analysis of biochemical data to increase the computational and numerical sophistication used to build sound models of the underlying biological processes. Students start with Excel as the analytical tool. MATLAB is then used as the complexity of the problems demands it.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 242 [Min Grade: D]

BIO 412 Biology of Aging 3.0 Credits
Discusses ageing at the organismal, organ, cellular, and molecular levels. Discussions include chronological verses biological aging, normal and abnormal human physiology of aging, current theories of aging, the effect of caloric restriction on aging, and the molecular mechanisms that underlie normal and abnormal aging.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 218 [Min Grade: D]

BIO 413 Genomics 3.0 Credits
This course aims to elucidate current technologies, theory, and applications of genomic research. Though a large emphasis will be placed on the use of genomic tools to study human health, we will also study the genomes, transcriptomes, and proteomes of bacteria, fungi, plants, and other animals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 218 [Min Grade: D]

BIO 415 Proteins 3.0 Credits
Discusses protein structure, function, and isolation. Emphasizes biochemical, biophysical, and molecular biological techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 214 [Min Grade: D]

BIO 416 Biochemistry of Major Diseases 3.0 Credits
This course focuses on the biochemical bases of several selected human disorders including neoplasm, cardiovascular disorders, diabetes and obesity. Biochemical changes ant their regulation by signaling pathways under the disease conditions will be examined. The relevance of diagnosis and treatment will be discussed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 203 [Min Grade: C] or BIO 311 [Min Grade: C]

BIO 420 Virology 3.0 Credits
Discusses the major viral groups, including biochemistry and molecular genetics of viral replication, structure, gene expression, latency, and role in disease.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 218 [Min Grade: D]

BIO 421 Biomembranes 3.0 Credits
The experimental and theoretical basis for the structure and function of biological membranes will be surveyed. Topics include membrane self assembly, bilayer phase behavior and dynamics, membrane protein structure, passive and active transport, membrane fusion and trafficking.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 214 [Min Grade: D]

BIO 424 Microbial Physiology 3.0 Credits
Covers physiology and metabolism of microorganisms with emphasis on aspects unique to prokaryotes, including envelope structure, transport systems, modes of nutrition, biosynthesis, growth, and mechanisms of action of antibiotics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 221 [Min Grade: D]

BIO 426 Immunology 3.0 Credits
Covers the fundamental concepts of innate and adaptive immunity, including the molecular and cellular mechanisms that generate responses to a broad spectrum of infectious threats, self-non-self recognition, immune regulation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 214 [Min Grade: D]

BIO 427 Immunology Laboratory 2.0 Credits
Students will gain a more thorough understanding of the complexities of the mammalian immune system and will receive hands on experience with common models used in immunology labs. This course complements the Immunology lecture course (BIO 426). Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 426 [Min Grade: D] (Can be taken Concurrently)

BIO 430 Cell Biology of Disease 3.0 Credits
An introduction to the pathobiology of human disease as it relates to principles of cytoskeleton and membrane biology. The course reviews basic intracellular mechanisms and examines how they go awry in respiratory, heart and kidney diseases, diabetes, cancer, neurodegeneration and during viral and microbial infections.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 214 [Min Grade: D]

BIO 433 Advanced Cell Biology 3.0 Credits
Course covers chemical composition and cellular function of organelles and other cellular structures, intra- and inter- cellular regulatory processes, intercellular communication, genetic mechanisms and analytical techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is BIO.
Prerequisites: BIO 214 [Min Grade: D]

BIO 434 [WI] Advanced Cell Biology Laboratory 2.0 Credits
Course covers fundamentals of growth, division and homeostasis of mammalian cells grown in culture. Students perform experiments on cells to monitor cellular morphology, including subcellular structures and specific regulatory proteins. Techniques include fluorescent microscopy, cell transfection and subcellular fractionation. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is BIO and classification is Senior.
Prerequisites: BIO 433 [Min Grade: D] (Can be taken Concurrently)

BIO 435 Immunobiology of Disease 3.0 Credits
This course will expand on the concepts of molecular immunology focusing on emerging concepts in immunology research, immunopathologies, failure of host defense and current clinical concepts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 426 [Min Grade: D]

BIO 442 Modeling Methods in Biology I 3.0 Credits
Offers practical experience in the modeling of simple biological systems, including the applications of linear, trigonometric, and exponential functions in biology and the use of differential and integral calculus, simple differential equations, and the Eulerian approach to simulation. Emphasizes practical computational use of such tools in biological problems. Offered in alternate years.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

BIO 443 Modeling Methods in Biology II 3.0 Credits
Offers a practical introduction to the modeling of dynamic biological processes, including deterministic and stochastic processes. Emphasizes the development and construction of working models and the interpretation of results. Discusses both mechanistic and empirical/predictive models. Students develop their own model of a real-world biological process. Offered in alternate years.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 442 [Min Grade: D]

BIO 444 Human Genetics 3.0 Credits
Covers the fundamentals and principles of genetics with an emphasis on their relevance to human genetics and disease. Topics include human genetic disorders, pedigree analysis and genetic testing, cytogenetics, epigenetics, genetics if cancer, gene therapy, stem cell research, human genomics and biotechnology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 218 [Min Grade: D]

BIO 445 Microbial Genetics 3.0 Credits
Covers genetic organization and regulation in bacteriophage and bacteria, techniques of genetic manipulation of microbial genomes, genetic interactions of microbes under natural conditions and the use of microbial genome modification in industry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 218 [Min Grade: D] and BIO 221 [Min Grade: D]

BIO 447 Advanced Genetics and Molecular Biology 3.0 Credits
Covers classical prokaryotic and eukaryotic genetics; DNA/RNA structure; DNA replication, transcription, translation and regulation of these processes. Also covers major molecular techniques used for characterizing prokaryotic and eukaryotic genes, tools for analysis of genomes, and applications of molecular genetics research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is BIO.
Cannot enroll if classification is Freshman
Prerequisites: BIO 218 [Min Grade: D] and BIO 244 [Min Grade: D]

BIO 449 Recombinant DNA Laboratory 5.0 Credits
Covers procedures of DNA isolation and purification, insertion of DNA sequences into plasmid cloning vectors, introduction of plasmids into appropriate host cells, and methods of recovering and analyzing cloned DNA.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 218 [Min Grade: D]

BIO 451 Genetic Reg Development 3.0 Credits
Covers molecular and genetic control of morphogenesis and cellular differentiation. Focuses on differential gene function and the interaction between the nucleus and the cytoplasm.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 270 [Min Grade: D]

BIO 453 Protein Dysfunction in Disease 3.0 Credits
Proteins are essential for the function and health of the cell. Misfolded and damaged proteins are at the root of numerous human diseases, known collectively as conformational diseases. In this course we will examine cellular mechanisms involved in biosynthesis, folding and maintenance of proteins, and discuss how the failure of these mechanisms contributes to disease.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 214 [Min Grade: D]

BIO 462 Biology of Neuron Function 3.0 Credits
Covers molecular and cellular mechanisms underlying neuron function. Topics include: molecular and cellular biology of neurons and neural development; molecular biology and physiology of sensory and motor neurons; molecular biology of muscle function; molecular and cellular basis of learning and memory in model organisms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 201 [Min Grade: D] or BIO 218 [Min Grade: D]

BIO 463 Molecular Mechanisms of Neurodegeneration 3.0 Credits
This is an advanced course on the current, primary literature in the area of neurodegeneration. Students are expected to be conversant in areas of Genetics, Cell Biology, Molecular Biology, Biochemistry, and Neurobiology. This is a discussion course based on reading current manuscripts from the primary literature. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 214 [Min Grade: D]

BIO 465 Neurobiology of Disease 3.0 Credits
The objective of the course is to provide a basic understanding of molecular and cellular biology of disorders of the human nervous system. Advances developed form experimental models that have armed clinicians and basic scientists with new tools for diagnosis and treatment of disease and injury will be presented.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D] and BIO 462 [Min Grade: D]

BIO 466 Endocrinology 4.0 Credits
Describes the classical hormones, their regulation and major clinical abnormalities. New directions in endocrinology, such as cellular regulation and cellular mediators of hormonal action are also considered. The major focus of the course will be on mammals, although some examples involving other vertebrates are included.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 100 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D]

BIO 471 Seminar in Biological Sciences 2.0 Credits
Discusses and evaluates selected current topics in bioscience and biotechnology. Includes presentations by outside speakers.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Can enroll if major is BIO and classification is Senior.
Prerequisites: BIO 218 [Min Grade: D]

BIO 472 Seminar in Biological Sciences 2.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Can enroll if major is BIO and classification is Senior.
Prerequisites: BIO 471 [Min Grade: D]

BIO 473 [WI] Seminar in Biological Sciences 2.0 Credits
This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is BIO and classification is Senior.
Prerequisites: BIO 472 [Min Grade: D]

BIO 480 Special Studies Biological Science 12.0 Credits
Covers special topics offered in biology. Current offerings include Biotechnology, Biology of Cancer, Ethnobiology, Neurobiology, and Bioinformatics, as well as other selected topics of interest in molecular biology, genetics, and biotechnology.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

BIO 497 Research 0.5-12.0 Credits
Provides guided research in biology, molecular biology, microbiology, cell or human physiology, genetics, biochemistry, or biotechnology.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

BIO 498 Independent Study 0.5-12.0 Credits
Provides independent study in biology, molecular biology, microbiology, cell or human physiology, genetics, biochemistry, or biotechnology.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

Chemical Engineering Chemistry

Courses

CHEC 352 Physical Chemistry and Applications II 4.0 Credits
Equilibrium electrochemistry and transport; Covers electrochemical cells, Nernst equation, fuel cells, batteries, electrolytic solutions, transfer processes, Fick's laws, diffusion, ion transport, introduction to simple quantum mechanical systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (PHYS 211 [Min Grade: D] or PHYS 102 [Min Grade: D] or PHYS 201 [Min Grade: D] or PHYS 153 [Min Grade: D]) and (CHEM 252 [Min Grade: D] or CHEM 253 [Min Grade: D] or ENGR 210 [Min Grade: D])

CHEC 353 Physical Chemistry and Applications III 4.0 Credits
Kinetics and spectroscopy; Covers reaction kinetics, steady state approximation, chain reactions and unimolecular reactions, optical spectroscopy; Beer's Law, atomic spectra/simple atomic models, rotational and vibrational spectra, Raman spectra, term symbols and selection rules, lasers, molecular statistics, partition functions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (PHYS 211 [Min Grade: D] or PHYS 153 [Min Grade: D] or PHYS 102 [Min Grade: D] or PHYS 201 [Min Grade: D]) and (CHEM 252 [Min Grade: D] or CHEM 253 [Min Grade: D] or ENGR 210 [Min Grade: D]) and (CHEC 352 [Min Grade: D] or CHEM 355 [Min Grade: D])

Chemistry

Courses

CHEM 050 Preparatory Chemistry 0.0 Credits
This online course covered general chemical principles, such as stoichiometry, atomic and molecular structure, and characterization of chemical reactions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 100 Chemistry 2.0 Credits
Chemistry and its significance to industry and life, with discussions revolving around synthesis and use of polymers and biologically significant molecules.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 101 General Chemistry I 3.5 Credits
Covers fundamental principles of chemistry, stoichiometry, atomic and molecular structure, chemical bonding, states of matter, thermochemistry, and periodicity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: APCH 12 or CHEM 111 [Min Grade: D] or CHEM 050 [Min Grade: D]
Corequisite: EXAM 080

CHEM 102 General Chemistry II 4.5 Credits
Covers chemical equilibrium, including acid-base equilibria in solution; electrochemistry; organic chemistry; polymers; and petroleum.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 101 [Min Grade: D] or CHEM 121 [Min Grade: D] or CHEM 161 [Min Grade: D]
Corequisite: EXAM 080

CHEM 103 General Chemistry III 5.0 Credits
Covers organic functional groups, biochemistry, inorganic and coordination compounds, chemical kinetics, thermodynamics, and nuclear chemistry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])
Corequisite: EXAM 080

CHEM 108 Health Chemistry I 3.0 Credits
Covers physical and chemical properties of substances used in medical areas and related principles: atomic structure, bonding, gases, solutions, acids and bases, oxidation-reduction and the chemistry of hydrocarbon compounds and polymers. Examples are taken from pharmacology, nutrition and other allied health fields.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 080

CHEM 110 Environmental Chemistry 2.0 Credits
Chemistry of the environment; the ecological aspects. Discussion of problems related to the pollution of the atmosphere, natural waters, and soil from a chemist's point of view.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 111 General Chemistry I 4.0 Credits
Not open to engineering or science majors. Introduces the principles of general chemistry. Covers SI units, unit factor calculations, states of matter, elements and compounds, energy, atoms, electronic configurations, ionic and covalent bonds, Lewis dot structures, shapes of molecules, chemical equations, stoichiometry, molarity, gas laws, nuclear chemistry, equilibrium between different states of matter, and some colligative properties of solutions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 080

CHEM 112 General Chemistry II 4.0 Credits
Introduces organic chemistry. Covers some classes of organic compounds from alkanes to amines, basic reactions of important functional groups, uses of some compounds, stereochemistry, synthetic and natural polymers (carbohydrates, protein, DNA), and briefly acids and bases.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 111 [Min Grade: D]

CHEM 113 General Chemistry I Laboratory 1.5 Credit
Covers chemical and physical properties and techniques for inorganic, organic, and polymeric compounds, including distillation, crystallization, chromatography, separation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 111 [Min Grade: D] (Can be taken Concurrently)

CHEM 114 General Chemistry II Laboratory 1.5 Credit
Continuation of CHEM 113.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 112 [Min Grade: D] (Can be taken Concurrently)

CHEM 121 Majors Chemistry I 5.0 Credits
Part I in an introductory sequence for chemistry majors. Covers fundamental principles of atomic and molecular nature of matter, electronic structure, physic-chemical properties, periodicity, chemical reactions, stoichimoetry, thermochemistry, chemical bonding, properties of gases, and nuclear chemistry. Course includes weekly lab experiments.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CHEM.
Prerequisites: APCH 12 or CHEM 111 [Min Grade: D] or CHEM 050 [Min Grade: D]

CHEM 122 Majors Chemistry II 5.0 Credits
Part II in an introductory sequence for chemistry majors. Covers physical properties of liquids and solids, kinetics, equilibrium, solutions, acids and bases, thermodynamics, and electrochemistry. Course includes weekly lab experiments.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CHEM.
Prerequisites: CHEM 101 [Min Grade: C-] or CHEM 121 [Min Grade: C-]

CHEM 123 Majors Chemistry III 5.5 Credits
Part III in an introductory sequence for chemistry majors. Course covers physical and chemical properties of substances used in consumer products through an introduction to fundamental structures, nomenclature and properties of hydrocarbons, organize functional groups, polymers and biomolecules. Course includes weekly lab experiments.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CHEM.
Prerequisites: CHEM 102 [Min Grade: C-] or CHEM 122 [Min Grade: C-]

CHEM 151 Applied Chemistry 3.0 Credits
For business majors. Covers physical and chemical properties of substances used in consumer products. Provides qualitative introduction to required principles, including atomic structure and the elements, bonding and compounds, and the chemistry of carbon compounds and polymers. Uses examples from the areas of food and nutrition, pharmacology, and the petrochemical industry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 080

CHEM 161 General Chemistry I 3.0 Credits
Covers atomic structure, stoichiometry, gases, valence theory, and thermochemistry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 003 [Min Grade: D] or (MATH 001 [Min Grade: D] and MATH 002 [Min Grade: D])

CHEM 162 General Chemistry II 3.0 Credits
Covers solutions, colligative properties, chemical equilibrium, and electrochemistry. Introduces organic chemistry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 161 [Min Grade: D] or CHEM 101 [Min Grade: D]

CHEM 163 General Chemistry III 3.0 Credits
Continues organic chemistry. Introduces thermodynamics, molecular biology, inorganic chemistry, chemical kinetics, and nuclear chemistry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 164 [Min Grade: D] and CHEM 162 [Min Grade: D]

CHEM 164 General Chemistry Laboratory I 2.0 Credits
Involves experiments demonstrating the principles of gas behavior, thermochemistry, colligative properties, chemical equilibrium, and electrochemistry. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 162 [Min Grade: D] (Can be taken Concurrently)

CHEM 165 General Chemistry Laboratory II 2.5 Credits
Involves experiments illustrating the principles of organic separations, transition metal chemistry, complex ions, chemical kinetics, and qualitative analysis. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 163 [Min Grade: D] (Can be taken Concurrently)

CHEM 201 Why Things Work: Everyday Chemistry 3.0 Credits
Course will cover chemical explanations of everyday materials and phenomena. The focus will be conceptual understanding, as opposed to a detailed quantitative treatment.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 230 Quantitative Analysis 4.0 Credits
Covers chemical analysis and data treatment, including chemical equilibrium, acid-base and redox reactions, and applications to gravimetric and titrimetric methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

CHEM 231 [WI] Quantitative Analysis Laboratory 2.0 Credits
Provides laboratory studies in quantitative analysis. This is a writing intensive course. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 230 [Min Grade: D] (Can be taken Concurrently)

CHEM 241 Organic Chemistry I 4.0 Credits
Covers structure, reactions, and stereochemistry of organic compounds, especially alkanes, cycloalkanes, haloalkanes, and alkenes. Also covers SN1, SN2, E1, and E2 compound.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

CHEM 242 Organic Chemistry II 4.0 Credits
Covers structure, reactivity, and stereochemistry of organic compounds, especially alkanes, alkynes, alcohols, ethers, dienes, and aromatic compounds. IR, MS, and NMR spectral techniques are introduced and applied to the identification of organic compounds.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 241 [Min Grade: D]

CHEM 243 Organic Chemistry III 3.0 Credits
Covers structure, preparation, reactivity, and stereochemistry of organic compounds, especially substituted aromatics, aldehydes, ketones, carboxylic acids, carboxylic acid halides, anhydrides, amides, polypeptides, esters, amines, phenols, and carbohydrates.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 242 [Min Grade: D]

CHEM 244 Organic Chemistry Laboratory I 3.0 Credits
Introduces simple recrystallization, distillation, extraction, and chromatography techniques and applies them to several organic reactions illustrative of topics covered in CHEM 241. Provides opportunity to take and interpret IR and GC spectra.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 241 [Min Grade: D]

CHEM 245 Organic Chemistry Laboratory II 3.0 Credits
Provides experiments illustrating a number of organic reactions covered in CHEM 242 as well as more advanced organic techniques. Provides opportunity to take and interpret IR and GC scans. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 242 [Min Grade: D] (Can be taken Concurrently)CHEM 244 [Min Grade: D]

CHEM 246 Organic Chemistry for Majors I 6.5 Credits
This course offers a basic foundation for modern organic chemistry. Lecture topics include: the chemistry of alkanes, cycloalkanes, alkyl halides, alkenes, cycloalkenes, and alkynes, free radical substitution, nucleophilic substitution, elimination, ionic addition, and free radical addition reactions. Lab topics include recrystallization, distillation, chromatography, liquid-liquid extraction, and simple chemical reactions, including an elimination reaction to prepare an alkene and several substitution reactions to prepare alkyl halides. Introduction to the use of IR and 1-H NMR as structure identification tools.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CHEM.
Prerequisites: CHEM 103 [Min Grade: D] or CHEM 123 [Min Grade: D]

CHEM 248 Organic Chemistry for Majors II 6.5 Credits
This course continues developing the basic foundation of modern organic chemistry started in CHEM 246. Lecture topics include the chemistry of alcohols, ethers, conjugated systems, aromatic compounds and thiols. The principles of IR, MS, 1-H and 13-C NMR will be taught in lecture and put to use in identifying products in the lab. Other lab topics include the preparation of alcohols, a Grignard synthesis, an alkene addition reaction, an aromatic nitration, a Friedel-Crafts reaction, the preparation of ferrocene, and how to safely handle water-sensitive chemicals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CHEM.
Prerequisites: CHEM 246 [Min Grade: D] or (CHEM 241 [Min Grade: D] and CHEM 244 [Min Grade: D])

CHEM 249 Organic Chemistry for Majors III 7.0 Credits
This course completes development of the basic foundation of modern organic chemistry started in CHEM 246. Lecture topics include the chemistry of aldehydes, ketones, amines, carboxylic acids & their derivatives, carbohydrates, organometallic compounds, and multi-step organic synthesis. Asymmetric synthesis and C,C-bond forming reactions will also be covered. Lab topics include the multi-step syntheses of benzocaine and DEET, stereochemical inversion, diazonium coupling, Aldol condensation, sequential Diels-Alder and lactonization reactions, and the principles of functional group protection.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CHEM.
Prerequisites: CHEM 248 [Min Grade: D] or (CHEM 242 [Min Grade: D] and CHEM 245 [Min Grade: D])

CHEM 251 Physical Chemistry I 3.0 Credits
Introduces physical chemistry. Topics include quantum chemistry, operators, the uncertainty principle, deBroglie wavelength, particle in a box, hydrogen-like atoms, aufbau principle, commutators, normalization, LCAO-MO, variation principle, diatomic molecules, Heckel approximation, harmonic oscillator, conjugated systems, electronic and vibrational spectroscopy, and selection rules.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (CHEM 102 [Min Grade: D] and MATH 200 [Min Grade: D]) or TDEC 121 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

CHEM 253 Thermodynamics and Kinetics 4.0 Credits
Covers gas properties, gas laws, state functions, first, second, and third laws of thermodynamics, phase transformations, phase diagrams, chemical equilibrium, spontaneous reactions, Gibbs free energy, molecular motion, diffusion, rates of chemical reactions, rate laws, molecular reaction dynamics, transition states, electron transfer.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D]) and MATH 200 [Min Grade: D]

CHEM 256 Physical Chemistry for Biological Sciences 4.5 Credits
Covers elementary chemical thermodynamics and homogeneous reaction kinetics as bases for experiment and phenomenology in biology and biochemistry, including properties of molecules in solution.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

CHEM 270 Software Skills for Chemists 3.0 Credits
Course covers mathematical, computational, and professionals skills useful to chemists. Representation of chemical problems in mathematical language; use of software to: solve mathematical problems that arise in chemistry; process, analyze and present data; visualize and analyze molecular structures. Also covers the American Chemical Society guidelines for professionalism in chemistry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] and (PHYS 201 [Min Grade: D] or PHYS 211 [Min Grade: D])

CHEM 346 Qualitative Organic Chemistry 5.5 Credits
Covers identification of pure organic compounds, physical constants, solubilities by semi-micro techniques, infrared and nuclear magnetic resonance spectroscopy, and separation and identification of mixtures.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 243 [Min Grade: D] and CHEM 245 [Min Grade: D]

CHEM 355 Physical Chemistry IV 3.0 Credits
Computational methods of modeling molecules; Covers potential energy functions and surfaces, molecular conformations, failures of classical physics, the quantum hypothesis, the classical wave equation and the origins of the Schrodinger equation, particle-in-a-box, linear variation functions, molecular orbitals from linear combinations of atomic orbitals, Pauli principle, molecular calculations and their interpretation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (CHEM 252 [Min Grade: D] or CHEM 253 [Min Grade: D]) and (CHEM 270 [Min Grade: D] or PHYS 160 [Min Grade: D]) and (MATH 201 [Min Grade: D] or MATH 210 [Min Grade: D]) and CHEC 352 [Min Grade: D]

CHEM 356 Physical Chemistry Laboratory 2.0 Credits
Provides experiments in physical chemistry for engineering students. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 241 [Min Grade: D] (Can be taken Concurrently)

CHEM 357 [WI] Physical Chemistry Laboratory I 2.5 Credits
Provides experiments illustrative of topics included in CHEM 251 and CHEC 352. This is a writing intensive course. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (CHEM 252 [Min Grade: D] or CHEM 253 [Min Grade: D]) and (PHYS 211 [Min Grade: D] or PHYS 201 [Min Grade: D]) or CHEC 352 [Min Grade: D]

CHEM 358 Physical Chemistry Laboratory II 2.5 Credits
Continues CHEM 357.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 357 [Min Grade: D] and (CHEM 252 [Min Grade: D] or CHEM 253 [Min Grade: D] or CHEC 352 [Min Grade: D])

CHEM 359 Atomic and Molecular Spectroscopy 3.0 Credits
Emission and absorption of light, laser principles, optical spectrometers, atomic spectroscopy. LS-coupling, Zeeman effect, magnetic resonance spectroscopy, EPR, NMR, ENDOR, molecular spectroscopy of diatomic and polyatomic molecules, rotational, vibrational and electronic, fluorescence spectroscopy, two-photon spectroscopy, time resolved spectroscopy, photo-electron spectroscopy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 355 [Min Grade: D]

CHEM 361 Advanced Organic Chemistry Laboratory 2.5 Credits
Emphasizes experimental design, data collection, and interpretation in such areas as reaction mechanism and molecular structure determination. Not offered every year.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 243 [Min Grade: D] and CHEM 245 [Min Grade: D]

CHEM 364 Spectroscopic Analysis 3.0 Credits
Covers interpretation of spectra for the determination of structure of organic molecules. Stresses use of infrared, nuclear magnetic resonance, and mass spectrometry. Fall. Not offered every year.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 243 [Min Grade: D]

CHEM 367 Chemical Information Retrieval 3.0 Credits
This course examines methods for retrieving literature information, via standard tabulations, journals, and abstracts, using both hard-copy and electronic sources. Includes techniques for online searching of databases such as Chemical Abstracts, Beilstein, and crystallographic depositories.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 371 Chemistry of Biomolecules 3.0 Credits
This course is a chemistry-based approach to understanding the basic structure, chemical reactivity, and biological function of biomolecules – including amino acids, peptides, proteins, carbohydrates, nucleic acids, and lipids. A special emphasis will be given to topics in the frontiers of biomolecular research at the interface between chemistry and biology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 243 [Min Grade: D]

CHEM 420 Molecular Symmetry and Group Theory Applied Chemistry 3.0 Credits
Applies the principles of simple group theory to molecular structure and to electronic and motional properties of molecules, including crystal field and molecular orbital methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 421 [Min Grade: D]

CHEM 421 Inorganic Chemistry I 3.0 Credits
Covers crystal, atomic, and molecular structure; modern chemical bonding; and magnetic properties of inorganic systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 253 [Min Grade: D] (Can be taken Concurrently)CHEM 252 [Min Grade: D] or ENGR 210 [Min Grade: D]

CHEM 422 Inorganic Chemistry II 3.0 Credits
Covers organometallic and coordination compounds, substitution mechanisms, and bio-inorganic chemistry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 420 [Min Grade: D]

CHEM 424 Special Chemistry Problems 0.5-12.0 Credits
Allows theoretical and laboratory investigations of a particular problem of interest to the individual student. A written report may be required.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

CHEM 425 Inorganic Chemistry Laboratory 4.0 Credits
Covers synthesis of properties of inorganic compounds, magnetic measurements, spectroscopic properties, and interpretations of complex ion structure. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 422 [Min Grade: D] (Can be taken Concurrently)

CHEM 430 Analytical Chemistry I 3.0 Credits
Provides an introduction to statistics (particularly the development and use of analytic calibration curves), basic electronics, and the principles of spectroscopic methods of analysis, including the interaction of light with matter and basic instrument design.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 253 [Min Grade: D] (Can be taken Concurrently) (CHEM 230 [Min Grade: D] and CHEM 242 [Min Grade: D]) or CHEC 352 [Min Grade: D])

CHEM 431 [WI] Analytical Chemistry II 4.0 Credits
Continues CHEM 430. Covers principles of chromatographic methods of analysis. Lab includes experiments on atomic absorption, fluorescence, infrared absorption, UV/visible absorption, gas chromatography, high performance liquid chromatography, basic electronics, and potentiometry/coulometry. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 430 [Min Grade: D] or ENGR 210 [Min Grade: D]

CHEM 465 Synthetic Polymer Chemistry 3.0 Credits
Explores scope of polymer science; structure-property relations; step, free radical, cationic, group-transfer, metathesis, coordination, and ring-opening polymerizations; and stereochemistry of polymerizations and reactions of polymers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 242 [Min Grade: D]

CHEM 466 Physical Chemistry of Polymers 3.0 Credits
Covers kinetics and thermodynamics of polymerizations; control of polymerization processes; gelation theory; copolymerization; and determination of polymer molecular weight and distribution by membrane osmometry, light-scattering, solution viscosity, and other techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 242 [Min Grade: D] and (CHEM 252 [Min Grade: D] or CHEM 253 [Min Grade: D])

CHEM 467 Polymer Chemistry III 3.0 Credits
Covers spectroscopy of polymers; rubber elasticity; morphology; viscoelasticity; thermal analysis; computational methods; testing, fabrication, and processing; and magnetic and mechanical properties of polymers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CHEM 252 [Min Grade: D] or CHEM 253 [Min Grade: D] or CHEC 352 [Min Grade: D] or ENGR 210 [Min Grade: D]

CHEM 480 Special Topics in Chemistry 5.0 Credits
This course covers a selected special topic in chemistry. May be repeated three times for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 15 credits

CHEM 493 Senior Research Project 0.5-12.0 Credits
Provides individualized research with a faculty member in any number of chemical disciplines. Requires written report. May be repeated three times for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 12 credits
Restrictions: Can enroll if major is CHEM and classification is Junior or Senior.

CHEM 497 Research 0.5-12.0 Credits
Covers research problems in several areas of chemistry. Requires written report.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Can enroll if major is CHEM.

Chinese

Courses

CHIN 101 Chinese I 4.0 Credits
Introductory Mandarin Chinese. Includes listening, speaking, and reading, with individual audiolingual practice. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHIN 102 Chinese II 4.0 Credits
Continues CHIN 101. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHIN 101 [Min Grade: D]

CHIN 103 Chinese III 4.0 Credits
Continues CHIN 102. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHIN 102 [Min Grade: D]

CHIN 201 Chinese IV 4.0 Credits
Intermediate Chinese. Includes listening, speaking, reading, and writing, with individual audiolingual practice. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHIN 103 [Min Grade: D]

CHIN 202 Chinese V 4.0 Credits
Continues CHIN 201. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHIN 201 [Min Grade: D]

CHIN 203 Chinese VI: Conversation & Composition 4.0 Credits
Provides intensive practice in comprehension and written and oral communication. Emphasizes development of writing skills and increased oral competence in everyday situations. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHIN 202 [Min Grade: D]

CHIN 301 Chinese VII 3.0 Credits
Advanced Chinese. Includes reading, writing, and extensive conversational practice. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHIN 203 [Min Grade: D]

CHIN 302 Chinese VIII 3.0 Credits
Continues CHIN 301. Covers techniques of translation and communication. Provides advanced practice in translation, comprehension, and written and oral communication. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHIN 301 [Min Grade: D]

CHIN 303 Chinese IX 3.0 Credits
Continues CHIN 302. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHIN 302 [Min Grade: D]

CHIN 399 Advanced Independent Study in Chinese 0.5-12.0 Credits
Provides supervised study of special subjects in Chinese language and literature. Scheduled as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: CHIN 303 [Min Grade: D]

CHIN 411 Introduction to Chinese Stylistics 3.0 Credits
Fourth year of Chinese. Provides advanced practice in translation, comprehension, and written and oral communication. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: CHIN 303 [Min Grade: D]

CHIN 431 Introduction to Chinese Literature 3.0 Credits
Provides intensive reading, writing, and conversational practice in Chinese, based on selected texts in Chinese literature. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: CHIN 303 [Min Grade: D]

CHIN 451 Introduction to Business and Professional Chinese 3.0 Credits
Fourth year of Chinese. Provides intensive oral practice and written work in business, professional, and commercial Chinese. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: CHIN 303 [Min Grade: D]

CHIN 480 Chinese Minor Thesis Course 4.0 Credits
Independent research study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study. At the end of the course, the student is required to produce a paper and oral defense on the topic of his paper.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

Criminal Justice

Courses

CJ 204 Criminology 3.0 Credits
Criminology is the scientific study of crime, criminal behavior and societal responses to crime and to crime victims. Students will study theories of crime causation, crime types, ethics of research, data collection and methods of crime prevention and control. Issues such as capital punishment, gun control and restorative justice will be debated.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 206 Criminal Justice 3.0 Credits
Criminal Justice is the study of the agencies that apprehend, adjudicate, sanction, and treat criminal offenders. Students will study the history, policies, procedures and issues regarding these agencies. Court and prison visits will give students an opportunity to augment academic knowledge with direct observation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 265 Criminal Investigation 3.0 Credits
The initial crime scene investigation can make or break subsequent crime solving and conviction of offenders. What does one look for? Who has responsibility for the collection of evidence and the resulting chain of custody? Who has authority in cases that involve several states and federal law enforcement?.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 266 Crime Prevention Planning 3.0 Credits
This course examines the current literature on effective crime prevention programming and planning. Students will be expected to be able to analyze physical and social risk factors for criminal events. Students will also explore methodologies for strategic planning and will use this knowledge to develop a crime prevention plan for the campus or a community.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 267 Introduction to Security Studies 3.0 Credits
This course will explore the historical evolution of private security, public policy issues related to privatization of criminal justice systems, legal issues of security and analytic models for security vulnerability assessments. A final project will include an analytically and theoretically sound security assessment of a building or a facility.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 273 Surveillance, Technology and the Law 3.0 Credits
This course will examine current surveillance technologies used by criminal justice agencies and private sector organizations and the laws that regulate government surveillance and protect privacy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 274 Sex, Violence & Crime on the Internet 3.0 Credits
This course explores how offenders are adopting computers to commit traditional crimes in a hi-tech manner. Specific attention will be paid to how the Internet has affected the structure of hate groups and the child pornography and sexual predator subcultures. Cyber-stalking and online harassment will also be examined.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 275 Issues in Domestic Violence 3.0 Credits
Domestic Violence is a major public health problem. This course will describe DV in the context of multiple response systems including health care, police, advocacy, and criminal justice. We will explore how DV affects men, women and children and examine societal conditions that allow DV to occur and continue.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 276 Introduction to Computer Crime 3.0 Credits
This course provides an overview of computer crime. Emphasis will be placed on the legislative responses and policy issues related to computer intrusions and cyber-fraud. Issues encountered when enforcing laws in cyberspace and the public/private sector initiatives for dealing with computer crime will also be explored.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 277 Introduction to Correctional Practices 3.0 Credits
This course will provide insight into corrections through theory, laws and contemporary practices, facilities management, reentry and alternatives to incarceration. Corrections involve the 'treatment and rehabilitation of offenders through a program involving penal custody, parole, and probation' (Merriam-Webster). This course will include site visits, guest lecturers and case analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 278 Introduction to Law Enforcement 3.0 Credits
Law enforcement, generally the first point of contact, is the largest of the three Criminal Justice agencies. A solid understanding of the missions, strategies and controversies of policing is essential to citizens and Criminal Justice students. The reality is more complicated than preventing crimes and catching criminals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 280 Communities and Crime 3.0 Credits
This course is an examination of classical and contemporary theories of the social ecology of communities and how this social ecology relates to crime. Further, we will explore the impact of community development activities on crime outcomes in neighborhoods. We will examine the importance of race and class in forging effective community based development models. Lastly, we will examine specific community based solutions to crime and disorder problems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 282 Community Policing 3.0 Credits
Community Policing, a new law enforcement philosophy, involves partnering with communities to identify and solve problems proactively. We will examine the multi-dimensional strategies necessary for Community Policing to be effective and for it to be significantly more satisfactory for the community policed and those policing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 289 Terrorism 3.0 Credits
This course will view terrorism from a historical perspective. Various forms of governments and social constructs will be scrutinized as to their impact on human rights issues. Students will study the causes and consequences of domestic and international terrorist activity and discuss the delicate balance between security and freedom.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 290 Crime and Public Policy 3.0 Credits
This course focuses on criminal justice and non-criminal justice policies used to combat crime. Students will use the most recent crime data and explanatory theories on crime to evaluate current policy. A multi-disciplinary approach will be used to develop new policies designed to have a long-lasting impact on crime.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 360 Juvenile Justice 3.0 Credits
Students will learn about the history, development and current status of the juvenile justice system. Philosophical, sociological, psychological, legal and political factors contributing to the changes in the manner in which society processes children and youth who violate social norms will be explored in research articles, legal decision, and theoretical analyses.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 362 Gender, Crime and Justice 3.0 Credits
Course examines the different experiences and needs of female criminal justice professionals, crime victims and offenders using field trips, guest experts, videotape, new theories, legislation, policies and discussions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CJ 206 [Min Grade: D] or CJ 204 [Min Grade: D]

CJ 364 Community Corrections 3.0 Credits
Costly, unnecessary and impractical incarceration of every offender emphasizes the importance of community-based alternatives which are more effective and less expensive. Course includes field trips, guest experts, and discussion.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 365 Computer Investigation and the Law 3.0 Credits
This course will examine the techniques used to investigate internet crimes and extract evidence from digital storage devices. Specific attention will be paid to the procedural laws that govern digital forensic techniques and investigations involving electronic evidence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CJ 274 [Min Grade: D] or CJ 276 [Min Grade: D]

CJ 369 Forensic Science Survey Course 3.0 Credits
This course will survey various forensic disciplines with emphasis on their role within the criminal justice system. The course will familiarize students with methods and techniques currently employed in the crime scene processing, drug identifications, trace evidence, bloodstain pattern analysis, entomology, DNA, other disciplines, ethics, and expert testimony. The course is taught by trained in-service forensic scientists.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 372 Death Penalty - An American Dilemma 3.0 Credits
Capital Punishment is a complex and controversial issue. Opinions about the death penalty are rarely grounded in hard evidence. This course will examine the history of the use of capital punishment in America: the case law and the issues which rise from the use of the Ultimate Sanction.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 373 Environmental Crimes 3.0 Credits
An examination of the criminal consequences of the violation of laws, regulations and policies governing clean water, air and toxic substances. Analysis of case studies from a variety of perspectives including crime scene investigations and potential terrorism.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

CJ 374 [WI] Restorative Justice 3.0 Credits
Restorative justice is a paradigm shift in criminal justice in response to the failure of the traditional retributive model to meet the needs of victims, offenders and the community. Programs have developed worldwide often sponsored by governments, others by non-profits, to handle both juvenile and adult criminal offences more effectively. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CJ 206 [Min Grade: D]

CJ 375 Criminal Procedure 3.0 Credits
Understanding the historical and contemporary significance of the Bill of Rights especially the 4th, 5th, and 6th amendments is critically important in the practice of law and law enforcement. Real life conflicts in the application of constitutional criminal procedure and tensions between due process and crime control will be discussed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CJ 206 [Min Grade: D]

CJ 376 Sentencing: The History, Necessity and Morality of Punishment in America 3.0 Credits
The course is an exploration of punishment, its various philosophies, theories and approaches. The costs and outcomes of incarceration as well as alternatives will be examined as well as disparities regarding age, gender, race in our sentencing. A review of the ultimate sanction, the death penalty will complete the course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CJ 206 [Min Grade: C]

CJ 377 Intellectual Property Theft in the Digital Age 3.0 Credits
This seminar focuses on the changing nature of intellectual property theft in the Digital Age. Attention will be paid to legislative solutions for protecting intellectual property and the challenges faced when investigating the theft of intellectual property. Additionally, theoretical explanations to account for intellectual property theft will be explored.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

CJ 378 Science of Forensic Science 3.0 Credits
Students will study actual casework to learn how to apply scientific method to evidence analysis and translation of results to criminal court hearings and trials. In this ONLINE course students will play the virtual role of analyst, gathering crime scene evidence and presenting it at trial.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 102 [Min Grade: D] or CHEM 101 [Min Grade: D] or BIO 151 [Min Grade: D] or CHEM 151 [Min Grade: D] or CHEM 111 [Min Grade: D]

CJ 379 Forensic DNA Analysis 3.0 Credits
An introduction to DNA analysis methods in current forensic testing . Genetics, inheritance, DNA biochemistry are applied to a fluorescent detection technology to produce results using one or more manufactured DNA testing kits. Students will be exposed to actual casework data and as virtual analyst present results to juries and judges.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 104 [Min Grade: D] or CHEM 102 [Min Grade: D] or CHEM 112 [Min Grade: D]

CJ 380 Special Topics 3.0 Credits
This course will explore current issues and interests in Criminal Justice. The topic will vary each term.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CJ 381 Legal Research and Writing I 3.0 Credits
Course provides instruction fundamentals of legal research and writing. Legal databases and law resources will be used. Students will learn legal writing styles to produce professionally acceptable documents.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CJ 382 Legal Research and Writing II 3.0 Credits
This course builds on the fundamentals of Legal Research & Writing I. Students will use databases and other resources. Advanced skills in legal writing styles will be developed. Professionally acceptable documents will be produced.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CJ 381 [Min Grade: D]

CJ 390 [WI] Internships in Criminal Justice 3.0-6.0 Credits
Internships provide opportunities for students to clarify career interests; synthesize prior academic knowledge with direct experience; and sharpen critical thinking, analytical, and observational skills. Direct participation in the criminal justice system allow for testing theory with practice. Learning from and networking with professionals in the field is enhanced. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits

CJ 399 Independent Study 0.5-12.0 Credits
Provides a course of independent study in Criminal Justice. Topics for study must be approved in advance of registration by the advisor and the instructor involved.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CJ 400 [WI] Critical Issues in Criminal Justice 3.0 Credits
The capstone course will be open only to Criminal Justice Seniors. It will serve as an opportunity for them to demonstrate their cumulative learning to the major by looking on the most challenging issues in the field. Students, divided into groups, will research the topics, draft a report and present and defend it before an audience of Criminal Justice students. The knowledge and skills obtained through four years as a Criminal Justice major will be reflected in their work. This course will be a writing intensive course as multiple drafts of their thesis will be reviewed and critiqued before the final report is written and accepted. (Topic will reflect contemporary issues and one subject to choose.).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CJ and classification is Senior.

Communication

Courses

COM 101 Human Communication 3.0 Credits
This course explores the elements of basic human communication - what does it mean to communicate? What makes communication good or bad? What is the nature of verbal and non-verbal messages? What does it mean to communicate in a group? How does culture affect communication?.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 111 Principles of Communication 3.0 Credits
Explores the importance of communication in organizational settings. Includes assessment of appropriate modes of communication, including written, spoken, and electronic.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 150 Mass Media and Society 3.0 Credits
Provides an overview of the history, economic structure, regulation, and impact of the mass media in the United States.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 210 Theory and Models of Communication 3.0 Credits
Surveys historical and contemporary attempts to understand the process of human communication, using examples from the literature of interpersonal, group, organizational, and mass communication.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

COM 220 Qualitative Research Methods 3.0 Credits
This course provides a detailed investigation of the nature, application, analysis and write up of qualitative research in communication and the social sciences, including such topics as ethnography, in-depth interviews, focus groups, participant observation, and narrative analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

COM 230 Techniques of Speaking 3.0 Credits
A workshop course in improving public speaking skills. Provides experience in speeches of explanation, persuasion, and argument.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HUM 102 [Min Grade: D] or HUM 105 [Min Grade: D] or HUM 107 [Min Grade: D] or ENGL 102 [Min Grade: D] or ENGL 105 [Min Grade: D]

COM 240 New Technologies In Communication 3.0 Credits
Provides an overview and survey of the changes taking place in the technologies of information production, distribution, storage, and display, including the interaction of these changes with legal, social, cultural, and communications systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

COM 246 Media and Identity 3.0 Credits
This course focuses on the central role that identity plays in popular culture, exploring how media reflect diverse identities and how, in turn, we use media to construct our own identities.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

COM 260 [WI] Fundamentals of Journalism 3.0 Credits
A workshop course in news reporting. Covers interviewing, editing, and writing for the mass media and for business, industrial, and trade publications. Explores the history of the field and changes in journalistic practices. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HUM 102 [Min Grade: D] or HUM 105 [Min Grade: D] or HUM 107 [Min Grade: D] or ENGL 102 [Min Grade: D] or ENGL 105 [Min Grade: D]

COM 265 Radio Journalism 3.0 Credits
This course will familiarize students with the creation of podcasts and other scripted content, as well as radio production for journalism, digital audio editing, and writing in radio narrative style. Students will be able to enter a radio news-room and be able to handle gathering and preparing new stories, anchoring, and preparing longer-form narrative stories.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 260 [Min Grade: D]

COM 270 [WI] Business Communication 3.0 Credits
Covers the writing of business letters, resumes, memos, proposals, and reports. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 280 Public Relations Principles and Theory 3.0 Credits
The course focuses on the principles of public relations. It introduces students to theory and practice of PR taught in the context of real life material and situations. The course also covers main public relations techniques, tools, and types of publics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HUM 102 [Min Grade: D] or HUM 105 [Min Grade: D] or HUM 107 [Min Grade: D] or ENGL 102 [Min Grade: D] or ENGL 105 [Min Grade: D]

COM 282 [WI] Public Relations Writing 3.0 Credits
In this writing-intensive course, students will develop the professional-level writing skills expected of public relations practitioners. The objectives include building an understanding of PR writing styles and genres as a persuasive influence and learning how to use basic information in different PR media kits, memos, letter, and other external and internal communications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 280 [Min Grade: D]

COM 284 Public Relations Research, Measurement and Evaluation 3.0 Credits
Public Relations research is the first essential element in the process of Public Relations. The purpose of this course is to introduce students to the methods of quantitative and qualitative research most widely used to assess an organization’s public relations efforts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 280

COM 286 Public Relations Strategies and Tactics 3.0 Credits
This course helps students better understand the advanced concepts, strategies, and tactics practiced in public relations today. It combines real-life case studies with core theoretical ideas to help students relate theory to the actual practice of the profession. This intermediate-level course connects scholarship with time-honored real-life PR strategies and tactics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 282 [Min Grade: D]

COM 290 Sports and the Mass Media 3.0 Credits
To explore the interrelationships between professional and college sports and the mass media. Students will look at how news media coverage has changes sports, the conventions found in sports journalism, promotion and marketing of sports teams and leagues, and how sponsorship of sporting events changes the nature of these events.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 107 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 300 [WI] On-line Journalism 3.0 Credits
Students will explore how to use computers and the internet to add depth and context to news stories. Students will conduct database searches and analyses, and access a wide variety of records from governmental agencies, all in the pursuit of two news stories. The impact of journalism of blogging will also be studied; students will develop and maintain their own news blogs. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 260 [Min Grade: D]

COM 305 Sports Journalism 3.0 Credits
To gain a deeper appreciation for and understanding of the meaning-making power of sports journalism. We will explore the history of sports journalism, review and critique examples of historically significant sports writing and write game stories and columns based on actual coverage of local and on-campus sporting events.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 260 [Min Grade: D]

COM 310 [WI] Technical Communication 3.0 Credits
Develops skills in communicating technical information. Focuses on writing letters, resumes, proposals, reports, and instructions. Offers extensive writing practice along with exercises and presentations. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 311 Dynamics of Interpersonal Communication 3.0 Credits
This course provides the student with a more thorough understanding of the communication dynamics between individuals. By reviewing scholarly writing on the subject and performing direct observations and analyses, students will acquire an appreciation of the complexities of interpersonal communication and enhanced communication skills.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 210 [Min Grade: D]

COM 315 Investigative Journalism 3.0 Credits
Mastery of investigative reporting tactics and strategies enables student to explore and write about issues of great importance to the community.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 260 [Min Grade: D]

COM 316 Campaigns for Health & Environment 3.0 Credits
This seminar-style course explores theories and practical aspects of environmental and health campaigns and community-based social marketing campaigns. This course has a strong applied component.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

COM 317 [WI] Environmental Communication 3.0 Credits
This reading and writing intensive course will explore communication about environmental issues. Topics can include advocacy campaigns, social marketing, environmental journalism, media coverage of environmental issues, green marketing, the environment in popular culture, risk communication, and public participation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.

COM 318 Film, Celebrity and the Environmental Movement 3.0 Credits
Using the framework of mass media and behavioral change theories, we will look at the environmental movement through the lends of “eco celebrities” and mainstream environmental films and will discuss how Hollywood shapes our perceptions of the environment and whether this has helped or hurt the environmental movement.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

COM 320 [WI] Science Writing 3.0 Credits
A workshop course in writing on scientific subjects. Includes analysis of the current market for science writing; examination of exemplary pieces of science writing; instruction in finding article ideas, interviewing, and working with editors; and production of feature-length articles. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 325 The Cultural Significance of Fame 3.0 Credits
We will explore why fame is so important to us. Why do so many of us want it so badly? Why do we envy those who have it? What does the pursuit of fame say about us and about society? You will explore your own perception of fame, dissect your fame-related experiences, and analyze how the mass media keep us thinking and talking about fame.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 150 [Min Grade: D]

COM 330 Professional Presentations 3.0 Credits
A workshop course in the theory and practice of making effective professional presentations for the technical and business professional. Provides a systems approach to the planning, production, and presentation of visual/aural programs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: COM 230 [Min Grade: D]

COM 335 Electronic Publishing 3.0 Credits
Electronic Publishing gives students applied and theoretical knowledge of professional electronic publishing. Students will focus on issues relating to writing and integrating text and graphics to create websites and on-line publications. Students will also consider how issues in document design and usability can be used to evaluate websites.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 103 [Min Grade: D] or HUM 105 [Min Grade: D] or HUM 108 [Min Grade: D]

COM 340 Desktop Publishing 3.0 Credits
Covers production of publications using desktop publishing software, including planning, writing, designing, and budgeting of institutional magazines, newsletters, manuals, and brochures. Requires students to design several pieces (letterheads and flyers).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 342 English Worldwide 3.0 Credits
This course provides an overview of the spread of English globally, by examining English as a language of trade, diplomacy, and education, as well as its status as an aesthetic and market force. For a final project, students research how English is utilized for social, economic, and political purposes in a single area of the world.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 345 Intercultural Communication 3.0 Credits
This course introduces students to the theory and practice of intercultural communication. Drawing from traditions in anthropology and communication, intercultural communication is the study of the effect of differing cultural norms and beliefs upon communication between speakers. Through a wide range of readings, journal writing assignments, and participative and experiential activities, students will develop both their understanding of and skills in inter-cultural communication. A final project and presentation draws together participative experiences and the readings and class discussions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore

COM 350 [WI] Message Design and Evaluation 3.0 Credits
Introduces the principles and practice of designing messages and measuring their effectiveness with audiences. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.

COM 351 Computer Mediated Communication 3.0 Credits
We focus on practices and affordances of Computer Mediated Communication (CMC). We consider how computer technology is used in social interaction and its practical consequences. We focus on social practices and uses of technology. We use qualitative methods of analysis to understand the practices of CMC.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: COM 220 [Min Grade: D]

COM 352 Social Media and Communication 3.0 Credits
Social Media provide a communication system for connecting, collaborating and building community. We will examine how these functions may be applied in personal, professional and political contexts. Activities will include readings, case studies and discussions. Students will create a strategic plan for using social media for personal, organizational or political purposes.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

COM 355 Ethnography of Communication 3.0 Credits
Examines theories and methods of qualitative language and communication studies. Topics include story telling, greetings, gossip, self-presentation in talk, language of ritual and religion, men and women's roles in communication, and communicative events and competence. Case student in literature will be analyzed and will form a basis for the students' own ethnographic fieldwork.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 360 International Communication 3.0 Credits
Examines the political, cultural, technological, and economic processes and effects of international communication flow.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore

COM 361 International Public Relations 3.0 Credits
The course is designed give students a comprehensive overview of international issues in PR including such areas as: history and evolution of the field of international PR; image-formation and image-changes process; PR in war and conflict; as well as effect of different political and legal systems on the field of public relations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 362 International Negotiations 3.0 Credits
This course is designed to give students a comprehensive overview of the field including different theoretical points of view on the process of international negotiations; the role of perceptions in this process; the role of internal politics and cultural variables in the process of international negotiations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

COM 363 Event Planning 3.0 Credits
This course will provide the student with the theoretical and practical fundamentals in understanding the complexities of producing Special Events across all major industries. Special Events addresses all elements of the communication process.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 365 Journalists, the Courts, and the Law 3.0 Credits
Students explore and apply techniques for covering the court system, and explore case law and recent key legal developments that have reshaped how journalists do their jobs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 260 [Min Grade: D]

COM 370 [WI] Advanced Business Writing 3.0 Credits
Covers application of policy manuals and research, analytic, design, and critical skills to produce corporate documents, such as proposals and reports. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: COM 270 [Min Grade: D]

COM 375 [WI] Grant Writing 3.0 Credits
Students explore the grant writing process, from the development of an idea and researching appropriate contributors, to writing a fully realized grant proposal, complete with budget. Course topics also include surveying the political and social climate before developing an idea, assessing an organization's capabilities to handle a project, and performing through literature reviews. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: COM 270 [Min Grade: D] or COM 310 [Min Grade: D] or SOC 260 [Min Grade: D]

COM 380 Special Topics in Communication Theory 3.0 Credits
Provides advanced communication studies covering various subjects in interpersonal, group, organizational, and mass communication. May be taken for credit twice.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

COM 384 Free Speech & Censorship 3.0 Credits
In this course, students will explore the various forms --some obvious, some not-- that censorship takes. Also explored will be what those who hold dissenting views endure as they try to contribute to the national dialogue. Historical and legal perspective on censorship will also be considered.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore

COM 385 Media Effects 3.0 Credits
Some people believe that the mass media rule our lives, making us fat, violent, sexist, etc. Some think that media are irrelevant. Of course these arguments are extreme and simplifications. In this course, we ask: What are the facts regarding media effects research?.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 386 Public Relations Campaign Planning 3.0 Credits
This capstone course will focus on the advanced aspects of public relations: how to analyze, plan, conduct, and implement successful public relations campaigns systematically and scientifically. Students will create full-scale PR campaigns, including budget, media materials, and social media tools, for their real-world "clients," and implement key activities.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 284 and COM 286

COM 390 [WI] Global Journalism 3.0 Credits
Explores the issues facing journalists covering foreign affairs. Students will research and write news stories on issues of global import and will examine the work of foreign correspondents from historical and critical perspectives. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: COM 260 [Min Grade: D]

COM 399 Independent Project 0.5-12.0 Credits
Provides a course of independent study on a project for one term only.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

COM 400 Seminar in Communication 3.0 Credits
This is an upper-level seminar in various topics in Communication, including but not limited to Rhetoric. Students will undertake an in-depth examination of critical texts or themes in Communication. The course is intended for upper-level majors in Communication and can be repeated for credit with a different topic.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 4 times for 12 credits
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: COM 210 [Min Grade: D]

COM 410 [WI] Advanced Technical Writing 3.0 Credits
Continues COM 310. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.
Prerequisites: COM 310 [Min Grade: D]

COM 420 Technical Editing 3.0 Credits
Introduces the theory and practice of technical editing, including project and copy editing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.
Prerequisites: COM 270 [Min Grade: D] or COM 310 [Min Grade: D] or COM 375 [Min Grade: D] or COM 410 [Min Grade: D]

COM 491 Senior Project in Communication I 3.0 Credits
Covers planning and execution of a professional project that integrates the academic and practical knowledge the student has acquired in his or her major.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is COMM and classification is Senior.
Prerequisites: COM 210 [Min Grade: D] and (COM 220 [Min Grade: D] or SOC 250 [Min Grade: D])

COM 492 Senior Project in Communication II 3.0 Credits
Requires completion and evaluation of the project begun in COM 491.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is COMM and classification is Senior.
Prerequisites: COM 491 [Min Grade: D]

English

Courses

ENGL 101 Composition and Rhetoric I: Inquiry and Exploratory Research 3.0 Credits
Develops students' abilities to use writing as a tool for inquiry as they think through open-ended questions. Introduces them to rhetorical concepts and terms—exigence, audience, context, argument, and appeals—that they will apply in their writing and critical reading. Teaches them how to find, evaluate, integrate, and document sources from a variety of media; and how to engage in the many stages of the research and writing processes, from invention, to review, to final product. Engages them in ongoing reflective analysis about writing and their writing development.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENGL 102 Composition and Rhetoric II: The Craft of Persuasion 3.0 Credits
Teaches terminology and rhetorical strategies of persuasive writing. Advances students' development in the writing process, and promotes their critical evaluation and integration of varied sources as they research complex and open-ended problems. Engages them in the act and study of collaboration, rhetorical awareness of images and design, and an understanding of how genres shape writing. Continues to promote their critical reading of challenging texts. Supports students in ongoing reflective analysis about writing and their writing development.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 101 [Min Grade: D]

ENGL 103 Composition and Rhetoric III: Thematic Analysis Across Genres 3.0 Credits
Teaches terminology and rhetorical strategies of writing analytically about a theme as it appears in a variety of genres. Advances students' development in the writing and research processes, in their rhetorical awareness of images and design, and in their understanding of how genres of writing (poetry, drama, fiction, nonfiction argumentative, investigative, academic, business, reportorial) shape meaning. Continues to promote their critical reading of challenging texts. Supports students in ongoing reflective analysis about writing and their writing development.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 102 [Min Grade: D]

ENGL 105 Honors Freshman English 3.0 Credits
Develops students' abilities to read and write expository and persuasive academic discourse. Teaches students the components of the writing process and strategies to think and read critically and to present a written argument. Requires students to write expository and persuasive essays and research papers and to keep a journal to express their responses to the material read and studied in the course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is HONR.

ENGL 200 [WI] Classical to Medieval Literature 3.0 Credits
A survey of Greek and Roman literature (Homer, Aeschylus, Euripides, Virgil and Cicero), up to and including the Medieval period (Aquinas, Cavalcanti, Chaucer, and Dante). This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 201 Renaissance to the Enlightenment 3.0 Credits
A survey of Western literature from the Renaissance to the Enlightenment, focusing on works by Cervantes, Erasmus, Rabelais, Petrarch, Voltaire, Rousseau, Swift and Pope.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 202 [WI] Romanticism to Modernism 3.0 Credits
A survey of Western literature of the 19th and 20th centuries focusing on the major periods of Romanticism (Blake, Coleridge and Keats), Realism (Balzac and Ibsen), and Modernism (Kafka, Borges and Woolf). This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 203 [WI] Post-Colonial Literature I 3.0 Credits
A survey of nonwestern literatures produced before the modern era in Asia, Africa, and the Middle East, representing the more important periods and genres. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 204 Post-Colonial Literature II 3.0 Credits
A survey of nonwestern literatures written in the 20th century by writers from Asia, Africa, and the Middle East, and focusing on the effects of social, aesthetic and contemporary events on artistic creation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 205 [WI] American Literature I 3.0 Credits
A survey of American literature from Colonial times through the Civil War, including works by such writers as Anne Bradstreet, Emily Dickinson, Frederick Douglass, Cotton Mather, Ralph Waldo Emerson, Nathaniel Hawthorne, Herman Melville, Henry David Thoreau and Walt Whitman. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 206 [WI] American Literature II 3.0 Credits
A survey of American literature from the Civil War through the 21st century, including works by such writers as Kate Chopin, W.E.B. Du Bois, T.S. Eliot, William Faulkner, F. Scott Fitzgerald, Henry James, Philip Roth, Mark Twain and John Updike. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 207 [WI] African American Literature 3.0 Credits
Introduces students to African-American Literature, from the mid-18th century to the present. Provides a basic understanding of social, political and cultural influences and an awareness of the African-American literary tradition. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 211 [WI] British Literature I 3.0 Credits
A historical survey of British literature from its beginning to the end of the eighteenth century. Students will read texts selected to represent major authors, forms and thematic material that illustrates the development of English literature through the medieval, Renaissance, seventeenth, and eighteenth centuries This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 212 British Literature II 3.0 Credits
A historical survey of British literature form the turn of the nineteenth century to the present; students will read texts selected to represent major authors, forms and thematic material of the Romantic, Victorian and modern periods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 214 Readings in Fiction 3.0 Credits
A basic course, which focuses on fiction as a genre through the study of a variety of short stories and fiction, organized by theme, period or form. One of three genre courses.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 215 [WI] Readings in Poetry 3.0 Credits
A basic course which focuses on poetry as a genre through the study of a variety of poems organized by theme, period or form. One of three genre courses. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 216 [WI] Readings in Drama 3.0 Credits
A basic course which focuses on drama as a genre through the study of a variety of plays organized by theme, period or form. One of three genre courses. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 300 [WI] Literature & Science 3.0 Credits
This course studies the impact of scientific and technological change on works of literature and art produced in various historical periods. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 302 Environmental Literature 3.0 Credits
This course explores the relatively recent discipline of Ecocriticism and considers the literary relationship between human beings and the natural environment--both altered and unaltered by human activity. The approach is interdisciplinary in its investigation of the relationships among science, culture, and personal observation. Students will read a selection of seminal texts of American environmental literature.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 303 Science Fiction 3.0 Credits
Provides reading and discussion of works illustrating the development of modern science fiction.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 304 Young Adult Fiction 3.0 Credits
This course introduces students to young adult (YA) fiction and to secondary sources useful for the appreciation of it. Topics discussed include: young adults as n audience, the genres of YA fiction, keeping up with YA fiction, literary and psychological theory applied to YA fiction.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 305 [WI] The Mystery Story 3.0 Credits
A study of the mystery story, from its inception as a genre in the 19th century to the present, through short stories and novels. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 306 Literature of Baseball 3.0 Credits
An examination of novels, short stories, and poetry about our "national pastime" that illumine American ideals and values, history and culture from 1845 to the present. A study of how the game's symbols and rituals, its history and mythology help us understand American belief systems and ideologies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 307 Literature of the Holocausts 3.0 Credits
To underline the fact that more than one Holocaust has occurred, the course offers different points of view about the systematic slaughter of several religious and ethnic groups, pre-and post-World War II, through fiction, children's literature and films.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 308 [WI] The Literature of Business 3.0 Credits
In this advanced reading course, students read literary works about business and work and write analytically about these works, grounding that analysis in nonfiction readings from business publications. Course writing assignments ask students to respond to problems and issues raised in the texts. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D] and ENGL 103 [Min Grade: D]) or ENGL 105 [Min Grade: A]

ENGL 310 [WI] Period Studies 3.0 Credits
This is a variable topics course, focusing on the literature of a particular period (i.e., Classical Literature; Victorian Literature; the Harlem Renaissance). May be repeated for credit. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 312 Research Project Development 1.0-3.0 Credit
Acquisition of knowledge and skills related to the development of researchable original ideas that involves literature, philosophy, history, or any other humanities area, or a creative work or portfolio.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 6 credits
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 315 [WI] Shakespeare 3.0 Credits
This course focuses on Shakespeare's major plays and sonnets, providing the historical and cultural contexts that gave rise to his work. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 320 [WI] Major Authors 3.0 Credits
A course focused on intensive study of one or more authors, for example: Jane Austen; Joseph Conrad; Hemingway, Faulkner and Fitzgerald; Writers of the Harlem Renaissance; Carlos Fuentes and Gabriel Garcia Marquez. May be repeated for credit. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 323 Literature and Other Arts 3.0 Credits
A variable topics course which studies relationships between literature and one or more of the visual arts, theater or music (i.e., Surrealism; Memoir and Documentary Film; The Faust Legend). May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: D]

ENGL 325 Topics in World Literature 3.0 Credits
A variable topics course which focuses on a particular national or regional literature within its cultural, historical and political contexts (i.e., African Literature; French Literature; Latin American Literature). May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 330 The Bible as Literature 3.0 Credits
This course provides a close reading of selected books of the Old and New Testaments alongside selected literary works to discover both the literary qualities of these texts and their influence on literature.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 335 Mythology 3.0 Credits
This course investigates the specific forms mythological stories have taken in the literature, art and ritual of some or all of the following: Greece, Rome, Iceland, Mesopotamia and Native American and European cultures in the United States.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 340 [WI] Classic Rhetoric 3.0 Credits
A study in the theory and practical application of Greek and Roman rhetorical strategies in composition. Focuses on influential figures, terminology, the five canons, and the ancient composition processes known as “progymnasmata” to look at historical texts, the rhetoric of popular media, and the students’ writing. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D]

ENGL 345 American Ethnic Literature 3.0 Credits
A variable topics course which studies the literature of one or more of the United States ethnic populations within their historical and cultural contexts. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 350 Jewish Literature and Civilization 3.0 Credits
Focuses on the Jewish Bible, a classic literary document of Western civilization, deemed by many people of the world as fundamental to their religion; stresses aspects of cultural diversity and awareness.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 355 [WI] Women and Literature 3.0 Credits
This course focuses on literature written by, and/or about women and considers issues relating to women’s place in literary history. May be repeated for credit. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 360 [WI] Literature and Society 3.0 Credits
This course examines the relationship between literature and the society it reflects and helps shape. May be repeated for credit. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 365 Topics in African American Literature 3.0 Credits
A variable topics course designed to further develop the ideas first presented in the African American Lit survey by exploring, in much more depth, significant authors, periods, and genres within the African American literary and cultural tradition. Topics include Science and Technology in African American Lit; the Slave Narrative; and Black Travel Writing.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 6 credits
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 370 Topics in Literature and Medicine 3.0 Credits
This is a variable topics course which focuses on aspects of illness, healing, care-giving, aging, grief, and mortality as presented in narrative. Exploration of how literary construction and analysis affect understanding of these experiences. Topics include ?Illness and Healing in Literature? and ?The Physician in Literature and Film.? May be repeated three times for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

ENGL 380 Literary Theory 3.0 Credits
This course examines literary theoretical thinking, and focuses on twentieth century structuralism, post-structuralism, and contemporary theory. We will examine the ways in which language is conceived and reconceived by major theoretical writers and the implications of this rethinking for conceptualizations of history, politics, ideology, sexuality, and trauma, among others.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENGL.
Cannot enroll if classification is Freshman or Sophomore
Prerequisites: ENGL 101 [Min Grade: C] and ENGL 102 [Min Grade: C] and (ENGL 202 [Min Grade: C] or ENGL 203 [Min Grade: C] or ENGL 204 [Min Grade: C] or ENGL 205 [Min Grade: C] or ENGL 206 [Min Grade: C] or ENGL 211 [Min Grade: C] or ENGL 212 [Min Grade: C] or ENGL 214 [Min Grade: C])

ENGL 395 [WI] Special Studies in Literature 3.0 Credits
This is a variable topics course, providing intense literary study on a specific theme. May be repeated for credit. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 399 Independent Project in Literature 0.5-12.0 Credits
This course provides independent study on a project for one term only.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 470 Capstone Seminar in Medical Humanities 3.0 Credits
This seminar gives students the opportunity to synthesize, contextualize, and deepen their understanding of how disciplines in the humanities and the social sciences approach the experiences and implications of illness, aging, mortality and healing. Regular guest lecturers, discussion of assigned readings, student presentations, and written projects.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CMDH.
Prerequisites: (ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: D]) and HUM 315 [Min Grade: B]

ENGL 490 Seminar in English and American Literature 4.0 Credits
An advanced course with variable topics in British or American Literature stressing textual analysis, cultural and historical contexts and research; provides students with intensive preparation for advanced and professional studies.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 12 credits
Restrictions: Can enroll if major is ENGL and classification is Junior or Senior.

ENGL 492 Seminar in World Literature 4.0 Credits
An advanced course with variable topics in World Literature stressing textual analysis, cultural and historical contexts and research; provides students with intensive preparations for advanced and professional studies.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 12 credits
Restrictions: Can enroll if major is ENGL and classification is Junior or Senior.

ENGL 499 Senior Project in Literature 4.0 Credits
Open to English Majors only, the senior project in literature should reflect the student's interest in a specific subject, author or theme and should demonstrate the student's research, critical and analytical expertise at an advanced, pre-professional level.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENGL and classification is Senior.

Environmental Policy

Courses

ENVP 275 Global Climate Change 3.0 Credits
This course provides a multidisciplinary introduction to the issue of global climate change. It focuses on the scientific evidence for climate change, its impacts on natural and human systems, actions that can be taken to mitigate or adapt to climate change and the political and cultural dynamics of this issue.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 325 Introduction to Urban and Environmental Planning 3.0 Credits
This course serves to introduce students to the field of urban and environmental planning. In doing so, this course seeks to expose students to the skill sets used by planners: including the planning process; citizens participation models; community needs assessment; data analysis and presentation; plan implementation and evaluation; and professional ethics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ENVP 345 Sociology of the Environment 3.0 Credits
Examines the social causes and solutions of environmental problems, including consumption, energy use and transportation, global trade and economy, environmental justice, environmentalists and anti-environmentalist ideology, environmental social movements and sustainability.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 346 Environmental Justice 3.0 Credits
Focuses on the uneven distribution of environmental hazards. Topics include the impact of pollutants on human health; poverty, race and exposure to environmental hazards; the impact of science and law on environmental justice; causes of environmental injustice; and the efforts and impact of the environmental justice movement.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 360 Environmental Movements in America 3.0 Credits
Provides an introduction to the key collective actors and institutions involved in the creation of the U.S. environmental policies. Examines, through the use of historical and cultural perspective, the development of the various worldviews, organizations, and practices that define U.S. environmental politics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ENVP 365 Introduction to Environmental Policy Analysis 3.0 Credits
Provides an introduction to the development and implementation of U.S. environmental policy, including historical development, political process methods of analysis and creation of laws, regulations and budgets to realize policy objectives.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 399 Independent Study in ENVR Studies 0.5-12.0 Credits
Provides a course of independent study in Environmental Studies. Topics for study must be approved in advance of registration by the advisor and the instructor involved.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ENVP 480 Special Topics 3.0 Credits
This cours will explore current issues and interests in Environmental Studies. The topic will vary each term.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Environmental Science

Courses

ENVS 101 Introduction to Environmental Science 5.0 Credits
Students will be introduced to a variety of disciplines and techniques necessary to effectively study local stream, marsh, lake, and terrestrial ecosystems. Students will examine the physical, chemical, and biological elements with these ecosystems with an emphasis on biological elements. Some of the field experiences will include learning how to sample algae, higher plants, invertebrates, fish and salamanders, and methods for surveying and monitoring marshes and selected physical and chemical measurements.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENVS.

ENVS 102 Natural History, Research and Collections 2.0 Credits
Students will learn about the scope, nature and uses of the specimen collection, methods of collection care, maintenance and growth for different taxonomic groups. Students will learn how biodiversity research questions and projects are conceived and implemented. Students will observe and collect specimens and data, and begin to learn analyses and publication of results. Students will gain an appreciation for the role of natural history collections in modern research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENVS.

ENVS 169 Environmental Science 3.0 Credits
This course provides an introduction to environmental problems and their causes, cultural changes, worldviews, ethics and environment. It covers such topics as science, matter and energy, ecosystems and how they work, air and air pollution, climate, global warming, and ozone loss, waste minerals and soil, solid, toxic and hazardous wastes, protecting food sources and energy resources.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 201 Practical Identification of Plants and Animals 2.0 Credits
This course provides instruction and hands on experience in using print and online taxonomic keys, field guides and reference collections of real specimens for identification of plants, animals and fungi. The emphasis is on the flora and fauna of the Philadelphia region and learning how to use identification tools in the field and lab. The main objective is to have students understand the importance of accurate identification of organisms and to develop basic knowledge and skills that can be extended and applied to organisms widely.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENVS.
Prerequisites: BIO 124 [Min Grade: C]

ENVS 202 Tree of Life 2.0 Credits
This course reviews the diversity of life in the context of phylogenetic history as the organizing principle. The course emphasizes recent discoveries of living and fossil taxa, breakthroughs and controversies in resolving relationships, and the key evolutionary innovations in eukaryotes, such as multicellularity, major shifts in habitat, parasitism, symbiosis, and complex morphological novelties.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENVS.
Prerequisites: BIO 124 [Min Grade: D]

ENVS 203 The Watershed Approach 2.0 Credits
Students will integrate several disciplines of study to compare an urbanized to a non-urbanized stream ecosystem. All elements of the stream ecosystem and its watershed will be examined. Field experience will include learning how to assess the physical properties of a stream, measure and monitor water quality, sample invertebrates and vertebrates.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENVS.
Prerequisites: ENVS 101 [Min Grade: D] or BIO 126 [Min Grade: D]

ENVS 212 Evolution 4.0 Credits
Aspects of the fact of evolution are discussed in class, including early evolutionary thought, pivotal moments in the history of life, and evidences for evolution from fossils, genetics, and living organisms. Key concepts include natural selection, speciation, adaptation, vicariance, inclusive fitness, and evodevo. Non-scientific arguments pertaining to evolution are refuted.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 226 Discoveries in Animal Behavior 3.0 Credits
The course explores the incredible diversity of animal behavior using specially selected examples of recent research findings. It focuses on the adaptiveness of behavior: how animals solve problems posed by their physical and social environments. We will consider implications of research on other species for understanding our own (human) behavior. Non-majors only.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 230 General Ecology 3.0 Credits
This course examines how organisms interact with the biological and physical world and bridges the natural sciences with the social sciences. Using evolutionary theory as its basis, this course will cover topics spanning multiple levels of organization within the science of ecology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 101 [Min Grade: D] or BIO 106 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 123 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 254 Invertebrate Morphology and Physiology 3.0 Credits
Provides comparative study of the major invertebrate groups, relationships between physiology and organismal structure, phylogenetic relationships and classification, development, and life histories.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 100 [Min Grade: D] or BIO 101 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 124 [Min Grade: D]
Corequisite: ENVS 255

ENVS 255 Invertebrate Morphology and Physiology Lab 2.0 Credits
This laboratory course provides a comparative study of the morphology of representative species from the major invertebrate groups. How their structural features relate to their physiology and behavior is emphasized. Identification of species, examining phylogenetic relationships, and understanding life histories will relate organisms to their ecological roles.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Corequisite: ENVS 254

ENVS 260 Environmental Science and Society 3.0 Credits
This course is a multidisciplinary introduction to the range of disciplines that make up the environmental sciences. The aim of this course is to provide an understanding of basic physical, ecological and social sciences that focus on the study on the natural environment and its interaction with human society.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 275 Global Climate Change 3.0 Credits
This course provides a multidisciplinary introduction to the issue of global climate change. It focuses on the scientific evidence for climate change, its impact on natural and human systems, actions that can be taken to mitigate or adapt to climate change and the political and cultural dynamics of this issue.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 280 Special Topics 12.0 Credits
Special topics offered in biodiversity, earth and environmental science. Topics include recent multidisciplinary areas of environmental concern.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ENVS 284 [WI] Physiological and Population Ecology 3.0 Credits
Examines the role of physiological adaptation in the ecology of plants and animals and the principles of population biology as applied to biological systems. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 123 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 109 [Min Grade: D]

ENVS 285 [WI] Population Ecology Laboratory 2.0 Credits
This laboratory course will introduce the basic concepts of populations ecology in context of their modern ramifications and will prepare students for advanced research in population ecology. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVR 284 [Min Grade: D], ENVS 284 [Min Grade: D] (Can be taken Concurrently)

ENVS 286 Community and Ecosystem Ecology 3.0 Credits
Introduces the principles of community and ecosystem ecology. Emphasizes the role of community structure and ecosystem organization in the ecology of plants and animals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 123 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 109 [Min Grade: D]

ENVS 287 Community Ecology Laboratory 2.0 Credits
This laboratory course will introduce the basic concepts of community ecology in context of their modern ramifications and will prepare students for advanced research in community and ecosystem ecology. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVR 286 [Min Grade: D], ENVS 286 [Min Grade: D] (Can be taken Concurrently)

ENVS 289 Global Warming, Biodiversity and Your Future 3.0 Credits
Human induced global warming is changing the physical environment, ecological systems, and human systems around the world. We will explore causes, effects, and consequences of global warming using NASA satellite information and current scientific and semi-popular writings. Students will understand the implications of global climate change for their futures.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

ENVS 302 Environmental Chemistry Laboratory 2.0 Credits
In this curse students will learn basic techniques for chemical analysis of environmental samples, including biological material, water and soil. Students will also learn to utilize more manual methods but will also use electronic data acquisition systems and further develop their scientific writing skills.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENVS.
Prerequisites: CHEM 103 [Min Grade: D]

ENVS 308 GIS and Environmental Modeling 4.0 Credits
Students will learn how to write computer programs to read data directly from digital maps and then perform various spatial analyses and modeling tasks. The class will include an introduction to spatial- and geo-statistics; techniques for determining ecological riches of organisms, methods for modeling basic forcing factors such as solar radiation, water temperature; approaches for modeling the flow of water in a landscape; and ultimately, combining these techniques to model or simulate ecosystems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ENVS.
Prerequisites: MATH 102 [Min Grade: D] or MATH 123 [Min Grade: D]

ENVS 310 Introduction to Environmental Chemistry 3.0 Credits
This course uses a topic-based approach to the chemistry of the environment. Students in this course are expected to have a minimal/some knowledge of chemistry, with a desire of applying this knowledge to the environment. Topics of interest include environmental chemistry of water, water pollution, water treatment, geochemistry, atmospheric chemistry, air pollution, hazardous materials and resources.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 103 [Min Grade: D]

ENVS 312 Systematic Bio: Principles & Methods 3.0 Credits
This is an introduction to systematic biology. The primary tasks of systematics are 1) the discovery, description, and classification of biodiversity to construct a general reference system for life on Earth; 2) the reconstruction of the "tree of life": the descent relationships among units of biodiversity at multiple hierarchic levels from genes to phyla; and 3) the application of reconstructions of decent relationships to the study of evolution. Phylogenetic systematics, concerned with units of biodiversity at the species level and above, will be emphasized.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is BIO or major is ENVS.
Prerequisites: ENVS 201 [Min Grade: C] or ENVS 202 [Min Grade: C] or BIO 217 [Min Grade: C]

ENVS 321 Environmental Health 3.0 Credits
Covers evaluation of environmental hazards and design of environmental controls for the health and well-being of humans. Accompanying seminar on current problems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 123 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 126 [Min Grade: D]

ENVS 322 Tropical Ecology 3.0 Credits
This is a course in the ecology of tropical rain forests and dry forests. Tropical ecology will explore the physical and biological factors that result in the formation of the forest, the effect of human impact, the effectiveness of management, and the future of these forests.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVS 230 [Min Grade: D]

ENVS 323 Tropical Field Studies 3.0 Credits
Ecology of tropical rain forests and dry forests. We will explore physical and biological factors that result in formation of these forests, effect of human impacts on these forests, effectiveness of management of these forests, and the future of these forests in Costa Rica in the field. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVS 322 [Min Grade: D] (Can be taken Concurrently)

ENVS 324 Microbial Ecology 3.0 Credits
Studies the relationships of microbes with plants, animals, and the environment, both biotic and abiotic components. Examines the key role of microbes in the functioning of ecosystems affecting decomposition, disease, nutrient cycling, and energy flow. Studies these processes and the role of microbes in the natural functions of ecosystems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 221 [Min Grade: D] or ENVR 316 [Min Grade: D] or ENVS 316 [Min Grade: D]

ENVS 326 Molecular Ecology 3.0 Credits
Through a combination of lecture, discussion, and computational exercises, students will learn how molecular tools have been used to study genetic variation. They will then learn how these studies have provided answers to previously unanswered questions in fields including ecology, evolution, behavior, conservation, and forensics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVS 284 [Min Grade: D] or ENVR 284 [Min Grade: D] or BIO 218 [Min Grade: D] or ENVS 230 [Min Grade: D] or ENVR 230 [Min Grade: D]

ENVS 327 Molecular Ecology Laboratory 2.0 Credits
Through a combination of laboratory and computational exercises, students will develop a toolkit for applied molecular studies of ecology and evolution. The course will focus on initiating or continuing a novel research project relating to one of several topics within the field of molecular ecology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVS 284 [Min Grade: D] or ENVR 284 [Min Grade: D] or BIO 218 [Min Grade: D]

ENVS 328 Conservation Biology 3.0 Credits
This course we will detail the loss of biodiversity and explore related issues, including the theories and practices of conservation biology and the solutions currently and the solutions currently being formulated to enhance the preservation of species on our planet. The course will explore potential limitations to these strategies and provide an appreciation of the relevance of ethics, economics and politics to biodiversity conservation while promoting the potential for individual action to influence conservation efforts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 330 Aquatic Ecology 3.0 Credits
Studies the relationships between aquatic plants and animals and their environment. Introduces the study of the ecology of lakes, rivers, ponds, and streams.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.

ENVS 333 Wetland Ecology 3.0 Credits
Examination of the structure, function, and dynamics of wetland ecosystems. Topics include geomorphology, hydrology, biogeochemistry, plant and animal adaptations to wetland environments, and wetland policy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVS 203 [Min Grade: D] and ENVS 308 [Min Grade: D]

ENVS 334 Watershed Ecology 3.0 Credits
Watershed ecology explores the linkages among aquatic ecosystems and their water catchment or watershed. Aquatic ecosystems are influenced by physical, chemical, and biologic factors in "the watershed." The conditions in the watershed influence aquatic ecosystems at several spatial-scales, for example areas neighboring a stream, "the riparian zone," influences water temperature much more than those areas further away from the stream. Incorporating spatial scale into watershed studies is a developing field with many opportunities to advance watershed science and the associated environmental regulations and policies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 126 [Min Grade: D]

ENVS 336 Terrestrial Ecology 5.0 Credits
Studies the relationships between terrestrial plants and animals and their environment. Introduces the study of the ecology of local ecosystems, such as the Poconos and the New Jersey Pine Barrens.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 126 [Min Grade: D] or ENVR 230 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 341 Equatorial Guinea: Society & Environment 4.5 Credits
A lecture and community outreach course based at the National University of Equatorial Guinea that combines instruction in mankind's relationship with the natural environment (human population, natural resources, environmental degradation, pollution, biodiversity loss and climate change) with environmental outreach activities specific to Equatorial Guinea.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 342 Equatorial Guinea: Natural Resource Economics 4.5 Credits
A lecture course based a the National University of Equatorial Guinea that combines instruction in the economic implications of natural resources (renewable and non-renewable resources, efficient utilization, market performance, government controls, sustainability and discounting) with a university-wide guest lecture series addressing local issues.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 343 Equatorial Guinea: Field Methods 3.0 Credits
A lecture and field excursion course based at the University of Equatorial Guinea combining instruction in standard methods for studying rainforest communities (expedition planning; GPS and mapping, forest diversity and productivity; wildlife population monitoring) with multi-day field experiences in Bioko Island's remote protected areas.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 344 Equatorial Guinea: Field Research 6.0 Credits
An intensive research course that takes advantage of the unspoiled rainforest adjacent to the Moka Wildlife Center, a university-affiliated research station located in the highlands of Bioko Island, Equatorial Guinea (Central/West Africa). Opportunities exist for student research on topics including primates, antelope, birds, chameleons, butterflies and plants.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits

ENVS 351 Resource and Environmental Economics 4.0 Credits
Examines the microeconomic and quantitative aspects of markets for both renewable and exhaustible resources, and the interaction between the energy and resource sectors of the economy and between the productive sectors of the economy and the natural environment, with evaluation of major public initiatives and issues in these areas.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ECON 201 [Min Grade: D] and ECON 202 [Min Grade: D]

ENVS 360 Evolutionary Developmental Biology 3.0 Credits
Evolutionary Developmental Biology (Evo-Devo) compares developmental processes between organisms to determine how these mechanisms evolved in light of ancestral relationships. Topics include “your inner fish,” how to “build” a dinosaur, and the reducibly simple evolution of the eye. Also explored are developmental controls such as environmental factors and molecular mechanisms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 217 [Min Grade: D] and BIO 218 [Min Grade: D]

ENVS 364 Animal Behavior 3.0 Credits
The mechanisms, ecology and evolution of the activities of animals in relation to their natural environment. Topics include development and control (neural and hormonal) of behavior, adaptations for survival, feeding, and predator avoidance, strategies of habitat selection, communication, reproduction, and social behavior.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVS 230 [Min Grade: D] or BIO 123 [Min Grade: D] or BIO 126 [Min Grade: D]

ENVS 365 Animal Behavior Laboratory 2.0 Credits
An observational study of the behavior of a captive group of social animals at the Philadelphia Zoo including species selection, background research, ethogram construction, 16 hours of quantified observation, analysis of data and written report.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVS 364 [Min Grade: D] (Can be taken Concurrently)

ENVS 370 Practice of Environmental Economics 3.0 Credits
The focus of this course is on the real world implications of environmental resources exploitation and economic tools for dealing with them. Areas include air and water pollution, toxic wastes and mineral, water and forestry resource harvesting/extraction.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ECON 201 [Min Grade: D] and ECON 202 [Min Grade: D]

ENVS 382 Field Botany of the New Jersey Pine Barrens 4.0 Credits
This course focuses on plant identification skills that are necessary to conduct scientific botanical surveys. The vascular flora of the New Jersey Pine Barrens, including rare plant species, is emphasized with special reference to habitat and community analysis. Non-vascular species are examined but not emphasized.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

ENVS 383 Ecology of the New Jersey Pine Barrens 4.0 Credits
Course focuses on the ecology of the New Jersey Pine Barrens. Students learn field methods, identify index species (flora and fauna), perform community analyses, and use equipment for measuring abiotic variables (soil and water). Field exercises focus on key aspects of the regional ecology: fire, soil and water.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

ENVS 385 Systems Ecology 3.0 Credits
Systems Ecology will provide the tools to integrate and synthesize disciplines of sciences to understand the development, disruption, and dynamics of ecosystems. Students will learn general systems theory about how elements of an ecosystem interact with other parts of the system and how exogenous or external variables drive ecosystem processes. The course will show how to combine field data with simple mathematics in step by step calculations to describe, study, and emulate complex systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVS 203 [Min Grade: D] and ENVS 230 [Min Grade: D]

ENVS 388 Marine Field Methods 4.0 Credits
Course focus is on the ecology of local marine environments. Students learn marine field survey methods, identification of marine organisms, habitat analyses, and use of equipment for measuring abiotic variables. Students sample fish, plankton and invertebrate species aboard the Drexel 25 foot Research Vessel Peter Kilham.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

ENVS 390 Marine Ecology 3.0 Credits
This course studies major processes in the marine environment, especially relationships between organisms and the factors that influence their abundance.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.

ENVS 391 Diversity, Evolution and Ecology of Algae 3.0 Credits
Origin and evolution of various algal groups, principles and methods of algal systematics, algal ecology, and use of algae as environmental indicators. Field trips to local streams, ponds and wetlands where students will collect algal samples and record environmental data. Lab work will include sample processing and algal identification.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.
Prerequisites: BIO 124 [Min Grade: D] or ENVS 102 [Min Grade: D]

ENVS 392 Ichthyology and Herpetology 3.0 Credits
Many species of fishes, amphibians and reptiles face extirpation from their former ranges and some face total extinction within our lifetime. This course investigates major regional and global issues concerning viability of these organisms and addresses solutions using concepts of population ecology, community ecology, physiological ecology and conservation biology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.

ENVS 393 Entomology 3.0 Credits
This course introduces students to some of the major topics in the field of entomology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 124 [Min Grade: D]
Corequisite: ENVS 394

ENVS 394 Entomology Laboratory 2.0 Credits
This course introduces students to some of the major practical topics in the field of entomology. The course consists of lab work, collecting trips, and creation of an insect collection.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 124 [Min Grade: D]
Corequisite: ENVS 393

ENVS 400 Cascade Mentoring 2.0 Credits
Provides senior ENVS students with mentoring and service opportunities within the Environmental Science curriculum. The course will also cover issues of ethics, professional development and career counseling. ENVS senior students will be required to enroll as a peer mentor for one of these six courses. Seniors will work with faculty to help plan and deliver experiential activities and will act as mentors and tutors for first and second year students enrolled in these courses.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 6 credits
Restrictions: Can enroll if major is ENVS and classification is Senior.

ENVS 401 Chemistry of the Environment 3.0 Credits
Covers principles of physical and organic chemistry applicable to the study and evaluation of environmental conditions, especially the pollution of air, water, and soil (including chemical changes and reactions in the environment).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVE 302 [Min Grade: D] or CHEM 103 [Min Grade: D]

ENVS 405 Atmospheric Chemistry 3.0 Credits
Introduces the principles of atmospheric physics and photochemical kinetics as a prelude to understanding the atmospheric chemical system. Examines the chemistry of the natural atmosphere to prepare for the understanding of how pollutants interact with natural species. Considers pollution of the stratosphere and the troposphere.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVR 401 [Min Grade: D] or ENVS 401 [Min Grade: D]

ENVS 410 Physiological Ecology 3.0 Credits
Examines mechanisms by which physiological factors affect and limit the distribution and abundance of animals, including physiological and behavioral thermoregulation, heat and cold tolerance, acclimation, metabolism, osmoregulation and dehydration tolerance, feeding strategies, digestion and feeding patterns, energy and water budges, toxins and optimality theory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (ENVR 230 [Min Grade: D] or ENVS 230 [Min Grade: D]) and (ENVR 284 [Min Grade: D] or ENVS 284 [Min Grade: D] or BIO 201 [Min Grade: D])

ENVS 412 Biophysical Ecology 3.0 Credits
Covers energy balances and methods of heat transfer in organisms, including convection, conduction, radiation, evaporation, and metabolism and steady-state and transient energy balances, including mass balances, water uptake and evaporation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (MATH 239 [Min Grade: D] or MATH 123 [Min Grade: D]) and PHYS 153 [Min Grade: D]

ENVS 413 Advanced Population Ecology 3.0 Credits
One on of the greatest issues concerning life on Earth and human impact on the planet is whether species will survive or go extinct. This course explores how wild populations change over time and investigates the concepts and quantitative methods used to determine the viability of plant and animal populations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVR 284 [Min Grade: D] or ENVS 284 [Min Grade: D]

ENVS 414 Advanced Community Ecology 3.0 Credits
Community ecology is the study of how populations of organisms interact with each other and the physical environment. Students will investigate the underlying principles that explain and predict interactions among populations of organisms, and how these principles can be used to conserve and manage wild animal and plant communities.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVR 286 [Min Grade: D] or ENVS 286 [Min Grade: D]

ENVS 436 Principles of Toxicology I 3.0 Credits
This course reviews general human physiology and the acute and chronic effects of toxicants upon physiological mechanism. Basic principles of dose-response relationships, target organ toxicity and exposure characterization are incorporated.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: BIO 201 [Min Grade: D]

ENVS 437 Principles of Toxicology II 3.0 Credits
This course expands upon knowledge gained in ENVS 436 Principles of Toxicology I by focusing on the absorption, distribution, biotransformation, and excretion of toxic substances. Current advances in the studies of carcinogenesis and mutagenesis are also discussed as well as toxicological research methods, animal and plant toxins, food toxicology and pesticides.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENVR 436 [Min Grade: D] or ENVS 436 [Min Grade: D]

ENVS 438 Biodiversity 3.0 Credits
This course explores major patterns of biodiversity that biologists have documented across the planet. The course begins with an overview of major types of biodiversity, focusing on species diversity, and methods for measuring and analyzing biodiversity. Next it explores major patterns of biodiversity that are fundamental to ecology and conservation, and theories for the causes of biodiversity patterns.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 124 [Min Grade: D]

ENVS 441 [WI] Issues in Global Change I: Seminar 2.0 Credits
Discusses and evaluates topics such as records of climate change, atmospheric chemistry and global warming, the greenhouse effect, ozone depletion, acid rain, decreased biodiversity, desertification, deforestation, and sea-level rise. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Senior.

ENVS 442 Issues in Global Change II: Research 2.0 Credits
Requires students to focus on a particular change topic or issue in order to analyze it, prepare a research report, and present a final seminar.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Senior.
Prerequisites: ENVS 441 [Min Grade: D] or ENVR 441 [Min Grade: D]

ENVS 443 Issues in Global Change III: Synthesis 2.0 Credits
The purpose of this course is to provide seniors in Environmental Science and Ecology with an opportunity to make an in-depth examination of the factors causing global change in the 21st century, to analyze their own data as well as that in the literature, to synthesize new ideas and to report orally and in writing on their findings.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVS 442 [Min Grade: D]

ENVS 470 Advanced Topics in Evolution 3.0 Credits
Discusses and evaluates selected topics such as population and quantitative genetics, genomics in evolutionary analysis, fitness concepts and modes of selection, species concepts and modes of speciation, evolution of development and complex adaptations, biological diversification over space and time, adaptive radiation and extinction, historical biogeography. Topics for each term will be selected based on current research and interest.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits
Prerequisites: BIO 217 [Min Grade: C]

ENVS 480 Special Topics 12.0 Credits
Special topics offered in environmental science. Topics include recent multidisciplinary areas of environmental concern.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

ENVS 497 Research 0.5-12.0 Credits
Provides guided research in ecology, earth science and environmental science.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

ENVS 498 Independent Study 0.5-12.0 Credits
Provides independent study in environmental science.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Can enroll if classification is Junior or Senior.

English as a Second Language

Courses

ESL 001 Foundations of University Study 0.0 Credits
High intermediate to advanced English as a second language course. This course provides ESL students with a foundation for University success through developing academic communication skills and strategies and promoting awareness of the academic and co-curricular culture of the American university.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 15 credits
Restrictions: Can enroll if major is ESL or major is IG.

ESL 002 Foundations of Academic Writing 0.0 Credits
This course introduces ESL students to the academic essay and the process approach to writing as well as reading for different purposes.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 003 Foundations of Academic Reading 0.0 Credits
This course introduces ESL students to the skills of critical reading for information, specifically summarizing and evaluating source material.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 004 International Gateway Foundations of Academic Writing for Chemistry 201 0.0 Credits
This course provides International Gateway students with support for success in the CHEM 201 course through developing academic skills and strategies to participate in the sciences.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 010 Listening and Speaking I 0.0 Credits
Low beginning English as a second language. Provides intensive instruction in the development of the following skills: speaking and listening in everyday situations, vocabulary, pronunciation, and grammatical functions. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 011 Reading and Writing I 0.0 Credits
Low beginning English as a second language. Provides intensive instruction in the development of the following skills: reading comprehension, simple inferring, basic vocabulary development, sentence and paragraph writing, basic grammatical structures, and the ability to communicate ideas orally and in writing. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 012 English in Everyday Life 0.0 Credits
Low beginning English as a second language. Prepares students who have trouble talking with and understanding native English speakers in everyday situations such as going to the store or the bank, asking for directions, using the telephone, etc. Placement testing is required. Offered all terms. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 013 Beginning Grammar 0.0 Credits
Beginning English as a second language. Provides instruction and practice in such areas of English grammar as simple verb tenses, sentence structure, modals, and irregular verbs. Placement testing is required. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL.

ESL 020 Listening and Speaking II 0.0 Credits
High beginning English as a second language. Provides intensive instruction in the development of the following skills: speaking and listening (participating actively in spoken interactions and responding appropriately), vocabulary related to topics in the course, pronunciation and intonation patterns, and grammatical functions. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 021 Reading and Writing II 0.0 Credits
High beginning English as a second language. Provides intensive instruction in the development of the following skills: reading comprehension, inferring, vocabulary development, non-academic paragraph writing, basic grammatical structures and mechanics, and the ability to communicate ideas orally and in writing. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 022 Pronunciation and Conversation 0.0 Credits
High beginning to low intermediate English as a second language. Emphasizes vocabulary, pronunciation, and idioms. Gives students a chance to improve and practice their spoken communication skills. Placement testing is required. Offered all terms. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL or major is IG.

ESL 023 Intermediate Grammar 0.0 Credits
Intermediate English as a second language. Provides instruction and practice in such areas as complex and compound sentence structure, past tense verbs, and clause structure. Placement testing is required. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL or major is IG.

ESL 024 Presentations with Stories & Legends 0.0 Credits
Beginning to low intermediate. English as a second language. Provides instruction and practice in reading comprehension, writing, listening, and presentations using stories from a variety of sources. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL.

ESL 030 Listening and Speaking III 0.0 Credits
Low intermediate English as a second language. Provides intensive instruction in the development of the following skills: pronunciation (sounds, stress, intonation), vocabulary, listening/speaking (participating and responding appropriately in discussions, following directions, completing listening activities), grammatical competence, and repair of communication breakdown. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 031 Reading and Writing III 0.0 Credits
Low intermediate English as a second language. Provides intensive instruction in the development of the following skills: reading comprehension, inferring, vocabulary development, academic paragraph and essay format, grammatical structures and mechanics, and the ability to communicate ideas orally and in writing. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 032 English for Business Purposes 0.0 Credits
Intermediate English as a second language. Provides communication skills needed to do business with English speakers. Topics include small talk and telephone skills, participation in business meeting, presentations, communication through business letters and memos, and business negotiation. Placement testing is required. Offered all terms. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 034 Understanding the News Media 0.0 Credits
Intermediate to advanced English as a second language. Emphasizes listening, discussion, and reading skills as students learn to read newspaper articles and listen to news from a variety of sources. Provides instruction on how the news is made and evaluated. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL.

ESL 035 Vocabulary Development 3-4 0.0 Credits
Intermediate English as a second language. Provides strategies to improve academic, general, and technical vocabulary; to discover common roots in English words; and to improve reading skills. Placement testing is required. Offered all terms. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 036 TOEFL iBT Listening & Speaking 0.0 Credits
High intermediate to advanced English as a second language. Prepares students to take the Internet-based TOEFL (Test of English as a Foreign Language) for academic purposes. Provides instruction in the listening and speaking sections of the TOEFL. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits
Restrictions: Can enroll if major is ESL or major is IG.

ESL 040 Listening and Speaking IV 0.0 Credits
High intermediate English as a second language. Provides intensive instruction in the development of the following skills: pronunciation/fluency (sounds, stress, intonation, linking, phrasing), vocabulary, listening/speaking (participate appropriately in spoken interactions, understand news, mini-lectures), repair of communication breakdown, and grammatical competence. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 041 Reading and Writing IV 0.0 Credits
High intermediate English as a second language. Provides intensive instruction in the development of the following skills: reading comprehension, inferring, vocabulary development, academic essay format, grammatical structures and mechanics, and the ability to communicate ideas orally and in writing. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 042 Advanced Grammar 0.0 Credits
High intermediate to advanced English as a second language. Provides instruction and practice in such areas of advanced English grammar as usage of verb tenses, indirect speech, conditional sentences, clause structure, and the passive voice. Placement testing is required. Offered all terms. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL or major is IG.

ESL 043 Advanced Presentation Skills 0.0 Credits
High intermediate to advanced English as a second language course on preparing, delivering, and evaluating presentations. Explores ways to engage audience and improve performance. Builds confidence through speaking skill development.Placement testing is required. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits
Restrictions: Can enroll if major is ESL or major is IG.

ESL 044 Skills for College Success 0.0 Credits
High intermediate to advanced English as a second language. Addresses academic skills topics such as listening to lectures and note taking, reading textbooks and synthesizing information, conducting research, and expanding awareness of the United States academic environment. Placement testing is required. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits
Restrictions: Can enroll if major is ESL or major is IG.

ESL 045 TOEIC Preparation 4-6 0.0 Credits
High intermediate to advanced English as a second language. Introduces skills and strategies that are helpful in taking the TOEIC test. Improves listening and reading comprehension skills. Focuses on analyzing types of test questions commonly asked and learning strategies for answering the questions. Placement testing is required. Offered all terms. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 048 TOEFL iBT Reading & Writing 0.0 Credits
High Intermediate to advanced English as a second language. Prepares students to take the Internet Based TOEFL (Test of English as a Foreign Language) for academic purposes. Provides instruction in the reading and writing sections of the TOEFL. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL or major is IG.

ESL 050 Listening and Speaking V 0.0 Credits
Low advanced English as a second language. Provides intensive instruction in the development of the following skills: pronunciation/fluency (ease, speed, smoothness of speaking), vocabulary, listening/speaking (participate appropriately in spoken interactions, understand news reports, lectures), repair of communication breakdown, and grammatical competence. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 051 Reading and Writing V 0.0 Credits
Low advanced English as a second language. Provides intensive instruction in the development of the following skills: reading comprehension, inferring, vocabulary development, academic essays and the use of source material, grammatical structures and mechanics, and the ability to communicate effectively in writing. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 052 Vocabulary Development 5-6 0.0 Credits
Advanced English as a second language. Provides strategies to improve academic, general, and technical vocabulary; to discover common roots in English words; and to improve reading skills. Placement testing is required. Offered all terms. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 055 Strategies for Academic Reading 0.0 Credits
Advanced English as a second language. Improves reading comprehension. Provides skills for defining and identifying main and supporting ideas, recognizing transitional words and their role in meaning, and finding organizational patterns. Explores the authors' purpose, opinion, and tone. Placement testing is required. Offered as needed. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 056 GMAT Preparation 5-6 0.0 Credits
Advanced English as a second language. Provides instruction for GMAT reading. Offers strategies to identify key parts of an argument and reviews grammatical and stylistic rules in the sentence correction section. Analyses arguments. Provides instruction for essay writing. Placement testing is required. Offered as needed. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 057 Advanced Vocabulary and Idioms 0.0 Credits
Advanced English as a second language. Provides strategies to improve idiomatic language using authentic sources from a variety of media. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL or major is IG.

ESL 058 Exploring American Life & Language 0.0 Credits
Intermediate to advanced English as a second language course. Students evaluate aspects of United States culture and history as presented in selected drama, literature and music. Additional presentations and writing assignments support development of fluency in speaking and writing skills. Placement testing for this course is required.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 0 credits
Restrictions: Can enroll if major is ESL or major is IG.

ESL 060 Listening and Speaking VI 0.0 Credits
Advanced English as a second language. Provides intensive content-based instruction in the development of the following skills: pronunciation/fluency (ease, speed, smoothness of speaking), vocabulary, listening/speaking (participate appropriately in spoken interactions, understand news reports, lectures), grammatical competence, repair of communication breakdown. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 061 Reading and Writing VI 0.0 Credits
Advanced English as a second language. Provides intensive instruction in the development of the following skills: reading comprehension, inferring, academic writing (including research paper with synthesis, summary, reaction, analysis, and citation of sources), grammar and mechanics, and effective communication in writing. Placement testing is required. Offered all terms. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 062 TOEFL iBT for All Skills 0.0 Credits
High intermediate to advanced English as a second language. Prepares students to take the iBT (Internet Based Test of English as a Foreign Language) for academic purposes. Provides instruction in the listening, speaking, reading, and writing sections of the TOEFL. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 12 credits
Restrictions: Can enroll if major is ESL or major is IG.

ESL 070 GLOBE Business Information 0.0 Credits
Intermediate to advanced level English as a second language. Develops students' ability to read business material, understand key vocabulary and discuss current events in the business sector. Provides instruction in reading and understanding case studies. Placement testing is required. Offered as needed. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 071 GLOBE Business Communication 0.0 Credits
Intermediate to advanced level English as a second language. Improves students' ability to effectively communicate in business setting. Offers strategies for negotiation and provides instruction on cross-cultural communication styles. Placement testing is required. Offered as needed. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 072 Business Site Visits 0.0 Credits
Intermediate to advanced level English as a second language. Prepares students to observe American business practices on site. Develops research skill. Provides instructions and practice in organizing and making presentations as well as letter writing skills. Placement testing is required. Offered as needed. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 073 Introduction to Business Research 0.0 Credits
High-intermediate to advanced level English as a second language. Introduces students to the research process of business related topics and exposes them to American culture and conversation through interaction. Offered as needed. 7.5-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL or major is IG.

ESL 074 IELTS Listening and Speaking 0.0 Credits
High intermediate to advanced English as a second language. Prepares students to take the IELTS (International English Language Testing System) for academic and professional purposes. Provides instruction in the listening and speaking sections of the IELTS test. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL or major is IG.

ESL 075 IELTS Reading and Writing 0.0 Credits
High intermediate to advanced English as a second language. Prepares students to take the IELTS (International English Language Testing System) for academic and professional purposes. Provides instruction in the reading and writing sections of IELTS. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL.

ESL 076 IELTS (International English Language Testing System) Test Preparation All Skills 0.0 Credits
High intermediate to advanced English as a second language. Prepares students to take the IELTS (International English Language Testing System) for academic and professional purposes. Provides instruction in the listening, speaking, reading, and writing sections of the IELTS test. Placement testing is required.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 12 credits
Restrictions: Can enroll if major is ESL or major is IG.

ESL 080 Preparation Course for International Teaching Assistants 0.0 Credits
Intermediate to advanced English as a second language. Prepares new international teaching assistants for their responsibilities in the university. Provides intensive instruction in English language, pedagogy, and the culture of the American classroom. Department permission required. Offered as needed. 18-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 081 Accent Reduction 0.0 Credits
This is an advanced English as a second language course, which provides intensive instruction in the development of speaking and pronunciation skills. Students will practice pronunciation skills by participating actively in spoken interactions and responding appropriately while focusing on vocabulary, pronunciation, intonation patterns, and grammatical functions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ESL or major is IG.

ESL 090 English for Medical Purposes 0.0 Credits
High intermediate to advanced English as a second language. Develops participants' communication skills in medical context. Provides an overview of the American healthcare system and the dynamics of the different participants involved in the system. Placement testing is necessary. Offered as needed. 2.5-2.5-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ESL 091 Special Topics in English Language & Culture 0.0 Credits
Advanced English as a second language. Focuses on specific issues in English structure and usage. Includes issues of discourse, sociolinguistics, and culture. Placement testing is necessary. Offered as needed. 3-0-0.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

French

Courses

FREN 101 French I 4.0 Credits
Introductory French. Includes listening, speaking, reading, and writing. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

FREN 102 French II 4.0 Credits
Continues FREN 101. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: FREN 101 [Min Grade: D]

FREN 103 French III 4.0 Credits
Continues FREN 102. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: FREN 102 [Min Grade: D]

FREN 201 French IV 4.0 Credits
Intermediate French. Includes grammar review, listening, speaking, and reading, with individual audiolingual practice. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: FREN 103 [Min Grade: D]

FREN 202 French V 4.0 Credits
Continues FREN 201. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: FREN 201 [Min Grade: D]

FREN 203 French VI: Conversations & Composition 4.0 Credits
Provides intensive practice in comprehension and written and oral communication. Emphasizes development of writing skills and increased oral competence in everyday situations. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: FREN 202 [Min Grade: D]

FREN 311 [WI] Introduction to French Stylistics 4.0 Credits
Provides advanced practice in comprehension and written and oral communication, based primarily on periodicals and contemporary media. Offered every term. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: FREN 203 [Min Grade: D]

FREN 312 [WI] French Stylistics 3.0 Credits
Continues FREN 311. Provides extensive study of the techniques of translation and communication. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: FREN 311 [Min Grade: D]

FREN 313 [WI] Advanced French Stylistics 3.0 Credits
Continues FREN 312. Provides advanced training in oral and written communication in French. Particularly recommended for students who have pre-proficiency status, French minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: FREN 312 [Min Grade: D]

FREN 331 Introduction to Studies in French Literature 3.0 Credits
Advanced French. Reading, writing, and extensive conversational practice, based on masterpieces of French literature.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: FREN 312 [Min Grade: D]

FREN 332 Studies in French Literature 3.0 Credits
Includes reading and oral and written analysis of representative texts in French literature, including familiarization with the historical and cultural contexts. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: FREN 312 [Min Grade: D]

FREN 333 Advanced French Literature 3.0 Credits
Continues FREN 332. Provides advanced study of French literature. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: FREN 312 [Min Grade: D]

FREN 351 Introduction to Business and Professional French 3.0 Credits
Provides intensive oral practice and written work in business, professional, and commercial French. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: FREN 312 [Min Grade: D]

FREN 352 Business and Professional French 3.0 Credits
Advanced Business and Professional French. Advanced practice in oral and written French for business and the professions. Based on advanced texts, periodicals, and technical journals.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: FREN 312 [Min Grade: D]

FREN 353 Advanced Business and Professional French 0.5-20.0 Credits
Provides advanced study in business and professional terminology, with emphasis on the structure and protocols of the business world. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: FREN 312 [Min Grade: D]

FREN 371 Special Studies in French Civilization and Culture 3.0 Credits
Presents an integrated approach in French to the civilization, culture, history, and literature specific to the areas in which the language is spoken, with emphasis on the development and evaluation of cultural values. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: FREN 312 [Min Grade: D]

FREN 399 [WI] Advanced Independent Study in French 0.5-12.0 Credits
Provides supervised study of special subjects in French language and literature. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

FREN 411 [WI] Special Studies in Advanced French Stylistics 3.0 Credits
Continues FREN 313. Particularly recommended for students who have proficiency status, French minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: FREN 312 [Min Grade: D]

FREN 431 [WI] Special Studies in Advanced French Literature 3.0 Credits
Continues FREN 333. Particularly recommended for students who have proficiency status, French minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: FREN 312 [Min Grade: D]

FREN 451 Special Studies in Advanced Business and Professional French 3.0 Credits
Continues FREN 353, with emphasis on the structure and protocols of the European Union. Particularly recommended for students who have proficiency status, French minors, and students interested in graduate study and/or international careers. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: FREN 312 [Min Grade: D]

FREN 471 [WI] Special Studies in French Civilization 3.0 Credits
Presents an integrated approach, at the advanced level, to the civilization, culture, history, and literature of a given period specific to the areas in which French is spoken, with emphasis on the development and evaluation of cultural values. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: FREN 312 [Min Grade: D]

FREN 480 French Minor Thesis Course 4.0 Credits
Independent research study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study. At the end of the course, the student is required to produce a paper and oral defense on the topic of his paper.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

FREN 499 [WI] Special Topics in French 0.5-12.0 Credits
Recommended for French minors and for students with proficiency status. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

German

Courses

GER 101 German I 4.0 Credits
Introductory German. Includes listening, reading, writing, and speaking. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

GER 102 German II 4.0 Credits
Continues GER 101. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GER 101 [Min Grade: D]

GER 103 German III 4.0 Credits
Continues GER 102. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GER 102 [Min Grade: D]

GER 201 German IV 4.0 Credits
Intermediate German. Includes grammar review, listening, speaking, and reading. Recommended for students who wish to attain oral competence. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GER 103 [Min Grade: D]

GER 202 German V 4.0 Credits
Continues GER 201. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GER 201 [Min Grade: D]

GER 203 German VI: Conversation & Composition 4.0 Credits
Provides intensive practice in comprehension and written and oral communication. Emphasizes development of writing skills and increased oral competence in everyday situations. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GER 202 [Min Grade: D]

GER 311 [WI] Introduction to German Stylistics 3.0 Credits
Provides advanced practice in comprehension and written and oral communication, based primarily on periodicals and contemporary media. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GER 203 [Min Grade: D]

GER 312 [WI] German Stylistics 3.0 Credits
Continues GER 311. Provides extensive study of the techniques of translation and communication. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GER 311 [Min Grade: D]

GER 313 [WI] Advanced German Stylistics 3.0 Credits
Continues GER 312. Provides advanced training in oral and written communication in German. Particularly recommended for students who have pre-proficiency status, German minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: GER 312 [Min Grade: D]

GER 331 Introduction to Studies in German Literature 3.0 Credits
Advanced German. Reading, writing, and extensive conversational practice, based on masterpieces of German literature.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: GER 312 [Min Grade: D]

GER 332 Studies in German Literature 3.0 Credits
Includes reading and oral and written analysis of representative texts in German literature, including familiarization with the historical and cultural contexts. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: GER 312 [Min Grade: D]

GER 333 Advanced German Literature 3.0 Credits
Continues GER 332. Provides advanced study of German literature. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: GER 312 [Min Grade: D]

GER 351 Introduction to Business and Professional German 3.0 Credits
Provides intensive oral practice and written work in business, professional, and commercial German. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: GER 312 [Min Grade: D]

GER 352 Business and Professional German 3.0 Credits
Advanced business and professional German. Advanced practice in oral and written German for business and the professions. Based on advanced texts, periodicals, and technical journals.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: GER 312 [Min Grade: D]

GER 353 Advanced Business and Professional German 0.5-20.0 Credits
Provides advanced study in business and professional terminology, with emphasis on the structure and protocols of the business world. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GER 312 [Min Grade: D]

GER 371 Special Studies in German Civilization & Culture 3.0 Credits
Presents an integrated approach in German to the civilization, culture, history, and literature specific to the areas in which the language is spoken, with emphasis on the development and evaluation of cultural values. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: GER 312 [Min Grade: D]

GER 399 [WI] Advanced Independent Study in German 0.5-12.0 Credits
Provides supervised study of special subjects in German language and literature. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

GER 411 [WI] Special Studies in Advanced German Stylistics 3.0 Credits
Continues GER 313. Particularly recommended for students who have proficiency status, German minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: GER 312 [Min Grade: D]

GER 431 [WI] Special Studies in Advanced German Literature 3.0 Credits
Continues GER 333. Particularly recommended for students who have proficiency status, German minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: GER 312 [Min Grade: D]

GER 451 Special Studies in Advanced Business and Professional German 3.0 Credits
Continues GER 353, with emphasis on the structure and protocols of the European Union. Particularly recommended for students who have proficiency status, German minors, and students interested in graduate study and/or international careers. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: GER 312 [Min Grade: D]

GER 471 [WI] Special Studies in German Civilization 3.0 Credits
Presents an integrated approach, at the advanced level, to the civilization, culture, history, and literature of a given period specific to the areas in which German is spoken, with emphasis on the development and evaluation of cultural values. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: GER 312 [Min Grade: D]

GER 480 German Minor Thesis Course 4.0 Credits
Independent research study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study. At the end of the course, the student is required to produce a paper and oral defense on the topic of his paper.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

GER 499 [WI] Special Topics in German 0.5-12.0 Credits
Recommended for German minors and for students with proficiency status. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Greek

Courses

GREC 101 Modern Elementary Greek I 4.0 Credits
The goal of this course is to provide a thorough foundation in Greek language with emphasis on communication. Small class size provides intensive practice in speaking, writing and listening comprehension.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

GREC 102 Modern Elementary Greek II 4.0 Credits
The goal of this course is to provide a thorough foundation in Greek language with emphasis on communication. Small class size provides intensive practice in speaking, writing and listening comprehension. Builds on Greek 101.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GREC 101 [Min Grade: D]

GREC 103 Modern Elementary Greek III 4.0 Credits
The goal of this course is to provide a thorough foundation in Greek language with emphasis on communication. Small class size provides intensive practice in speaking, writing and listening comprehension. Builds on Greek 102.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GREC 102 [Min Grade: D]

GREC 201 Intermediate Modern Greek I 4.0 Credits
Emphasizes complex grammatical and syntactical phenomena of the Modem Greek language through oral communication and texts. Students examine idiomatic nuances and special features of the language. Skills in speech, reading comprehension and writing are further developed at this level. This course counts toward the completion of a Minor in Greek Studies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: GREC 103 [Min Grade: D]

GREC 212 Introduction to Greek Folklore 3.0 Credits
Greek folklore developed when the Greek nation was born. Using folklore, Greeks try to preserve their traditions and define their cultural identity. The class explores majors folklore topics and interpretive techniques. It provides examples and analyses of particular folklore forms, events and expressions of the Greek culture.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

GREC 225 Introduction to Greek Music & Dance 3.0 Credits
This course studies Greek music and dance historically by a) exploring performance events and b) focusing on certain music and dance genres and music groups/musicians. How does music and dance help Greeks express who they are? Formal music training and the ability to read Western staff notation is not required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

GREC 280 Communicate in Greek: Philoxenia 3.0 Credits
The Greek word for hospitality is philoxenia, which literally means “love for the foreigners”. The goal of this course is a) to provide a foundation in Greek language with emphasis on communication and b) the construction of a basic vocabulary and useful phrases students need in order to effectively communicate in simple, everyday life situations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

GREC 313 Greek History, Economy & Society 3.0 Credits
Greece’s geographic location is strategic as a connecting link between East and West and a crossroads amongst three continents that embraces various influences. Crete holds a significant tourist, economic and social role. Our goal is to understand the challenges that historically have been rising in relation to today’s global world.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

GREC 380 Special Topics in Greek Studies 1.0-4.0 Credit
Provides topics that cover various subjects in Greek time and space, such as geography, history, economy, civilization, culture and the arts.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

GREC 399 Independent Study in Greek 1.0-3.0 Credit
Provides supervised study that allows students to explore topics of their own choosing individually.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

Hebrew

Courses

HBRW 101 Introduction to Hebrew I 4.0 Credits
The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HBRW 102 Introduction to Hebrew II 4.0 Credits
The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension. Continues HBRW 101.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HBRW 101 [Min Grade: D]

HBRW 103 Introduction to Hebrew III 4.0 Credits
The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension. Continues HBRW 102.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HBRW 102 [Min Grade: D]

HBRW 201 Intermediate Hebrew IV 4.0 Credits
The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension. Continues HBRW 103.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HBRW 103

HBRW 202 Intermediate Hebrew V 4.0 Credits
The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension. Continues HBRW 201.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HBRW 201

HBRW 203 Intermediate Hebrew VI 4.0 Credits
The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension. Continues HBRW 202.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HBRW 202

History

Courses

HIST 140 Europe and the Modern World I 4.0 Credits
Provides an introduction to the 18th and 19th centuries, including the Age of Enlightenment, the American Revolution, the French Revolution and Napoleonic era, transatlantic industrialization, liberalism and nationalism, the revolutions of 1848, the American Civil War, and the unifications of Italy and Germany.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 141 Europe and the Modern World II 4.0 Credits
Examines imperialism; the rise of the United States and Japan as world powers; the spread of industrialization, democracy, and socialism; world wars; communism and fascism; and the rise of the non-West.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HIST 140 [Min Grade: D]

HIST 161 Themes in World Civilization I 3.0 Credits
Examines development of civilizations from antiquity to the 12th century. Views patterns of historical change through key themes and interpretive debates, including political structures; land tenure and social systems; commercial and trade relations; the development of cities, science, and technology; and religions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 162 Themes in World Civilization II 3.0 Credits
Provides an analysis of civilizations from the 12th century to 1815 viewed through key themes and interpretive debates, including the development of the nation-state, interaction between civilizations, the concept of cultural unity, religious upheaval, disease and science, the relationship between culture and politics, and the nature of revolutions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 163 Themes in World Civilization III 3.0 Credits
Explores the emergence of modern civilization through key themes and interpretive debates, including industrialization, imperialism, science and technology, ideological debate, the nature of modern warfare, the relationship between nationalism and the state, and the emergence of state-sponsored racism.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 201 United States History to 1815 3.0 Credits
Examines the political, economic, and social forces that shaped America in the era of its founding.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 202 United States History, 1815-1900 3.0 Credits
Examines the emergence of modern America to the close of the Spanish-American War.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 203 United States History since 1900 3.0 Credits
Examines America as economic giant, world political power, and scene of social change.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 209 The United States & Central America: From Monroe Doctrine to Cold War 3.0 Credits
Covers the history of relations between the United States and the nations of Central America.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 212 Themes in African-American History 3.0 Credits
Explores the major issues in the development of Afro-American history through the 19th century, beginning with an overview of West and Central African societies in the 15th and 16th centuries and including the family, religion, forms of resistance, aesthetics, and patterns of white-black relationships.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 214 United States Civil Rights Movement 3.0 Credits
Examines the origins, objectives, successes and failures of the Civil Rights movement in the United States between 1954 and 1972.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 215 American Slavery 3.0 Credits
This course if a rigorous examination of slavery and its representation in the United States. Using primary and secondary resources, art, literature and film clips; the relationship between history and memory and the impact of the social, political, and gendered imagination are investigated.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 216 Freedom in America 3.0 Credits
This course examines African-American history, 1865 to the present, and explores the impact of gender and sexuality in history. Specifically, comparing primary and secondary sources in order to critique how history itself is manufactured and to investigate the role that sexuality and gender play on that process.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 218 Race and Film in United States History 3.0 Credits
This course examines the interplay between history, film and African American? pursuit of social justice and equality. Specifically, the use of films as cultural artifacts or prisms through which better understanding of the dynamics of race and racial inscription in America.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 220 History of American Business 3.0 Credits
Examines the development of business in the United States from the 1870s to the present. Emphasizes the evolving structure of business enterprise, business/government relations, business in an international context, and business and American culture.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 222 History of Work & Workers in America 3.0 Credits
Examines the changing nature of work and the lives of American workers, from the origins of wage labor in the 19th century to the transformation of the workplace in the 20th.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 223 Women and Work in America 3.0 Credits
Examines the historical roots of women's work in the U.S. from the Colonial period to the present, including women and unions, occupational segregation, race and ethnicity, industrialization, depression, war, and the rise of a consumer economy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 224 Women in American History 3.0 Credits
Covers the history of American women from the 1890s to the present, with emphasis on women's rights, women and technology, women's role in war, and women in the labor force in the 20th century.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 230 United States Military History I (before 1900) 3.0 Credits
Covers the origins and development of military institutions, traditions, and practices in the United States from the Revolution to the Spanish-American War, and the operational, intellectual, diplomatic, and social aspects of military history.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 231 US Military History II (since 1900) 3.0 Credits
Examines the emergence of the United States as a major military power, including military/civil relationships; the impact of technological change; and the world, Korean, and Vietnam wars.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 232 The American Revolution 3.0 Credits
Investigates why Americans rebelled against Great Britain, how they gained their independence against staggering odds, and the new problems created by independence. Looks at the Revolution as a model of the first successful struggle of colonial subjects against their European overlords.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 234 The United States Civil War 3.0 Credits
Examines the causes, course, and results of the American Civil War.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 235 The Great War, 1914-1918 3.0 Credits
Examines the global causes, conduct, and consequences of World War I, which fundamentally altered our century's political, social, economic, and cultural institutions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 236 World War II 3.0 Credits
Provides an in-depth study of World War II, with emphasis on Europe but also including the war in North Africa, Asia, and the Pacific. Discusses major military events in a broad political framework, with lectures on economic, social, and scientific developments.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 237 Topics in the Cold War 3.0 Credits
Investigates various aspects of the History of the Cold War from 1947 to 1991. Topics will vary from U.S. domestic politics, the politics of the nuclear age, to other foreign policy aspects of the Cold War in its different stages.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

HIST 238 The Vietnam War 3.0 Credits
Covers Southeast Asia before the French, the French imperium, the First Indochina War, entry of the United States, the Second Indochina War, and withdrawal of the United States.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 241 Modern France 3.0 Credits
Discusses France since the Revolution, with emphasis on the Third and Fourth Republics. Seeks to reconcile the appearance of extreme political instability and intellectual ferment with evidence of strong economic and social conservatism.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 242 Modern Italy 3.0 Credits
Covers Italy from Napoleon to the present, including risorgimento, unification, trasformismo, fascism, and the post-World War II period.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 243 Germany & World of Hitler 3.0 Credits
Examines German history since 1815. Emphasizes the roots of national socialism, the world wars, and Hitler the man. Ends with the fall of East Germany, the reunification of 1990, and recent trends.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 244 Twentieth Century Russia & the USSR 3.0 Credits
Examines the last years of imperial Russia, showing the background to the revolutions of 1917, followed by a study of the institutions and personalities of the USSR.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 245 England to Elizabeth, to 1558 3.0 Credits
A survey of the formation of the English people and their growth to national independence and maturity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 246 England from Elizabeth to Waterloo, 1558-1815 3.0 Credits
Covers the crisis of the English constitution, the beginnings of modern society and the Industrial Revolution, and the formation of the British Empire.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 247 Modern England, 1815 - present 3.0 Credits
Examines Victorian England as the first industrial society, the course of empire through two world wars, and the challenge of the present.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 249 Modern Jewish History 3.0 Credits
Explores the social, cultural, political and religious forces that have shaped world Jewry from the 18th to the 20th centuries.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 250 European Revolutionary Movements and Ideology, 1815-1914 3.0 Credits
Provides a comprehensive analysis of the development and influence of the principal revolutionary movements and ideologies that challenged the European status quo from 1815 to 1914.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 251 Fascism 3.0 Credits
Provides a chronological/topical study of fascist movements and regimes in Europe between 1919 and 1945, with emphasis on Italian Fascism and German Nazism.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 252 Europe between Wars, 1919-1939 3.0 Credits
Examines Europe in the 1920s and 1930s, with emphasis on totalitarianism and the causes of World War II. Analyzes the search for peace and stability following World War I; totalitarianism in Italy, Germany, and the Soviet Union; the decline of Great Britain and France and their appeasement policies; and Nazi fascist aggression and the crises leading to World War II.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 253 Jewish Life and Culture in the Middle Ages 3.0 Credits
This course is an introductory survey of the history of the Jewish people, their civilization, religion, and contacts with other cultures in medieval times. Topics will include the rise of Christianity and Islam, the Talmud, Jewish mysticism, and the growth of Ashkenazic and Sephardic Jewry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 254 Russian History Before 1900 3.0 Credits
Survey of Russian History from its origins to the end of the Tsarist period. This course covers both Russia's role in Western European history, and its interactions with Eastern Eurasian civilizations. Fulfills a non-Western distribution requirement.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 258 History of Europe in the 19th Century 3.0 Credits
Analysis of the forces and events that define European civilization in the 19th century, from the Congress of Vienna to the origins of WW1.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 259 History of Europe in the 20th Century 3.0 Credits
Analysis of the forces and events that define European civilization in the 20th century, from the outbreak of WW1 to the present.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 263 The World and China 3.0 Credits
Examines China from its origins to the present day, with emphasis on social, political, and economic institutions. Describes the influences Chinese civilization has had on other societies of the world and the influences other societies have had on China.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 264 East Asia in Modern Times 3.0 Credits
Deals primarily with China and Japan, including a description of their traditional societies and the changes they have undergone during the 20th century.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 267 Twentieth Century World I 3.0 Credits
Examines movements, institutions, and personalities in the major regions of the world, from 1890 through 1939.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 268 Twentieth Century World II 3.0 Credits
Studies events in the major regions of the world since 1945 in historical perspective.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 270 [WI] Introduction to Latin American History 3.0 Credits
Takes a thematic approach to Latin American history, examining modernization and tradition, sex roles and family honor, love and lust, dictatorship and human rights abuses, poverty and crime, terrorism and revolutionary violence. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 271 History of Mexico 3.0 Credits
Surveys themes in Mexican history from the ancient civilizations of the Mayans and Aztecs to the present, including Spanish conquest, Hapsburg and Bourbon colonial systems, independence wars, social conflict and political protest, the Reform, Maximilian's empire, economic expansion, the revolution of 1910, and revolutionary Mexico.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 272 Ancient and Colonial Mexico 3.0 Credits
Surveys Mexico from the ancient Aztecs; their conquest by the spanish; and three hundred years of colonialism under the Habsburg and Bourban dynasties to the 1810s. Covers role of race, class, gender and family (marriage and food).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 273 Modern Mexico 3.0 Credits
Surveys Mexico from the Wars of Independence (1810's) to the present. Pays attention to changing values evident in rituals, celebrations and food.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 274 Conquest of Mexico 3.0 Credits
Students will analyze interpretations of "the conquest" and compare the roles of technology and culture. They will also examine carefully the variety of primary courses (including the letters written by Cortes, recollections by other conquistadors, and records of the Aztecs) that historians have used to support their contrasting conclusions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 276 The History of Philadelphia 3.0 Credits
This course surveys the history of Philadelphia through pre-colonial, colonial, and industrial eras to the present day. Philadelphia is investigated as an economic, social, cultural, and political center. Students read primary and secondary sources, and conduct original research into Philadelphia's history. Lectures and discussions are complemented by on-site historical investigations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 280 History of Science: Ancient to Medieval 3.0 Credits
Explores the history of Western science from the Ancient to Medieval period. Surveys the intellectual content of natural philosophy (science) especially Babylonian, Greek, Roman sciences and medicine, in their broader political, economic, social, cultural contexts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 281 History of Science: Enlightenment to Modernity 3.0 Credits
Explores the history of science in the Modern period from Newton to late 20th century. Surveys the major developments in the history of science including: Newtonianism, Chemical Revolution, Darwinian Evolution, Laboratory Revolution, Modern Genetics, Ecology, and Environmentalism in their broader historical contexts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 282 History of Science: Medieval to Enlightenment 3.0 Credits
Explores the history of Western science (broadly understood) from the end of the Middle Ages to the Enlightenment. Connects the changes in the content, methodology, and meaning of natural knowledge to the broader political, economic, social, cultural, and intellectual trends of the time.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 285 Technology in Historical Perspective 3.0 Credits
Examines the causal interrelations between technological progress and developments in economic, social, intellectual, and political aspects of Western civilization from the 18th century to the present.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 286 Exploration in Technology and Gender 3.0 Credits
Examines how, when, and why science and technology have become masculinized since the 12th century, producing a world without women.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 290 Technology and the World Community 3.0 Credits
Examines the effect on international relations of rapid technological change in the modern era, and technology as a tool of modernization, political integration, and national security among advanced and developing states.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 292 Technology in American Life 3.0 Credits
Examines the role of technology as means of production, social force, and ideology in modern U.S. history.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 296 Research Methods in History 3.0 Credits
Designed for history majors, this course introduces students to the fundamentals of historical research. The course focuses on methods, particularly in teaching students to locate and analyze evidence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 298 Special Studies in History 12.0 Credits
Provides supervised individual study of subjects in history. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 299 Historical Background of Current Issues 3.0 Credits
Examines a current policy issue in its historical context. See departmental brochure for topic scheduled for a particular term. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 301 The Study of History 3.0 Credits
Introduces the discipline of history and historical research. Examines philosophies of history, great historical debates, and the nature of historical evidence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HIST 296 [Min Grade: D]

HIST 310 Women, Crime, and History 3.0 Credits
This class will examine gender, race and crime in US history. Specifically, we will explore the experience of female criminals from the colonial period to the present. We will conduct primary research into this subject at the Philadelphia City Archive (PCA), located at 3101 Market Street. Students will be responsible for a final research paper based on their research findings.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 332 [WI] Junior Seminar 3.0 Credits
A research seminar directed by a historian. Requires students to write an extended paper on a topic selected in consultation with the instructor. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HIST 490 [WI] Senior Seminar I 3.0 Credits
Requires an in-depth research project supervised by a historian. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HIST 301 [Min Grade: D]

HIST 491 [WI] Senior Seminar II 3.0 Credits
Requires completion of the project begun in HIST 490. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HIST 490 [Min Grade: D]

HIST 492 Senior Seminar 3.0 Credits
The senior capstone course in history. Students complete an in-depth research project supervised by an historian.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is HIST and classification is Senior.
Prerequisites: HIST 301 [Min Grade: D]

Humanities, General

Courses

HUM 006 Oral Communication Skills for Non-Native Speakers 0.0 Credits
Designed to help international members of the Drexel community improve their listening comprehension and oral communication skills in English. Provides participants with opportunities to make presentations and receive constructive feedback, with particular attention to grammar, pronunciation, and fluency problems. Especially recommended for international teaching assistants.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

HUM 106 Humanities and Communications I 3.0 Credits
Covers reading of fictive and expository works and writing of essays of response and critical analysis. Introduces technical writing. Develops an awareness of audience and begins group work for collaborative projects, with a focus on creativity in the liberal arts and in engineering. Requires students to keep journals as tools for reflection.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HUM 107 Humanities and Communications II 3.0 Credits
Covers the research process. Continues work with critical analysis begun in HUM 106. Requires students to apply research methodology as they write a critical review and a chemistry synthesis paper, and develop group proposals for their design projects. Also requires students to continue the study of literature begun in HUM 106 and continue keeping journals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HUM 108 Humanities and Communications III 3.0 Credits
Requires students to write a literary analysis of a play in production locally and discuss visual arts. Includes written and oral presentations of students' final engineering design projects. Coordinates readings in non-fiction with the course science component. Requires students to write a synthesis paper for biology and continue using journals as a means for reflection.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HUM 159 [WI] Peer Tutoring Workshop 3.0 Credits
A course in which students learn to do writing-intensive tutoring using theory and practice. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

HUM 211 Studies in the Humanities I 3.0 Credits
Introduces the subject matter, methodologies, and critical issues of the humanities.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

HUM 305 Metaphorical Thinking 3.0 Credits
Interdisciplinary study of the process of metaphorical thinking.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

HUM 315 Perspectives in Medical Humanities 3.0 Credits
This course introduces a multidisciplinary approach to health related topics rooted in literary, philosophical, social, scientific/technological, and psychological perspectives and methodologies. Discussion format and student participation in choosing readings enhance a sense of community among the participants.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CMDH.
Cannot enroll if classification is Freshman

International Area Studies

Courses

IAS 190 Global Research Methods 3.0 Credits
Introduction to research and writing in International Area Studies. It covers quantitative, qualitative, and mixed approaches to IAS research. Students learn to use international studies research databases and the websites of international organization. Drawing on the content areas from the four IAS concentrations, students construct a research design for a topic of their choice.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is IAS.

IAS 230 Arab Women Writers 3.0 Credits
From Maghrebian Algeria and Morocco to Middle Eastern Egypt and Iraq and Lebanon, Arab women writers depict life in their countries or an unnamed desert state, from the 1940's to the Iraq War, raising critical questions about society, politics, economics and woman's place in doing so.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

IAS 235 African Francophone Women Writers 3.0 Credits
An introduction to the writing of some Francophone women writers from West and Sub-Saharan Africa. With each writer, the status, roles and challenges of women in their respective countries and societies will be examined.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

IAS 260 Evil Isms 3.0 Credits
From antisemitism to totalitarianism in the name of religion or politics (communism, nazism) to terrorism, this course focuses on prejudices and ideologies, how they variously expressed themselves negatively throughout time and space to the present, how they have been counteracted or still, always, do need counteracting.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

IAS 320 Building Global Bridges 3.0 Credits
This course is designed to develop an understanding of international development. Students learn about the practical challenges of development work from local needs to grant writing, fund-raising, implementation strategies, and project evaluation. They study the theoretical and practical frameworks for poverty reduction and democracy development as well as the agencies involved.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

IAS 359 Culture and Values 3.0 Credits
This course provides an in-depth comparative study of the historical, social and cultural imperatives of major world civilizations, with particular emphasis on the philosophical and cultural diversity of today's global society. This class is required for, and restricted to, IAS majors. Students will also be guided through the process of writing a thesis on a topic of interest to them, and that builds on their experience as an IAS major.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is IAS and classification is Senior.

IAS 360 Special Topics in World Civilization 3.0-12.0 Credits
This is an interdisciplinary seminar designed to give students an understanding of the modern cultural attitudes, ethical values, and sociopolitical norms of major civil-izations in a given geographical area and their relationship to one another. May be repeated for credit with a change in course topic. Required for the B.A. degree in International Area Studies.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits
Restrictions: Cannot enroll if classification is Freshman

IAS 370 Iran Then and Now 3.0 Credits
This course explores some of Iran's past (18th and 19th centuries) but focuses on the 20th and 21st centuries. Politics, culture, religion, literature and film will be studied through Iranian eyes.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

IAS 385 Rum, Rice and Revolution: Caribbean History 3.0 Credits
Course provides a broad, interdisciplinary and socio-historical introduction to the Caribbean. Several themes are covered including empire and the making of the Caribbean; slavery and emancipation; labor formation and race; revolution and resistance; gender oppression and women's experiences; and cultural expressions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

IAS 390 Special Topics in International Area Studies 1.0-6.0 Credit
This course explores critical issues and debates in International Area Studies. Topics vary each term. May be repeated three times for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 30 credits
Restrictions: Cannot enroll if classification is Freshman

IAS 399 Independent Study in International Area Studies 1.0-12.0 Credit
This course provides independent study in a topic related to International Area Studies.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

International Studies

Courses

IST 398 International Research Project and Study Abroad 0.5-20.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

Italian

Courses

ITAL 101 Italian I 4.0 Credits
Introductory Italian. Includes listening, speaking, reading, and writing. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ITAL 102 Italian II 4.0 Credits
Continues ITAL 101. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ITAL 101 [Min Grade: D]

ITAL 103 Italian III 4.0 Credits
Continues ITAL 102. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ITAL 102 [Min Grade: D]

ITAL 201 Italian IV 4.0 Credits
Intermediate Italian. Includes grammar review, listening, speaking, and reading. Recommended for students who wish to attain oral competence based on standard usage. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ITAL 103 [Min Grade: D]

ITAL 202 Italian V 4.0 Credits
Continues ITAL 201. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ITAL 201 [Min Grade: D]

ITAL 203 Italian VI: Conversation and Composition 4.0 Credits
Provides intensive practice in comprehension and written and oral communication. Emphasizes development of writing skills and increased oral competence in everyday situations. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ITAL 202 [Min Grade: D]

ITAL 311 [WI] Introduction to Italian Stylistics 3.0 Credits
Provides advanced practice in comprehension and written and oral communication, based primarily on periodicals and contemporary media. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ITAL 203 [Min Grade: D]

ITAL 312 [WI] Italian Stylistics 3.0 Credits
Continues ITAL 311. Provides extensive study of the techniques of translation and communication. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ITAL 311 [Min Grade: D]

ITAL 313 [WI] Advanced Italian Stylistics 3.0 Credits
Continues ITAL 312. Provides advanced training in oral and written communication in Italian. Particularly recommended for students who have pre-proficiency status, Italian minors and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 331 Introduction to Italian Literature Studies 3.0 Credits
Advanced Italian. Reading, writing, and extensive conversational practice, based on masterpieces of Italian literature.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 333 Advanced Italian Literature 3.0 Credits
Continues ITAL 332. Provides advanced study of Italian literature. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 351 Introduction to Business and Professional Italian 3.0 Credits
Provides intensive oral practice and written work in business, professional, and commercial Italian. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 352 Business and Professional Italian 3.0 Credits
Advanced business and professional Italian. Advanced practice in oral and written Italian for business and the professions. Based on advanced texts, periodicals, and technical journals.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 371 Special Studies in Italian Civilization and Culture 3.0 Credits
Presents an integrated approach in Italian to the civilization, culture, history, and literature specific to the areas in which the language is spoken, with emphasis on the development and evaluation of cultural values. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 399 [WI] Advanced Independent Study in Italian 0.5-12.0 Credits
Provides supervised study of special subjects in Italian language and literature. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: ITAL 203 [Min Grade: D]

ITAL 411 [WI] Special Studies in Advanced Italian Stylistics 3.0 Credits
Continues ITAL 313. Particularly recommended for students who have proficiency status, Italian minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 431 [WI] Special Studies in Advanced Italian Literature 3.0 Credits
Continues ITAL 333. Particularly recommended for students who have proficiency status, Italian minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 451 Special Studies in Advanced Business and Professional Italian 3.0 Credits
Continues ITAL 353, with emphasis on the structure and protocols of the European Union. Particularly recommended for students who have proficiency status, Italian minors, and students interested in graduate study and/or international careers. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 471 [WI] Special Studies in Italian Civilization 3.0 Credits
Presents an integrated approach, at the advanced level, to the civilization, culture, history, and literature of a given period specific to the areas in which Italian is spoken, with emphasis on the development and evaluation of cultural values. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ITAL 312 [Min Grade: D]

ITAL 480 Italian Minor Thesis Course 4.0 Credits
Independent research study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study. At the end of the course, the student is required to produce a paper and oral defense on the topic of his paper.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ITAL 499 [WI] Special Topics in Italian 0.5-12.0 Credits
Recommended for Italian minors and for students with proficiency status. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Japanese

Courses

JAPN 101 Japanese I 4.0 Credits
Introductory Japanese. Includes listening and speaking, with individual audiolingual practice. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JAPN 102 Japanese II 4.0 Credits
Continues JAPN 101. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 101 [Min Grade: D]

JAPN 103 Japanese III 4.0 Credits
Continues JAPN 102. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 102 [Min Grade: D]

JAPN 104 Japanese Writing I 3.0 Credits
This course focuses on reading and writing in the Japanese language. The course introduces the basic elements of the Japanese writing systems, which include Katakana, Hiragana and Kanji.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 101 [Min Grade: D] and JAPN 102 [Min Grade: D]

JAPN 105 Japanese Writing II 3.0 Credits
This course focuses on reading and writing in the Japanese language. The course builds on lessons from Japanese Writing I.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 104 [Min Grade: D]

JAPN 201 Japanese IV 4.0 Credits
Intermediate Japanese. Includes listening, speaking, reading, and writing, with individual audiolingual practice. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 103 [Min Grade: D]

JAPN 202 Japanese V 4.0 Credits
Continues JAPN 201. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 201 [Min Grade: D]

JAPN 203 Japanese VI: Conversation and Composition 4.0 Credits
Continues JAPN 202. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 202 [Min Grade: D]

JAPN 204 Japanese Writing III 3.0 Credits
This course focuses on reading and writing in the Japanese language. The course builds on lessons from Japanese Writing I and II.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 105 [Min Grade: D]

JAPN 301 Japanese VII 3.0 Credits
Advanced Japanese. Provides reading, writing, and extensive conversational practice. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 203 [Min Grade: D]

JAPN 302 Japanese VIII 3.0 Credits
Provides advanced practice in translation, comprehension, and written and oral communication. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 301 [Min Grade: D]

JAPN 303 Japanese IX 3.0 Credits
Continues JAPN 302. Offered as needed and with sufficient enrollment.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: JAPN 302 [Min Grade: D]

JAPN 399 Advanced Independent Study in Japanese 0.5-12.0 Credits
Provides supervised study of special subjects in Japanese language and literature. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

JAPN 411 Introduction to Japanese Stylistics 3.0 Credits
Fourth year of Japanese. Provides advanced practice in comprehension and written and oral communication. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: JAPN 303 [Min Grade: D]

JAPN 451 Introduction to Business and Professional Japanese 3.0 Credits
Fourth year of Japanese. Provides intensive oral practice and written work in business, professional, and commercial Japanese. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: JAPN 303 [Min Grade: D]

JAPN 480 Japanese Minor Thesis Course 4.0 Credits
Independent research study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study. At the end of the course, the student is required to produce a paper and oral defense on the topic of his paper.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

Judiac Studies

Courses

JUDA 201 Jewish Literature and Civilization 3.0 Credits
This course explores the origins of the Jewish people and their core narratives and beliefs that have become the foundations of Jewish civilization and religion, introducing the first five books of the Torah, the Jewish Bible and analyzing its influence. Major events of the Jewish lifecycle and calendar are examined.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 202 Jewish Life and Culture in Middle Ages 3.0 Credits
This course is an introductory survey of the history of the Jewish people, their civilization, religion and contacts with other cultures in medieval times. Topics will include the rise of Christianity and Islam, the Talmud, Jewish mysticism and the growth of Ashkenazic and Sephardic Jewry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 203 Modern Jewish History 3.0 Credits
This course is an exploration of the social, cultural, political and religious forces that have shaped Jewry the world over from the 18th to the 20th centuries. Topics will include Emancipation and Enlightenment, modern religious movements, socialism, Hebrew and Yiddish literature, the Holocaust, Zionism and the state of Israel.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 211 American Jewish Experience 3.0 Credits
The course explores communal organization of Jews in America from colonial times until today. Topics include westward expansion, urban neighborhoods, American Jewish religion and culture, and Jewish contributions to American culture. The study of this ethno-religious group elucidates historical issues, such as the immigration legacy, minority rights, discrimination, and intermarriage.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 212 Contemporary Jewish Life 3.0 Credits
The course will analyze Jewish social, cultural, and religious activities since the 1970s through four ethnographic community studies and documentary films, aiming to understand the meaning that Jews derive from their beliefs, rituals, and institutions. We will stress identity development over the lifespan and historical issues since the Holocaust and the establishment of the State of Israel.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 213 Jewish Cultural Tapestry 3.0 Credits
The course examines the different customs and traditions of Jews in various parts of the world throughout history. How do minorities develop and maintain their group identity? How have the Jews evolved both diversity and uniformity of practice and ideology? The focus will be on the geography and history of folk traditions: language, religious practice, foodways, dress, and music. The class will examine the phenomenon of diaspora, the dispersion of a people from its homeland, and will analyze the shared religious culture and the parallel, local specific culture.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 214 Language and Cultural Diversity in the USA 3.0 Credits
Starting with research on communication patterns of men and women, moving on to the language diversity of African Americans, and then emphasizing the cultural production of various immigrant groups, the predominance of a rich array of languages and cultures will be shown to pertain to most periods of American history. The Yiddish language-based immigrant culture of American Jews will be treated as a case study, dwelling on the rich Yiddish literature created, as well as language-based cultural institutions, such as the press, theater, radio, klezmer music, and film.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 215 Reconstructing History After Genocide 3.0 Credits
The course explores educational restitution to peoples who are victims of genocide. After conceptualizing the world's responsibility to maintain its cultures and help victims of genocide to recover their history, the class will compare educational efforts to document life before the destruction in places such as Rwanda, the former Yugoslavia and among Native Americans. Our main focus will be the politics of teaching about Polish Jewry, the largest community of Jews before WW II that was destroyed by the Nazis in the Holocaust. Students will evaluate sources that describe Jewish life in one city, Lublin, Poland.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 216 Yiddish Literature & Culture 3.0 Credits
The course describes the major Jewish culture during the past thousand years. In a lively course stressing the arts and everyday family life, students will be introduced to the multi-faceted Yiddish language and culture. Through study and meetings with community members, students learn how Yiddish both reflects and gives meaning to life. Texts will include English translations of proverbs, folktales, folksongs, prayers, epics, personal diaries, memoirs, drama, films, memorial literature, modern fiction and poetry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

JUDA 280 Special Topics in Judaic Studies 3.0 Credits
In this course, students will explore specific areas not covered in the regularly offered Judaic Studies courses. The course will be taught by teaching faculty members of the Judaic Studies Program, Drexel professors who are members of the Judaic Studies Faculty Committee, or by visiting professors. This is a three-credit elective course for the Louis Stein Judaic Studies Minor. It may also be used as a free elective course for a variety of students.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 9 credits

JUDA 298 Field Work in Judaic Studies 3.0 Credits
In this course, students will do independent fieldwork within a Jewish communal organization in the USA or abroad, or ethnographic or archeological fieldwork. The plan of the work, weekly time commitment, and periodic reports will be agreed upon in advance by the student and Professor Peltz, Director of Judaic Studies, or another Drexel Judaic Studies faculty member. This is a three-credit elective course for the Louis Stein Judaic Studies Minor. It may also be used as a free elective course for a variety of students.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 9 credits

JUDA 299 Independent Study in Judaic Studies 3.0 Credits
In this course, students will work under the direction of the director of the Judaic Studies program, one of the Judaic Studies teaching faculty members, or a member of the Judaic Studies Faculty Committee. The subject matter will cover a specific research area in Judaic Studies or an area of academic study not offered in an existing Judaic Studies course. Only students with sufficient background work will be accepted by the faculty member for independent work. This is a three-credit elective course for the Louis Stein Judaic Studies Minor. It may also be used as a free elective course for a variety of students.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 9 credits

Korean

Courses

KOR 101 Korean I 4.0 Credits
Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

KOR 102 Korean II 4.0 Credits
Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice. Builds on Korean 101.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: KOR 101 [Min Grade: D]

KOR 103 Korean III 4.0 Credits
Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice. Builds on Korean 102.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: KOR 102 [Min Grade: D]

KOR 201 Korean IV 4.0 Credits
Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice. Builds on Korean 103.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: KOR 103 [Min Grade: D]

KOR 202 Korean V 4.0 Credits
Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice. Builds on Korean 201.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: KOR 201 [Min Grade: D]

KOR 203 Korean VI 4.0 Credits
Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice. Builds on Korean 202.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: KOR 202 [Min Grade: D]

KOR 301 Korean VII 3.0 Credits
Advanced Korean. Focuses on reading, writing and conversational practices.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: KOR 203 [Min Grade: D]

KOR 302 Korean VIII 3.0 Credits
Advanced Korean. Focuses on reading, writing and conversational practices. Builds on Korean 301.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: KOR 301 [Min Grade: D]

KOR 303 Korean IX 3.0 Credits
Advanced Korean. Focuses on reading, writing and conversational practices. Builds on Korean 302.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: KOR 302 [Min Grade: D]

KOR 399 Korean Advanced Independent Study 0.5-12.0 Credits
Provides supervised study of special topics in Korean language and literature. Scheduled as needed. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 5 times for 30 credits
Prerequisites: KOR 303 [Min Grade: D]

KOR 480 Korean Minor Thesis Course 4.0 Credits
Independent research study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study. At the end of the course, the student is required to produce a paper and oral defense on the topic of his paper.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

Language

Courses

LANG 180 Special Topics in Languages 0.5-12.0 Credits
Provides opportunities in language study commonly not taught in the Modern Language Program. Course offers intensive language training and study of the historical, social and cultural imperatives of the country where the language is spoken. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

LANG 200 Crossing the Bridge 3.0 Credits
This course is designed for students who are experiencing the "otherness" of culturally diverse groups through living, studying or working abroad. Students will integrate and build on their intercultural experiences through a self-reflective process, and will become aware of the impact the students' own culture has on these experiences.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

Linguistics

Courses

LING 101 Introduction to Linguistics 3.0 Credits
Introduces major topics in the study of language, including language acquisition, language change, the social use of language, and the analysis of discourse, and teaches basic techniques in linguistic analysis through the use of a wide variety of language data.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

LING 102 Language and Society 3.0 Credits
Develops understanding of how language is involved with relations of class, ethnicity, gender and aesthetics in society. The course covers the social investigation of language use, politeness in languages, different varieties of English dialects, slang, and rap, bilingualism and languages in immigrant communities, and language planning.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

Mathematics

Courses

MATH 004 Trigonometry 0.0 Credits
Required for all students who did not have high school trigonometry and for those who did not pass the placement test in trigonometry. Covers the rectangular coordinate system and distance formula, angular measure and trigonometric functions of a number, variations and graphs of the trigonometric functions, trigonometric identities and equations, inverse trigonometric functions, and solutions of triangles applications. All terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 050 Elements of Precalculus 0.0 Credits
This course covers topics essential for the study of calculus, including elements of algebra, geometry and trigonometry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 100 Fundamentals of Mathematics 3.0 Credits
Course covers properties of real numbers, algebraic expressions, rational expressions, linear and quadratic functions and graphs. This course is intended to give students the background needed to enroll in MATH 101.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Freshman or Sophomore .
Corequisite: EXAM 082

MATH 101 Introduction to Analysis I 4.0 Credits
Covers linear, quadratic, exponential, and logarithmic functions; systems of linear equations; elementary linear programming; matrix algebra; inverse; and mathematics of finance.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: APEM 061 or MATH 100 [Min Grade: D]
Corequisite: EXAM 080

MATH 102 Introduction to Analysis II 4.0 Credits
Covers limits, continuity, derivatives, indefinite and definite integrals, and applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 101 [Min Grade: D]
Corequisite: EXAM 080

MATH 107 Probability and Statistics for Liberal Arts 3.0 Credits
Probability and statistics in everyday life. The pitfalls of interpreting statistical data. A basic introduction to probability, chance, and gambling. Examples include coin-tossing, dice and roulette wheels.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 100 [Min Grade: D] or APEM 060

MATH 108 Mathematics for Nursing Professionals 3.0 Credits
Math foundations needed in the calculation of dosages and solutions of medications. Topics include systems of measurement and calculating dosages involving tablets, capsules, liquids, and powders.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: APEN 070 or MATH 100 [Min Grade: D]

MATH 110 Precalculus 3.0 Credits
Reviews topics from algebra, geometry, and trigonometry essential for the study of calculus. For students planning to take Calculus I.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Freshman or Sophomore .
Corequisite: EXAM 082

MATH 119 Mathematical Foundations for Design 4.0 Credits
This course serves as an introduction to the mathematical concepts and tools most useful to students majoring in the Design Arts. Topics include functions, graphs, plane and fractal geometry, trigonometry, polar coordinates, and elementary topology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Freshman or Sophomore .
Corequisite: EXAM 080

MATH 121 Calculus I 4.0 Credits
Functions, limits and continuity, derivatives, trancendental functions, and applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Freshman or Sophomore .
Prerequisites: APC 070 or APC2 070 or MATH 110 [Min Grade: D]
Corequisite: EXAM 080

MATH 122 Calculus II 4.0 Credits
Definite integrals, Fundamental Theorem of Calculus, integration techniques, applications of integration, numerical integration and differential equations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 121 [Min Grade: D]
Corequisite: EXAM 080

MATH 123 Calculus III 4.0 Credits
Differential equations, Taylor's theorem, sequence and series, convergence, power series.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 122 [Min Grade: D]
Corequisite: EXAM 080

MATH 180 Discrete Computational Structures 4.0 Credits
Covers basic concepts of discrete mathematics that are important to computing, including elementary set theory, recurrence relations, and graph theory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 102 [Min Grade: D] or MATH 121 [Min Grade: D]

MATH 181 Mathematical Analysis I 3.0 Credits
Covers set theory, coordinate systems and graphs, functions, linear programming (geometric approach), matrices and linear systems, and linear programming (algebraic approach). Required for architecture, business administration, and construction management students. Non-credit for engineering and science students. Fall, Winter.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 182 Mathematical Analysis II 3.0 Credits
Covers counting techniques, probability, statistics, and probability applications. Non-credit for engineering and science students. All terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 181 [Min Grade: D]

MATH 183 Mathematical Analysis III 3.0 Credits
Covers limits, rates of change, derivatives, applications of differentiation, exponential and logarithmic functions, integrals, techniques of integration, applications of integration. Non-credit for engineering and science students. All terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 182 [Min Grade: D]

MATH 200 Multivariate Calculus 4.0 Credits
Vectors, curves, partial derivatives, gradient, constrained optimization, coordinate system, multiple integrals, and applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 122 [Min Grade: D]
Corequisite: EXAM 080

MATH 201 Linear Algebra 4.0 Credits
Systems of linear equations, matrix algebra, determinants, vector spaces, eigenvalues and eigenvectors, orthogonality, diagonalization, applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 121 [Min Grade: D]
Corequisite: EXAM 081

MATH 205 Survey of Geometry 3.0 Credits
Axiomatic approach to geometry: plane geometry, transformational geometrics, and an introduction to classical non-Euclidean geometries. Includes experimental approaches using appropriate software tools.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 201 [Min Grade: D]

MATH 210 Differential Equations 4.0 Credits
Covers solution methods and properties for scalar and vector differential equations. Topics include linear and nonlinear equations, numerical methods, partial differential equations, separation of variables, and transform methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 200 [Min Grade: D] and MATH 201 [Min Grade: D]

MATH 220 Introduction to Mathematical Reasoning 3.0 Credits
A transition course that develops the reasoning skills necessary for later courses. Emphasizes writing and presentation skills. Topics taken from set theory, logic, induction, relations, functions, and properties of the real number system.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

MATH 221 Discrete Mathematics 3.0 Credits
Elementary set theory, combinatorics, elementary number theory, graphs, and special topics chosen from formal language theory, graph algorithms, coding theory, and other applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 220 [Min Grade: D] or CS 270 [Min Grade: D] or ECE 200 [Min Grade: D]
Corequisite: EXAM 081

MATH 235 Math Competition Problem Solving Seminar 0.5-4.0 Credits
Problems from math competitions (such as the Putnam exam) are solved by students in this course.This course may be repeated four times for credit as topics vary.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 4 times for NaN credits
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 200 [Min Grade: D]

MATH 238 History of Mathematics 3.0 Credits
This course explores the history of mathematical concepts. Both the people involved and the environment in which the developments took place will be studied. Mathematics from the time of Babylonia to the present will be discussed. The presentation will take a thematic approach, which may vary each term.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 239 Mathematics for the Life Sciences 4.0 Credits
A broad survey of mathematical topics that are fundamental for application in the life science: multivariate calculus, differential equations, elementary probability. Emphasis on application.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 102 [Min Grade: D]

MATH 261 Linear Algebra 3.0 Credits
Covers matrix arithmetic systems of linear equations, including vector spaces, coordinate systems, determinants, characteristic value problems, and Euclidean spaces, and application to quadratic forms and linear differential equations. Problems from engineering and science will be solved using applications such as MATLAB during the lab.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Freshman.
Prerequisites: MATH 122 [Min Grade: D]

MATH 262 Differential Equations 3.0 Credits
Covers solutions of first-order equations, undetermined coefficient and variation of parameter methods of solution of higher order linear equations, systems of equations, and Laplace transform. Problems from engineering and science will be solved using applications such as MATLAB during the lab.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 261 [Min Grade: D]

MATH 279 Special Topics in Mathematics 12.0 Credits
Covers topics in pure or applied mathematics. Different topics may be considered in different quarters.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

MATH 285 Differential Equations II 3.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 210 [Min Grade: D]

MATH 286 Applied Differential Equations 3.0 Credits
Reviews basic methods, including applications to electric circuits, chemical mixtures, mechanics, and motion problems. Introduces partial differential equations. Spring. Alternate years.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 285 [Min Grade: D]

MATH 291 Complex and Vector Analysis for Engineers 4.0 Credits
Complex and Vector Analysis for Engineers. Covers gradient, divergence, and curl; integral theorems curvilinear coordinates, complex differentiation and integration, Cauchy's Theorem, power series, residues and applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 200 [Min Grade: D] and PHYS 102 [Min Grade: D]

MATH 300 Numerical Analysis I 4.0 Credits
The course covers polynomial and trigonometric interpolation, splines, numerical linear algebra, numerical quadrature, solutions of nonlinear equations, and nonlinear optimization. The course emphasizes computational solutions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 200 [Min Grade: D] and MATH 201 [Min Grade: D] and (CS 171 [Min Grade: D] or CS 123 [Min Grade: D])

MATH 301 Numerical Analysis II 3.0 Credits
A continuation of MATH 300. This course focuses on time dependent problems. It includes numerical solution of ordinary differential equation, the heat and wave equations, and moving interfaces. The discussed techniques include implicit schemes or ODEs, finite differences, spectral methods and the level set method.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 300 [Min Grade: D]

MATH 305 Introduction to Optimization Theory 4.0 Credits
Provides a broad survey of mathematical techniques in optimization theory used in operations research and management science. Includes topics selected from the following categories: linear programming, integer programming, network flows, and nonlinear programming.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 201 [Min Grade: D]

MATH 310 Probability and Statistics 4.0 Credits
Not open to mathematics or computer science majors. Covers probability, probability distribution of discrete and continuous random variables, moment-generating functions, distribution of sample statistics, estimation and statistical tests, tests for goodness of fit, and regression analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is CS or major is MATH or classification is Freshman
Prerequisites: MATH 200 [Min Grade: D]

MATH 311 Probability and Statistics I 4.0 Credits
Covers sample spaces, axioms and theorems of elementary probability, random variables, distributions and expectation, mean, variance, moment-generating functions, Chebyshev's inequality, law of large numbers, and central limit theorem.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 200 [Min Grade: D]
Corequisite: EXAM 081

MATH 312 Probability and Statistics II 4.0 Credits
Covers estimation, consistency, unbiasedness, maximum likelihood, confidence intervals, hypothesis testing, Type I and Type II errors, Neyman Pearson lemma, likelihood ratio tests, and tests for means and variances.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 311 [Min Grade: D]
Corequisite: EXAM 081

MATH 316 Mathematical Applications of Symbolic Software 3.0 Credits
Mathematical Applications of Symbolic Software. Topics from calculus are investigated via complex problems requiring the use of symbolic mathematical software, primarily Maple. Numerical, graphical, and algebraic approaches are integrated. Limits, derivatives, root-finding, integration, and infinite series are explored in this context.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 123 [Min Grade: D] and MATH 200 [Min Grade: D]

MATH 318 [WI] Mathematical Applications of Statistical Software 3.0 Credits
Mathematical Applications of Statistical Software. Applications of modern statistical technologies and software, such as SAS, are used to describe and analyze data. Some topics covered are data management, collecting data, inferences for single and multiple population means, proportions count data, regression, correlation and nonparametric statistical methods. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 310 [Min Grade: D] or MATH 312 [Min Grade: D]

MATH 319 Techniques of Data Analysis 4.0 Credits
An applied course that considers the acquisition, analysis, visualization, and presentation of data. Emphasizes computation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 318 [Min Grade: D]

MATH 320 Actuarial Mathematics 3.0 Credits
Covers probability in a risk management context. Univariate probability distribution including binomial, negative binomial, Poisson, uniform, exponential, normal, lognormal, Pareto, and Weibull distributions. Multivariate distributions including conditional and marginal probability distributions, joint moment generating functions, probability and moments for linear combinations of independent random variables and related topics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 311 [Min Grade: D]

MATH 321 Vector Calculus 4.0 Credits
Covers vector algebra; gradient, divergence, curl, and curvilinear coordinates; Green's theorem, divergence theorem, and Stokes' theorem; and applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 200 [Min Grade: D] and MATH 201 [Min Grade: D]

MATH 322 Complex Variables 4.0 Credits
Introduces functions of one complex variable. Topics include the basic properties of analytic functions, power series, integration, residues and poles, and conformal mapping with applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 210 [Min Grade: D]

MATH 323 Partial Differential Equations 4.0 Credits
Covers basic concepts and solution techniques for the standard partial differential equations of mathematical physics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 210 [Min Grade: D]

MATH 331 Abstract Algebra I 4.0 Credits
Covers theory of groups, homomorphism and isomorphism, theory of rings, integral domains, ideals, unique factorization, and theory of fields.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (MATH 220 [Min Grade: C-] or CS 270 [Min Grade: C-]) and (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D] or ENGR 231 [Min Grade: D])

MATH 332 Abstract Algebra II 3.0 Credits
Covers further topics in abstract algebra, including canonical decomposition of linear transformation, bilinear forms, multilinear algebra and determinants, finite fields, and selected short subjects.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 331 [Min Grade: C-]

MATH 382 Advanced Calculus 3.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

MATH 387 Linear Algebra II 3.0 Credits
Covers linear transformations, including kernel and range; eigenvalues and eigenvectors; diagonalization of symmetric matrices; and application to differential equations, quadratic forms, and Markov chains. Fall.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: or MATH 201 [Min Grade: D], MATH 261 [Min Grade: D] or MATH 201 [Min Grade: D]

MATH 401 Elements of Modern Analysis I 3.0 Credits
Covers the real number system, elementary topology, limits, infinite series, continuity, derivatives, and the Riemann integral.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (MATH 220 [Min Grade: C-] or CS 270 [Min Grade: C-]) and (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D] or ENGR 231 [Min Grade: D]) and MATH 200 [Min Grade: D]

MATH 402 Elements of Modern Analysis II 3.0 Credits
Covers continuation of integration theory, improper integrals, sequences and series, power series, and uniform convergence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 401 [Min Grade: C-]

MATH 410 Scientific Data Analysis I 3.0 Credits
Fundamental principles and applications of statistics for scientific data analysis. Topics include data exploration, principles of probability distributions, Central Limit Theorem, hypothesis testing, z, t and F tests, one-way analysis of variance, linear regression, and contingency table analysis. Programming statistical applications in R will be included.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 122 [Min Grade: D] or MATH 239 [Min Grade: D]

MATH 411 Scientific Data Analysis II 3.0 Credits
Scientific data analysis and experimental design. Topics include multiple regression and model selection, nonlinear and logistic regression, analysis of covariance, multi-factor analysis of variance, nested, factorial and repeated measures experimental designs, random effects, and introduction to bootstrap methods and randomization tests. Programming statistical applications in R will be included.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 410 [Min Grade: C-]

MATH 422 Introduction to Topology 4.0 Credits
Covers topological space, metric spaces, function, continuity, compactness, and connectedness.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 200 [Min Grade: D] or MATH 201 [Min Grade: D]

MATH 449 Mathematical Finance 3.0 Credits
This course is an introduction to the mathematics of finance. The main topics include: fixed income mathematics (duration, convexity, compounding conventions, immunization of bond portfolios, yield curve stripping), foundations of the arbitrage theory (pricing of futures and forwards, swaps, put/call parity) and introduction to stochastic derivative pricing (Black-Scholes and beyond).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 311 [Min Grade: D]

MATH 450 Introduction to Graph Theory 3.0 Credits
Introduction to Graph Theory. Topics covered include paths and cycles, Eulerian graphs, Hamiltonian graphs, trees, matching, coloring, planarity, and some additional topics in special graphs such as interval graphs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 201 [Min Grade: D] and MATH 221 [Min Grade: D]

MATH 475 Cryptography 3.0 Credits
Classic cryptosystems, elementary number theory, RSA, ElGamal, discrete logarithms, digital signatures, plus a special topic selected from elliptic curves, information theory, and quantum cryptography.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 201 [Min Grade: D] and MATH 311 [Min Grade: D]

MATH 480 Special Topics in Mathematics 12.0 Credits
Covers topics in Mathematics of interest to students or faculty. Different topics may be considered during different quarters.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

MATH 483 Discrete Event Simulation 3.0 Credits
Covers system simulation, Monte Carlo methods, discrete event modeling techniques, queuing models, programming considerations, statistical definitions and concepts, random number generation, output analysis, and design of computer experiments. Spring.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 385 [Min Grade: D]

MATH 489 Tensor Analysis 3.0 Credits
Covers tensor algebra, including coordinate transformations, fundamental quadratic form, covariant and contravariant tensors, Riemannian metric, and applications. Elective. Spring. Alternate years.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 381 [Min Grade: D]

MATH 497 Independent Study in Mathematics 0.5-12.0 Credits
Provides supervised study of selected topics in mathematics.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

MATH 498 Special Topics 12.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

MATH 499 Independent Study in Mathematics 6.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Physics - Environmental Science

Courses

PHEV 141 [WI] Atmospheric Science I: Climate and Global Change 3.0 Credits
Covers the atmosphere and its structure and variations, the greenhouse effect, ozone depletion, the influence of weather on humans, air pollution, and acid rain. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 142 [WI] Atmospheric Science I Laboratory 1.0 Credit
Introduces climate analysis and methods. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 143 Atmospheric Science II: Weather Analysis and Forecasting 3.0 Credits
Covers the atmosphere and its properties, weather systems, severe weather, hurricanes, and weather forecasting.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 144 [WI] Atmospheric Science II Laboratory 1.0 Credit
Introduces meteorological analysis and forecasting methods. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 145 Weather I: Climate and Global Change 4.0 Credits
Introduction to the Earth's atmosphere and climate system including the structure and interaction of the components of this system. Students learn basic meteorological ideas and concepts. Special topics include weather satellite and Doppler radar imagery, daily weather discussions, the greenhouse effect and ozone depletion.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 146 Weather II: Analysis and Forecasting 4.0 Credits
Course covers real problems of weather analysis and forecasting. Components focus on surface and upper-air weather maps, westerlies and the jet stream, mid-latitude cyclones, thunderstorms, tornadoes and hurricanes. Special topics include weather instruments and observations, atmospheric optics and climate analyses.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 346 Atmospheric Dynamics 3.0 Credits
Covers equations of motion on a rotating earth; balanced horizontal motion and the thermal wind relation; equation of continuity; mechanism of pressure change; application of circulation and vorticity to atmospheric motion, viscosity, turbulence, and diffusion; and energy and stability relationships.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 200 [Min Grade: D] and PHYS 211 [Min Grade: D]

Philosophy

Courses

PHIL 101 Introduction to Western Philosophy 3.0 Credits
Introduces the main methods and aims of Western Philosophy, involving the study of problems central to metaphysics, theory of knowledge, and ethics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHIL 102 Introduction to Eastern Philosophy 3.0 Credits
Introduction to the main topics of study in Buddhist, Hindu and other systems of Eastern thought.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHIL 105 Critical Reasoning 3.0 Credits
Introduces and develops the skills involved in reasoning effectively about experience, and being able to distinguish strong arguments form weak ones.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHIL 107 Philosophy and Knowledge Organization 3.0 Credits
This course imparts knowledge and skills associated with organizing concepts. The context for the course is the history of knowledge organization, viewed philosophically, with special emphasis on the Platonic, Cartesian, Kantian, Comtean and Digital paradigms. Students will learn to recognize the classical principles of knowledge organization and how to apply them using a "logic of concepts." Students will also come to understand how and why knowledge is organized the way it is in the modern university.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHIL 111 Propositional (zero-order) Logic 3.0 Credits
An introduction to the fundamental concepts of symbolic logic: argument, validity, soundness, provability, completeness, consistency, decidability, entailment, logical equivalence, logical truth, logical contradiction. Covers truth-functional connectives, rules of formation and translation, and rules of inference. Proof techniques studies include natural deduction, truth-tables, and/or truth-trees.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHIL 207 Predicate (first-order) Logic 3.0 Credits
Concentrates on syntax and semantics of quantification. Formation principles include A, E, I, and O statements (and square of opposition), domain of discourse, quantifier scope, multiple quantification, relations, and identity. Proof mechanics covered include natural deduction, instantiation, semantic tableau, and possible-world counterexamples. Also explored are the completeness, consistency, and decidability of first-order systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHIL 111 [Min Grade: D]

PHIL 210 Philosophy of Sport 3.0 Credits
Studies theories about philosophical issues arising in sport, in areas including its personal, social, aesthetic, and political dimensions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore

PHIL 211 Metaphysics 3.0 Credits
Studies theories about the nature of reality and philosophical issues such as the nature of time, mind, personal identity, and free will.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHIL 101 [Min Grade: D]

PHIL 212 Ancient Philosophy 3.0 Credits
Studies central works that have shaped Western Philosophy and culture from the Ancient Greek era and its legacy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 214 Modern Philosophy 3.0 Credits
Studies central works that have shaped Western Philosophy and culture from the Renaissance through the late Nineteenth Century.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 215 Contemporary Philosophy 3.0 Credits
Studies central works that have had important impacts upon Western Philosophy and culture from the Twentieth Century through the present.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 216 Philosophy of Time 3.0 Credits
In this course we will study philosophical problems surrounding the nature of time. We will consider questions like, "Does the present exist?"; "Does time have a direction?"; "Are events pre-determined?"; "Is time travel possible?"; etc. Students will read and discuss treatments of these issues in philosophy, literature, and film.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHIL 221 Epistemology 3.0 Credits
Studies theories about knowledge that bear upon philosophical issues concerned with the nature and status of knowledge claims as expressed in concepts like belief, truth, and justification.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHIL 101 [Min Grade: D]

PHIL 231 Aesthetics 3.0 Credits
Studies theories about art and the nature of beauty that bear on philosophical issues concerned with artistic production, performance, and perception, such as arise in activities like painting, sculpture, film literature, music, and dance.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 241 Social & Political Philos 3.0 Credits
Studies theories about human social and political life that bear on philosophical issues such as the nature and scope of justice, the legitimacy of states, and the relationship between democracy, civil rights, and civil disobedience.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHIL 101 [Min Grade: D]

PHIL 251 Ethics 3.0 Credits
Studies theories about human conduct which bear upon the rightness and wrongness of actions, and the goodness and badness of ends, including the nature, scope, purposes, and varieties of moral and ethical theories.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHIL 255 Philosophy of Sex & Love 3.0 Credits
This course investigates sexual activity and desire, and the morality of sexual behavior. It also examines various types of love and their links with sexuality. Figures studied include Plato, Aristotle, Augustine, Aquinas, Kant, Kierkegaard, Freud and Foucault. Topics include marriage, prostitution, pornography, homosexuality, perversion, rape, intentionality, irreplaceability, unconditionality, reciprocity, and exclusivity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHIL 301 Business Ethics 3.0 Credits
Study of such moral issues as truth-telling, puffery, and lying in business communications; employer-employee relations; obligations to customers; obligations to foreign populations; and government contracts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 305 Communication Ethics 3.0 Credits
Ethical analysis of current laws and legislation aimed at regulating speech in the context of mass communications (radio, television and film).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 311 Computer Ethics 3.0 Credits
Ethical analyses of current laws and pending legislation aimed at regulating computer use as well as Internet practices and content.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 315 Engineering Ethics 3.0 Credits
Provides critical reflection on the nature of engineering and technology and on the ethical obligations and responsibilities unique to the engineering profession. Topics include the social responsibilities of engineering, the nature of professionalism, professional autonomy, whistleblowing, conflicts of interest, organizational (dis)obedience, the ethics of risk assessment, and the place and purpose of engineering codes of ethics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if major is BUSN or major is ECON or classification is Freshman or Sophomore

PHIL 317 Ethics and Design Professions 3.0 Credits
Examines ethical theories and their application to architecture; the ethics of architectural space and place; the logic of ethical reasoning applied to the practice of architecture; professional ethics and the social responsibility of architects; the ethics of safety and risk in the production of architectural structures; sustainable environmental architectural design.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is ARCH or major is INTR.

PHIL 321 Biomedical Ethics 3.0 Credits
Studies moral issues related to health and disease, patients' rights and professional responsibilities, informed consent, abortion, euthanasia, and biomedical research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 322 Ethics of Human Enhancement 3.0 Credits
Discussion of developments in health-care with the potential not only to treat disease, but also to improve human performance and cosmetically change the human body, thereby creating ethical considerations about the nature of health and disease and the proper scope and goals of health care.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: HSAD 210 [Min Grade: D] or PHIL 251 [Min Grade: D]

PHIL 323 Organizational Ethics 3.0 Credits
This course focuses on the application of ethical theories and principles to organizational systems and decision-making. Emphasis will be placed on how ethical principles affect and are applied to organizational policy-making, leadership behavior, systems of communication, technology use, and other systems of organization.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

PHIL 325 Ethics in Sports Management 3.0 Credits
An introduction to various ethical issues in sports and sports management, such as leadership and coaching; gender and racial equity in sports; fair play and cheating; violence and competition; commercialization of sports; the relation of sports to cultural value systems; ethics of technology and sports performance.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore

PHIL 330 Ethical Issues in Criminal Justice 3.0 Credits
Studies ethical issues in the policies and practices of criminal justice, and theories that bear upon issues such as the relationship of law to justice, the definition of crime, the use of deception and coercion in law enforcement, and the purposes and varieties of criminal punishment.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 335 Global Ethical Issues 3.0 Credits
Offers an introduction to the ethical tensions of our age, globally construed. May address such issues as terrorism, genocide, religious exclusivism, nuclear proliferation, the regulation of the Internet, as well as culturally competing notions of right and wrong, and good and bad.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 341 Philosophy of the Environment 3.0 Credits
Studies ecological issues from a philosophical standpoint stressing the implications of scientific and technological developments as they affect people's lives and choices.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHIL 101 [Min Grade: D]

PHIL 351 Philosophy of Technology 3.0 Credits
Studies technology from a philosophical standpoint stressing its role in shaping human existence and values, considering issues such as the control and distribution of information, housing and city planning, automation, and the uses of technology in medicine.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHIL 101 [Min Grade: D]

PHIL 355 Philosophy of Medicine 3.0 Credits
Examines the ideas of medicine, disease, and health from a philosophical perspective. Examines such concepts as gender, mental-illness, mind-body unity, aging and physical perfection as derived from both Eastern and Western traditions. Current health policy alternative treatment practices are also discussed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: PHIL 101 [Min Grade: D] or PHIL 102 [Min Grade: D]

PHIL 361 Philosophy of Science 3.0 Credits
Studies natural scientific theory-construction and investigative methods from a philosophical standpoint, considering issues such as the nature and scope of experimental method, and the history and justification of theory change.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: PHIL 101 [Min Grade: D]

PHIL 371 Philosophy of Social Sciences 3.0 Credits
Studies social scientific theory-construction and investigative methods from a philosophical standpoint, considering issues such as the distinction between explanation and interpretation, and the history and justification of theory change.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: PHIL 101 [Min Grade: D]

PHIL 381 [WI] Philosophy in Literature 3.0 Credits
Studies philosophical issues such as the concept of the self, the nature and course of evil, the nature and scope of free will, and ideals in living as they appear in significant works of literature.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHIL 385 Philosophy of Law 3.0 Credits
This course addresses philosophical issues in the law. Topics include the meaning of "law," the nature and logic of legal (in contrast to moral) concepts and principles, and competing conceptions of law (Natural Law, Positivism, Realism, Rights-Based, etc.). Authors may include Plato, Mill, Rawls, Hart, Dworkin and others.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: PHIL 101 [Min Grade: D] or PHIL 102 [Min Grade: D]

PHIL 391 Philosophy of Religion 3.0 Credits
Studies various aspects of religious belief and experience from a philosophical standpoint, considering issues such as the definition and existence of God, the nature and course of evil, and the relationship between faith and reason in a religious life.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: PHIL 101 [Min Grade: D]

PHIL 395 Advanced Topics in Logic 3.0 Credits
Specialized topics, from among: self-reference paradoxes, set theory, axiomatization of arithmetic, computability, Church-Turing thesis, Gödel's theorem, minds and machines, Turing test, artificial intelligence, definitions of truth, models and satisfaction, analyticity, syntax/semantics, ontological commitment, intention/extension, reference justifying deduction, nominalism/realism, multi-valued logic, intuitionism, modal logic, doxastic logic, and logic of moral discourse.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 6 credits
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: PHIL 111 [Min Grade: D] and PHIL 207 [Min Grade: D]

PHIL 399 Independent Project in Philosophy 1.0-12.0 Credit
Provides directed reading and writing in philosophy.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 6 credits
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

PHIL 421 [WI] Seminar in Ancient Philosophy 3.0 Credits
Advanced study and discussion of the works of the leading philosophers and philosophical schools of Western antiquity. Reading and Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: (PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D]) and (PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D])

PHIL 425 [WI] Seminar in Medieval Philosophy 3.0 Credits
Advanced study and discussion of the works of the leading philosophers and philosophical schools of the Medieval period. Reading and Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: (PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D]) and (PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D])

PHIL 431 [WI] Seminar in Rationalism & Empiricism 3.0 Credits
Advanced study and discussion of the works of the leading philosophers and philosophical schools of the Modern period (circa. 1500 A.D. to 1900 A.D.) on the European Continent and British Isles. Reading and Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: (PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D]) and (PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D])

PHIL 461 [WI] Seminar in Contemporary Philosophy 3.0 Credits
Advanced study and discussion of the works by leading philosophers from 1900 to present. Reading and Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: (PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D]) and (PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D])

PHIL 465 [WI] Seminar in American Philosophy 3.0 Credits
Advanced study and discussion of works by leading American philosophers, including Peirce, James, Mead, Royce, C.I. Lewis, Quine, Davidson, Rorty and others. Reading and Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: (PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D]) and (PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D])

PHIL 475 Special Problems in Philosophy 3.0 Credits
Topic for each term to be announced. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore

PHIL 481 [WI] Seminar in a Philosophical School 3.0 Credits
Development of doctrines, theories, arguments and problems associated with one or more philosophical schools (or movements). Schools (or movements) may include Pythagoreanism, Platonism, Epicureanism, or recently, Positivism, Pragmatism, and Existentialism. This course is Reading and Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: (PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D]) and (PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D])

PHIL 485 [WI] Seminar in a Major Philosopher 3.0 Credits
Study of the works of a major philosopher such as Plato, Aristotle, Descartes, Locke, Hume, Kant, etc. Reading and Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: (PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D]) and (PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D])

PHIL 497 [WI] Senior Essay I: Research & Thesis 3.0 Credits
Individual supervision. Selection of research topic for the senior argumentative essay; collection and analysis of hard-copy and electronic research material; construction of bibliography. Initial thesis formulation and drafting of argument sketch. Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PHIL and classification is Senior.

PHIL 498 [WI] Senior Essay II: Argument Construction 3.0 Credits
Supervised construction of the main and supporting arguments of the senior essay involving drafting and re-drafting of the prose statement. Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PHIL and classification is Senior.
Prerequisites: PHIL 497 [Min Grade: D]

PHIL 499 [WI] Senior Essay III: Defense 3.0 Credits
Individual Supervision. Defense of the senior essay thesis before the philosophy faculty and fellow senior philosophy majors. Written replies to main criticisms as determined by the faculty supervisor. Final submission of senior essay. Writing Intensive.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PHIL and classification is Senior.
Prerequisites: PHIL 498 [Min Grade: D]

Physics

Courses

PHYS 050 Preparation for Engineering Studies 0.0 Credits
PHYS-050 is a self-paced online course and is intended for students who need additional preparation in mathematics and physics to be successful in the beginning physics courses (PHYS-101, 102). The online course is divided into six UNITS : Simultaneous Equations, Fundamentals of Plane Geometry, Use of Trigonometric Functions, Fundamentals of Solid geometry Vectors, and Kinematics. Each UNIT is organized in four sections: [i] Introduction; [ii] Interactive Problems; [iii] Sample Problems; and [iv]Tests.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PHYS 100 Preparation for Engineering Studies 4.0 Credits
This is a basic mathematics foundational course to prepare the students for the beginning sequence of Engineering Physics. Topics include: simultaneous equations, fundamentals of plane and solid geometry, use of trigonometric functions and vectors and translational kinematics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 101 Fundamentals of Physics I 4.0 Credits
First of a four course sequence teaching fundamental physics to engineering and science majors. Topics include: description of motion, inertial and non-inertial frames, special relativity, Newton's Laws, translational and rotational equilibrium, one- and two-dimensional motion, fundamental forces, inverse square laws, Gauss' Law, Bohr's quantization, rotational dynamics, potential energy, black holes, determinism and chaos.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 121 [Min Grade: D] and (APC 070 or APC2 070) or PHYS 100 [Min Grade: D]
Corequisite: EXAM 080

PHYS 102 Fundamentals of Physics II 4.0 Credits
Second of a four course sequence teaching fundamental physics to engineering and science majors. Topics include: electrostatics, capacitors, charges in motion, insulators, semiconductors, conductors, superconductors, voltage and current measurements, magnetism, electromagnetic induction, magnetic materials, quantum dots, magnetic resonance phenomenon.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 101 [Min Grade: D]
Corequisite: EXAM 080

PHYS 103 General Physics I 4.0 Credits
Algebra-based course that covers force, motion, work, energy properties of matter, and wave motion and sound propagation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 104 General Physics II 4.0 Credits
Algebra-based course that covers electricity and applications, magnetism, and optics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 103 [Min Grade: D]

PHYS 105 Computational Physics I 3.0 Credits
Introduces computational physics. Covers analytical and numerical solutions of equations governing the behavior of physical systems. Includes the use of Maple and simple FORTRAN/C/C++ programming methods to solve selected problems. Introduces UNIX, X-windows, programming languages, and visualization and data analysis tools for problems in computational physics. Introduces elementary programming concepts as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (PHYS 113 [Min Grade: D] or PHYS 101 [Min Grade: D]) and CS 171 [Min Grade: D]

PHYS 106 [WI] The Physics of High Fidelity 3.0 Credits
Applies physical principles to understanding how hi-fi systems work. Includes consumer education in selecting components. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 107 Acoustics 3.0 Credits
Covers the theory describing sound, behavior and sound waves, resonance and harmonics, frequency analysis, electronic production of sound, sound perception by the human ear, sound recording and reproduction, and room acoustics. Emphasis will be placed on understanding how sound operates in the physical world and how our ears respond to it.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 113 Contemporary Physics I 5.0 Credits
Part I in an introductory physics sequence for majors. This course combines the traditional lecture/lab format with real-time numerical simulations designed by the students. Topics include: the fundamental forces, Newton's laws, the atomic nature of matter, work and energy, light, friction, and atomic nuclei.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: MATH 121

PHYS 114 Contemporary Physics II 5.0 Credits
Part II in an introductory sequence for majors. This course combines the traditional lecture/lab format with real-time numerical simulations designed by the students. Topics include: angular momentum, entropy, gas dynamics, electric fields, electricity and matter, and electric potential.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 113 [Min Grade: D]
Corequisite: MATH 122

PHYS 115 Contemporary Physics III 5.0 Credits
Part III in an introductory sequence for majors. This course combines the traditional lecture/lab format with real-time numerical simulation designed by the students. Topics include: magnetic fields, electronics, radiation, waves and particles, and an introduction to semiconductor devices.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 114 [Min Grade: D]
Corequisite: MATH 123

PHYS 121 Physical Science for Design I 4.0 Credits
Offers a non-calculus-based survey of physical science for students in design and the visual arts. Topics include kinematics in two dimensions, forces, Newton's laws, applications using the constant acceleration model, energy, momentum, conservation laws, universal gravitation, circular motion, satellites, oscillatory motion, wave motion, sound, and music.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 080

PHYS 122 Physical Science for Design II 4.0 Credits
Continues PHYS 121. Topics include electricity, magnetism, em waves, light, geometrical and physical optics, anatomic structure, the elements, and nuclear decay and nuclear energy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 121 [Min Grade: D]
Corequisite: EXAM 080

PHYS 131 Survey of the Universe 3.0 Credits
Provides an overview of modern astronomy, including the scientific method; telescopes; stars and star clusters; stellar evolution; galaxies and the large-scale structure of the universe; and the Big Bang. May also include periodic visits to the university observatory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 135 How Things Work 4.0 Credits
This course examines the science behind everyday phenomena and devices. It uses real-world applications such as amusement park rides, microwave ovens, photocopiers, CDs, MRI, etc., as contextual vehicles to convey principles of classical and modern physics. It emphasizes conceptual understanding and uses pedagogy such as lecture demonstrations and active feedback.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 137 Issues in Science and Religion 3.0 Credits
This survey course examines the interconnections and differences of science and religion, including topics as Cosmology, Human Origins, Prayer and Consciousness. Fundamental to the exploration of these theories are the examination of the historical, philosophical, psychological and sociological implications of these topics for society.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 141 Atmospheric Science I - Climate and Global Change 3.0 Credits
The atmosphere and its structure and variations; greenhouse effect; ozone depletion; the influence of weather on man; air pollution; acid rain.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: PHEV 142

PHYS 142 Atmospheric Science I Laboratory 1.0 Credit
Introduction to climate analysis and methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 143 Atmospheric Science II - Weather & Forecasting 3.0 Credits
The atmosphere and its properties; weather systems; severe weather; hurricanes; weather forecasting.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Corequisite: PHEV 144

PHYS 144 Atmospheric Science II Laboratory 1.0 Credit
Introduction to meteorological analysis and forecasting methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHYS 151 Applied Physics 3.0 Credits
Non-calculus-based introductory physics for business majors. Covers basic mechanics and simple harmonic motion, followed by an introduction to more advanced topics such as relativity, electromagnetism, and quantum phenomena.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 081

PHYS 152 Introductory Physics I 4.0 Credits
First part of a three-course algebra-based sequence providing a comprehensive introduction to Physics. Covers basic mechanics, including motion in 1, 2, and 3 Newton's laws, gravitation, energy, momentum, rotational motion and elastic properties of materials. Includes labs to enrich class material. High school physics not required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: EXAM 081

PHYS 153 Introductory Physics II 4.0 Credits
Second part of a three-course algebra-based sequence providing a comprehensive introduction to Physics. Covers fluids, vibrations, waves, sound, heat and thermodynamics, geometrical optics and optical instrumentation. Includes labs to enrich class material.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 152 [Min Grade: D] or PHYS 101 [Min Grade: D]
Corequisite: EXAM 081

PHYS 154 Introductory Physics III 4.0 Credits
Third part of a three-course algebra-based sequence providing a comprehensive introduction to Physics. Covers fundamentals of electricity and magnetism, including charges, fields, potential, circuits, magnetic induction, electromagnetic waves, special relativity, and physical optics. Includes labs to enrich class material.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 101 [Min Grade: D] or PHYS 152 [Min Grade: D]
Corequisite: EXAM 081

PHYS 160 Introduction to Scientific Computing 3.0 Credits
Basic introduction to scientific problem solving and numerical modeling of physical system using Excel and Maple.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 181 Astronomy 3.0 Credits
Provides an overview of modern astronomy, including the scientific method; telescopes; stars and star clusters; stellar evolution; galaxies and the large-scale structure of the universe; and the Big Bang. May also include periodic visits to the university observatory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 182 Applied Physics I 3.0 Credits
Covers vectors; statics, kinematics, and classical dynamics, including Newton's laws, torque, projectile motion, and circular motion; work; power and energy; impulse and momentum; and rotation, in a non-calculus-based course. Fall.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 183 [Min Grade: D] and MATH 184 [Min Grade: D]

PHYS 183 Applied Physics II 3.0 Credits
Covers fluids; elasticity; vibration, including simple harmonic motion; sound waves and acoustics; thermodynamics of temperature; heat; thermal-expansion; phase change; and heat transfer, in a non-calculus-based course. Winter.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 182 [Min Grade: D]

PHYS 184 Applied Physics III 3.0 Credits
Covers light and illumination, electrostatics, potential, direct-current electrical circuits, magnetic fields, induction, generators, motors, and AC circuits, in a non-calculus-based course. Spring.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 183 [Min Grade: D]

PHYS 185 Fundamentals of Physics Lecture I 3.0 Credits
First of a three course sequence teaching fundamental physics to engineering and science majors. Topics include: description of motion, inertial and non-inertial frames, special relativity, Newton's Laws, translational and rotational equilibrium, one- and two-dimensional motion, fundamental forces, inverse square laws, Gauss' Law, Bohr's quantization, rotational dynamics, potential energy, black holes, determinism and chaos.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 121 [Min Grade: D]
Corequisite: MATH 186

PHYS 186 Physics I-A 1.0 Credit
A companion course for PHYS 185. Students will perform experiments related to Mechanics. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 185 [Min Grade: D] (Can be taken Concurrently)

PHYS 188 Physics II-A 1.0 Credit
A companion course for PHYS 189. Students will perform experiments related to Electricity and Magnetism. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 189 [Min Grade: D] (Can be taken Concurrently)

PHYS 189 Fundamentals of Physics Lecture II 3.0 Credits
Second of a four course sequence teaching fundamental physics to engineering and science majors. Topics include: electrostatics, capacitors, charges in motion, insulators, semiconductors, voltage and current measurements, magnetism, electromagnetic induction, magnetic materials, quantum dots, magnetic resonance phenomenon.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 185 [Min Grade: D]

PHYS 201 Fundamentals of Physics III 4.0 Credits
Third of a four course sequence teaching fundamental physics to engineering and science majors. Topics include: oscillations, EM waves, interference, diffraction, wave-particle duality, energy-matter equivalence, uncertainty relations, Schrodinger's equation, Hydrogen atom, laser, and nuclear physics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 102 [Min Grade: D]
Corequisite: EXAM 081

PHYS 202 Fundamentals of Physics IV 4.0 Credits
Fourth of a four course sequence teaching fundamental physics to engineering and science majors. Topics include: statistical kinetic, equipartition of energy, entropy, ultra-low temperatures, thermal transport, interaction of charged particles and light with biological tissue, fiber optics, IR, Raman, spectroscopy, fluidics, and microfluidics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 201 [Min Grade: D]

PHYS 217 Thermodynamics 4.0 Credits
Covers macro-thermodynamics: temperature, pressure, work, heat, equations of state, the first and second laws of thermodynamics and their applications, heat engines and refrigerators, thermodynamics potentials, Maxwell relations, theory of phase changes, kinetic theory and transport phenomena.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 114 [Min Grade: D] or PHYS 102 [Min Grade: D]

PHYS 222 Modern Physics 4.0 Credits
Covers special relativity and the electron, black-body radiation, quantum theory of radiation, Bohr theory, wave particle duality, Schrodinger equation, and nuclear phenomena.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 200 [Min Grade: D]

PHYS 223 [WI] Modern Physics Laboratory 3.0 Credits
Requires students to perform experiments in modern physics, including the Millikan oil-drop experiment, the photoelectric effect measurement, spectrometer experiments, atomic spectra observations, the Frank-Hertz experiment, the decay rate of radon, and a beta particle range experiment. This is a writing intensive course. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 113 [Min Grade: D] (Can be taken Concurrently)

PHYS 226 Instrumentation for Scientists I 3.0 Credits
Introduces measurement concepts, including a systems approach to analog and digital measurement, amplification and feedback, electrical data domains, measurements of varying analog signals, time domain measurements and conversions, and A/D and D/A conversions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHYS 227 Instrumentation for Scientists II 3.0 Credits
Covers optimization of scientific measurements, including systems analysis, signal/noise, control of frequency response, modulation and demodulation, relation of sampling parameters to signal characteristics, and signal-to-noise ratio enhancement.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 226 [Min Grade: D]

PHYS 231 Introductory Astrophysics 3.0 Credits
An introductory astrophysics course aimed at science majors. Topics include a treatment of orbits, Kepler's laws, celestial coordinates, light, blackbodies, optics, stellar structure and evolution, galactic formation, and large scale evolution and structure of the universe.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (PHYS 101 [Min Grade: D] or PHYS 113 [Min Grade: D]) and MATH 121 [Min Grade: D]

PHYS 232 Observational Astrophysics 3.0 Credits
Covers photometric and spectroscopic properties of stars, galaxies, and quasars and fundamental astrophysics of these objects. The course contains a significant lab component, which includes training in methods of observation, using the Joseph Lynch Observatory on campus to obtain astronomical measurements, and analysis of data.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 113 [Min Grade: D] and MATH 121 [Min Grade: D]

PHYS 261 Introduction to Biophysics 3.0 Credits
This is an introductory course to the wide field of Biophysics. The intended audience is undergraduate physics majors. However, the level and approach is also accessible to undergraduates from other concentrations, including Chemistry and Biology. Students will learn the basic principles behind cells, thermodynamics and statistical mechanics applied to cellular environments, forces affecting conformation of biological molecules, protein and nucleic acid biophysics, membrane biophysics, and basic physics principles behind nerve impulses.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 115 [Min Grade: D] or PHYS 201 [Min Grade: D]

PHYS 262 Introduction to Biophysics 3.0 Credits
This is an introductory course to the wide field of Biophysics. The intended audience is undergraduate physics majors. However, the level and approach is also accessible to undergraduates from other concentrations, including Chemistry and Biology. Students will learn the basic principles behind cells, thermodynamics and statistical mechanics applied to cellular environments, forces affecting conformation of biological molecules, protein and nucleic acid biophysics, membrane biophysics, and basic physics principles behind nerve impulses.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (PHYS 115 [Min Grade: D] or PHYS 201 [Min Grade: D])

PHYS 280 Fundamentals of Physics Lecture III 3.0 Credits
Third of a three course sequence teaching fundamental physics to engineering and science majors. Topics include: oscillations, EM waves, interference, diffraction, wave-particle duality, energy-matter equivalence, uncertainty relations, Schrodinger's equation, Hydrogen atom, laser, and nuclear physics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 102 [Min Grade: D]

PHYS 282 Fundamentals of Physics Laboratory III 1.0 Credit
A companion course for PHYS 280. Students will perform experiments related to Thermodynamics and modern physics. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 280 [Min Grade: D] (Can be taken Concurrently)

PHYS 305 Computational Physics II 3.0 Credits
Covers the application of computational techniques to problems in physics, including numerical solution of differential equations, computation and display of particle trajectories in arbitrary potentials, introduction to non-linear dynamics, random numbers and Monte-Carlo methods, and numerical implementation of selected methods in mathematical physics. Emphasizes hands-on experience in problem-solving, using both Maple and C.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: CS 171 [Min Grade: D], PHYS 105 [Min Grade: D]

PHYS 311 Classical Mechanics I 4.0 Credits
Covers motion in one, two, and three dimensions, conservation laws, and damped harmonic oscillator, forced harmonic oscillator, and central force motion.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 210 [Min Grade: D] (Can be taken Concurrently) (PHYS 115 [Min Grade: D] or PHYS 201 [Min Grade: D])

PHYS 312 Classical Mechanics II 4.0 Credits
Covers motion of system of particles, center of mass and conservation of linear momentum, description of collisions, Rutherford scattering, dynamics of rigid bodies, coordinate systems, the restricted three-body problem, generalized coordinates, Lagrange's equations and Hamilton's equations, and rotation of frame.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 311 [Min Grade: D]

PHYS 317 Statistical Mechanics 3.0 Credits
Covers distribution molecular velocities, transport phenomena, Maxwell-Boltzmann statistics, and quantum statistics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: MATH 210 [Min Grade: D] and PHYS 217 [Min Grade: D]

PHYS 321 Electromagnetic Fields I 4.0 Credits
Covers fields due to specified charge distributions, Gauss' law, multipole expansion of the fields, Laplace's equation, method of images, dielectrics, and energy of an electrostatic field. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 115 [Min Grade: D] (Can be taken Concurrently)

PHYS 322 Electromagnetic Fields II 4.0 Credits
Covers electric current, continuity equation, electromotive forces, magnetic fields, electromagnetic induction, magnetic properties of matter, Maxwell's equations, radiation, and radiation by moving charges.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 321 [Min Grade: D]

PHYS 324 Topics in Mathematical Physics 3.0 Credits
This course presents the mathematical background needed for Thermodynamics, Classical Mechanics, Electricity & Magnetism, and Quantum Mechanics using the theory of linear vector spaces and the standard tools of elementary mathematical physics. Emphasis will be placed on the use of analytic and numerical programming techniques, using Maple, FORTRAN and C.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHYS 326 Quantum Mechanics I 4.0 Credits
Explores the classical foundations of quantum mechanics, the Schrodinger equation, solutions of one-dimensional problems, and the one-dimensional harmonic oscillator.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 312 [Min Grade: D]

PHYS 327 Quantum Mechanics II 4.0 Credits
Covers the three-dimensional Schrodinger equation, angular momentum, matrix mechanics, the hydrogen atom, and perturbation theory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 326 [Min Grade: D]

PHYS 328 [WI] Advanced Laboratory 3.0 Credits
Requires students to perform advanced laboratory experiments in the various fields of physics. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 223 [Min Grade: D]

PHYS 330 Introduction to Nuclear Physics 2.0 Credits
Provides an overview of nuclear physics; including nuclear structure; nuclear stability; radioactivity and nuclear decay; nuclear forces and interactions; fission and fusion; and the interaction of particles with matter. A small amount of quantum mechanics will be included.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (PHYS 115 [Min Grade: D] or PHYS 201 [Min Grade: D]) and (MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D])

PHYS 399 Independent Study in Physics 12.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PHYS 405 Advanced Computational Physics 3.0 Credits
Covers the application of computational techniques to one or more research topics of current interest, including grid-based solutions of partial differential equations in one and two dimensions and particle methods in fluid mechanics. Introduces high-performance computation and massively parallel computing platforms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.
Prerequisites: PHYS 305 [Min Grade: C]

PHYS 408 Physics Seminar 1.0 Credit
Requires participation in weekly departmental colloquium.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 15 times for 15 credits
Restrictions: Cannot enroll if classification is Freshman

PHYS 409 Astrophysics Seminar 1.0 Credit
This course focuses on topics in modern astrophysics. Each term, a series of papers in a subfield is chosen. Students present and discuss recent results in fields such as stellar structure, black holes, cosmology, and dynamics. May be repeated twice for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 2 credits
Prerequisites: PHYS 231 [Min Grade: D] or PHYS 232 [Min Grade: D]

PHYS 428 Quantum Mechanics III 4.0 Credits
Advanced topics in quantum mechanics including spin, addition of angular momentum, scattering theory, relativistic quantum mechanics, atoms and molecules, and radiation from atoms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 327 [Min Grade: D]

PHYS 431 Galactic Dynamics 3.0 Credits
Covers dynamical problems ion astrophysics, including the two-body problem, galactic stability, globular clusters, spiral arms and galactic collisions. Computational methods such as calculation of grid-based and particle-based potentials will also be discusses and applied.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 312 [Min Grade: D]

PHYS 432 Cosmology 3.0 Credits
Covers cosmological models, age and distance scales in the universe, the hot big bang, primordial nucleosyntesis, inflation, baryonic and non-baryonic matter, galaxy formation and evolution, dynamics of structure formation, statistics of cosmological density fields, and cosmic background fluctuations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 311 [Min Grade: D]

PHYS 451 Quantum Structure of Materials 4.0 Credits
Introduces modern physics, including wave-particle duality; quantum mechanics of electrons located in one-dimensional potentials; introduction to solid-state physics; electronics in periodic potentials and energy band structure; numerical computations; metals, semiconductors, and insulators; electronic devices; quantum devices; and laboratory experiments in scanning tunneling microscopy and atomic force microscopy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 201 [Min Grade: D]

PHYS 452 Solid State Physics 3.0 Credits
Atomic basis of the physical properties of materials, including crystalline and non-crystalline solids. Detailed introductory treatment of the structural, vibrational, and electronic properties of solid and their inter-relationships. Overview of other materials, properties, and scientific basis of technological applications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 317 [Min Grade: D] and PHYS 326 [Min Grade: D]

PHYS 453 Nanoscience 3.0 Credits
Scientific basis of nanoscale materials and systems including discussions of low-dimensional structures and their physical properties, the self-assembly of nanostructures, applications in various fields of science and technology, and techniques for fabrication and characterization on the nanoscale.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 311 [Min Grade: D] and PHYS 217 [Min Grade: D]
Corequisites: PHYS 321, PHYS 326

PHYS 461 Biophysics 3.0 Credits
A one course introduction to biological physics. Topics may include: structure of biomolecules, protein stability, electron transfer, protein folding, protein substrates, allostery, and self-assembly. No biological background is presumed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 3 credits
Prerequisites: PHYS 317 [Min Grade: D]

PHYS 462 Computational Biophysics 3.0 Credits
This course involves mathematical applications of biological simulations. Using classical and statistical mechanics, we will cover topics including atomic scale simulations, statistical sampling and models of molecular cellular systems and living processes.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 305 [Min Grade: D] and PHYS 317 [Min Grade: D]
Corequisite: PHYS 321

PHYS 463 Single Molecule Methods 3.0 Credits
Covers the principles, operations and applications of the most commonly used single molecule methods in biophysics, including scanning probe microscopy and spectroscopy, optical trapping and fluorescence resonance energy transfer techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PHYS 217 [Min Grade: D] and PHYS 322 [Min Grade: D]

PHYS 471 Nonlinear Dynamics 3.0 Credits
This course introduces the basic ideas of the new science of nonlinear dynamics and develops methods to carry out fundamental computations of fractal dimension, Lyapunov exponents, and topological invariants.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 200 [Min Grade: D]

PHYS 476 Nuclear and Particle Physics 3.0 Credits
Covers the nucleus as a neutron-proton system, including stable and unstable nuclei, nuclear spectra and radioactive decay, fission and fusion, quarks and leptons, experimental methods, fundamental forces, the quark model of hadrons, electroweak unification, and unifying theories.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore
Prerequisites: PHYS 327 [Min Grade: D]

PHYS 480 Special Topics 12.0 Credits
Covers selected topics in physics. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PHYS 485 Research 3.0 Credits
Covers research problems in physics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PHYS 491 Senior Research I 3.0 Credits
A three-term sequence devoted to theoretical or experimental activities in a specific area of physics or atmospheric science to be chosen in consultation with a faculty adviser. Requires students to learn to identify interesting problems, develop a plan of attack, and carry the project to completion. Requires written and oral report at the end of the third term.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Senior.

PHYS 492 Senior Research II 3.0 Credits
Continues PHYS 491.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 491 [Min Grade: D]

PHYS 493 [WI] Senior Research III 3.0 Credits
Continues PHYS 492. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PHYS 492 [Min Grade: D]

Political Science

Courses

PSCI 100 Introduction to Political Science 4.0 Credits
Studies the political process, which determines who gets what, when, and how in society.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 110 American Government I 4.0 Credits
Introduces the elements of the American political system.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 120 History of Political Thought 4.0 Credits
Introduces the Western tradition of political thought, examining a selection of works by major political thinkers. Draws on primary sources, with a textual and conceptual emphasis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 130 Research Methods in Political Science I 4.0 Credits
Introduction to basic principles of political science writing and research design. Students learn how to locate, use, and evaluate information from a wide range of government agency websites and political science databases.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 140 Introduction to Comparative Political Analysis 4.0 Credits
Examines methods used to compare state political systems with respect to world order values in varying geographic and cultural settings.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 150 International Politics 4.0 Credits
Analyzes nation-states in their external relations, including the interaction of the great powers with each other and with emerging areas.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 211 American Government II 4.0 Credits
Provides a structural analysis of selected social, economic, and political institutions at various levels of government in the American political system.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSCI 110 [Min Grade: D]

PSCI 220 Constitutional Law I 3.0 Credits
Introduction to Constitutional law and the federal courts. Examines the emergence of judicial review, the judiciary's role in the system of check and balances, and the powers and limitations on each branch of government.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSCI 110 [Min Grade: D]

PSCI 230 Research Methods in Political Science II 4.0 Credits
This course is designed to provide the student with concepts, principles and tools of research methodology. Includes projects such as survey and content analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSCI 130 [Min Grade: D]

PSCI 240 Comparative Government 3.0 Credits
Examines the political process through the ideology and institutions of major constitutional and totalitarian powers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSCI 140 [Min Grade: D]

PSCI 250 American Foreign Policy 3.0 Credits
Examines current issues in American foreign policy, including the assumptions underlying policy goals, the means of achieving them, and the decision-making machinery.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSCI 150 [Min Grade: D]

PSCI 255 International Political Economics 4.0 Credits
Analyzes the contradiction between the political-military world and the newly emerging trading world, and its impact on future global political systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 270 Problems of Individual Liberty and Government Authority 3.0 Credits
Examines the relationship between personal freedom and a just society from a variety of perspectives, all of which are designed to serve as an introduction to history and politics.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSCI 120 [Min Grade: D]

PSCI 272 Contemporary Political Issues 3.0 Credits
Examines a current policy issue in its political context. See departmental brochure for subject scheduled in a particular term. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 313 State & Local Government 3.0 Credits
Examines major political, social, and economic problems of state, local, and metropolitan governments.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 323 Comparative Political Thought 3.0 Credits
Studies modern political thinkers from African, Asian, Latin American, and other traditions of political thought. Uses a textual and conceptual emphasis, but also considers the political movements and social practices that have embraced or given birth to the works of the selected authors.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 325 Political Theory from Below 3.0 Credits
Rethinks traditional approaches to political theory by emphasizing study of texts and movements "from below," drawn from both African American and Latin American thinkers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 327 Democratic Theory 3.0 Credits
Examines the works of various classical and contemporary thinkers on the nature, justification, and practice of democracy. Emphasizes matters of liberty, equality, participation, and social choice.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 329 Theories of Justice 3.0 Credits
Examines the nature and realization of justice in modern societies, with special attention to contemporary questions of civil rights.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 330 Public Opinion & Propaganda 3.0 Credits
Examines public opinion and propaganda from a variety of perspectives, including the process of opinion formation and change and its role in the development of public policy and methods of measurement and analysis of public opinion.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 331 Environmental Politics 3.0 Credits
Examines environmental politics, focusing on the United States. Solving environmental problems is not simply a question of using available science and technology; rather, proposals to combat environmental degradation confront political context that may or may not favor the aims of environmental policy. Understanding politics is therefore indispensable for effective environmental problem-solving.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 335 Political Communication 3.0 Credits
Introduces an investigation of the relationship between politics and communication, with the goal of developing an understanding of political communication's role in election campaigns, news coverage, political debates, political advertising, and "normal" portrayals of the political system through media and interpersonal communication.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 340 Politics of Developing Nations 3.0 Credits
Analyzes problems of political and economic development (modernization) in the Third World, with the focus on Africa.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 344 Introduction to 20th Century Middle East 3.0 Credits
An introduction to the major historical events and political issues that define the region of the Middle East in the 20th century, including Zionism, Arab nationalism, Islamic fundamentalism, and the war on terror.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 345 Comparative Politics of the Middle East 3.0 Credits
Introduces students to political issues and challenges that face Middle Eastern men and women and deepens their understanding of comparative politics in non-Western cultures and nations. Analyzes such common problems as nationalism, religion, and state/society relations, then examines in depth four countries representing various regimes. Assumes some familiarity with Middle Eastern history and concentrates primarily on contemporary politics and political economy.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSCI 150 [Min Grade: D] or PSCI 344 [Min Grade: D]

PSCI 351 International Organizations 3.0 Credits
The goal of this course is to present an overview of the nature and function of international organization in world politics. The role of the United Nations and its agencies are highlighted, but other organizations are considered. Students gain an understanding of how international life is structured through these institutions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 352 Ethics and International Relations 3.0 Credits
Are ethics relevant in world politics, or are power and survival the only concerns? This course considers the main moral issues facing the international community. Topics include the "just war" tradition, human rights, humanitarian intervention, and what rich countries owe the poor.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 353 International Human Rights 3.0 Credits
This course examines the origin of the international human rights movement after World War II, and discusses key issues confronting the international community today. These include genocide, political repression, the rights of women, and religious and cultural minorities. It also considers the moral basis of the rights ideal.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 354 United States & the Third World 3.0 Credits
Analyzes American foreign policy since 1945 with particular emphasis on the United States' rise to power as the major influence in the developing world of Africa, Asia, Latin America, and the Middle East.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 357 The European Union 3.0 Credits
This course combines an introduction to the history and institutions of the European Union with a special analysis of EU enlargement and institutional reform.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 358 Political Economy of Japan 3.0 Credits
Examines Japanese political economy on a global scale, focusing on her economic and trade relations with the United States, the Soviet Union, China, and Western Europe.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 363 Constitutional Law II 3.0 Credits
Examines protections for civil liberties afforded by the First Amendment of the Constitution, specifically those related to speech, the press, religion, and assembly.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 364 Constitutional Law III 3.0 Credits
Examines Constitutional civil rights claims arising under the Fourteenth Amendment equal protection and due process guarantees. Focuses on claims concerning discrimination on the basis of race, gender, and sexual orientation, as well as those asserted under an individual right to privacy in matters of reproductive rights, sexual conduct, and end of life decisions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 365 Politics, Law, & Justice 3.0 Credits
Examines justice as politically determined, including the personnel, policies, and practices of units of the legal system, especially civil, criminal, and juvenile courts in urban areas.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 366 Supreme Court and American Politics 3.0 Credits
This course focuses on the workings of the modern Supreme Court: theories of judicial interpretation; internal decision-making processes; the interplay of law and politics on the Court's personnel, agenda, and rulings; and the role of interest groups in shaping the Court's jurisprudence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 367 International Law 3.0 Credits
Examines the legal norms, codes resolutions, treaties conventions, court decisions, customs and other sources that comprised international law. Provides analysis of applications, especially in Europe.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 369 The Politics of Food 3.0 Credits
This course examines how politics shapes our diet. Though cultural and personal preferences influence what we eat, our food choices unfold in the context of public policies such as agricultural subsidies, trade agreements, and food safety regulations, etc. The 1st part of the course describes and analyzes the US food system, with a focus on regulatory policies and interest group politics. The 2nd part of the course examines the ideas and practices of food-based social movements that seek to create a food system that is less harmful to human and international health and more socially just than the existing system.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 370 Topics in Public Policy 3.0 Credits
Provides an in-depth exploration of an important public-policy issue or issue area in American or international life. Explores the origins, development, alternatives, and future consequences of an issue within the context of a political system. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 371 Science, Technology, & Public Policy 3.0 Credits
Examines the political effects of technological change, including public policy efforts to affect the impact of scientific development. Covers topics including atomic energy, electronic communications, and weapons development.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 372 City in United States Political Development 3.0 Credits
Course examines the role of the American city in the larger project of state-building. Topics covered include the changing functions of cities over American history; the role of cities in national political coalitions; and the construction of ethnic, racial, and class identities as a process or urbanization.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 374 Politics of Sport 3.0 Credits
The material in this course comes from a variety of disciplines and schools of thought with political science serving as an overarching framework. Issues covered include ethnicity, gender, race, nationalism, globalism, economics, and class.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 375 Politics of Immigration 3.0 Credits
This course is designed to introduce the student to the issues associated with immigration from both a US and international as well as a historical and contemporary perspective. Emphasis will be focused on the theory, public policy and philosophical issues that are associated with this area of inquiry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 376 Running for Political Office 3.0 Credits
This course is designed to introduce the students to both the theory and practice of running for political office. Emphasis will be placed upon both the theoretical and applied aspects of political campaigns. The course will use a combination of readings, a text, films, lectures, and guest speakers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 377 Politics of Latin America 3.0 Credits
Analysis of contemporary politics in South and Central American, as well as Cuba, with several in-depth country cases. Comparative themes include: legacies of military rules, economic dependency and revolution; dynamics of democratic transition, economic reform and U.S. hegemony; and, problems of domineering presidents weak parties and marginalized social groups.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 470 [WI] Junior Seminar in Political Science 3.0 Credits
A research seminar directed by a political scientist. Requires students to write an extended paper on a topic selected in consultation with the instructor. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.

PSCI 472 Special Studies in Political Science 12.0 Credits
Provides supervised individual study of special subjects in political science. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 490 [WI] Senior Seminar I 3.0 Credits
Requires an intensive research project supervised by a political scientist. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSCI 491 [WI] Senior Seminar II 3.0 Credits
Requires completion of the project begun in PSCI 490. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSCI 490 [Min Grade: D]

PSCI 492 Political Science Honors Thesis I 3.0 Credits
Students develop and begin an in-depth research project under the supervision of a political scientist. Course is restricted to seniors with a minimum 3.30 GPA.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSCI and classification is Senior.
Prerequisites: PSCI 211 [Min Grade: D] and PSCI 220 [Min Grade: D] and PSCI 230 [Min Grade: D] and PSCI 240 [Min Grade: D] and PSCI 250 [Min Grade: D] and PSCI 270 [Min Grade: D]

PSCI 493 Political Science Honors Thesis II 3.0 Credits
Students complete an in-depth research project under the supervision of a political scientist.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSCI and classification is Senior.
Prerequisites: PSCI 492 [Min Grade: D]

Psychology

Courses

PSY 101 General Psychology I 3.0 Credits
Reviews the fundamental principles, concepts, and methods of psychology, with emphasis on the concepts of motivation, learning, and perception, and their psychological foundations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 111 Pre-Professional General Psychology I 3.0 Credits
Preprofessional General Psychology is designed for majors and for other preprofessionals who are interested in Psychology as a minor. A scientific approach to the study of psychology is taken. An overview of the fundamental principles of psychology across a variety of sub-disciplines is offered. Part one is part of a two-part sequence and focuses on the experimental bases of psychology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 112 Pre-Professional General Psychology II 3.0 Credits
Preprofessional General Psychology is designed for preprofessionals who are interested in psychology or related fields, especially designed for majors, and may be taken by minors of psychology. It follows Preprofessional General Psychology I and includes a laboratory component to enhance the scientific approach to psychology. Part two focuses on the application of scientific principles of psychology to human behavior.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 111 [Min Grade: D]

PSY 120 Developmental Psychology 3.0 Credits
Examines the nature of developmental processes-perceptual, intellectual, emotional, and social-and the factors influencing and limiting them.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 140 Approaches to Personality 3.0 Credits
Discusses the major concepts of Freud, neo-Freudians, behaviorists, humanists, trait theorists, and others. Emphasizes understanding of self and others for psychotherapy and research. Fall.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 150 Introduction to Social Psychology 3.0 Credits
Examines theoretical and research findings in personal experiences of interacting with others in family and group settings, and with society in general.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 210 Evolutionary Psychology 3.0 Credits
Covers principles of genetics and evolution as applied to the behavior of the important types of living beings, from plants and unicellular organisms to the primates (including humans).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 212 Physiological Psychology 3.0 Credits
Reviews neural foundations of behavior, including the study of nerve activity and brain function.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 213 Sensation and Perception 3.0 Credits
Examines the structure and function of the senses, including vision, hearing, touch, temperature, pain, olfaction, gustation, time, and kinesthesia. Considers interaction of the senses and their role in determining behavior.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 222 Psychological Problems of Modern Youth 3.0 Credits
Examines psychological problem areas frequently encountered by young adults in today's society, including identity crisis, family conflict, the new sexuality, drugs, and the search for intimacy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 225 Child Psychopathology 3.0 Credits
This class will focus on the symptoms, etiology, and primary methods of treating common psychological disorders and problems of children and adolescence. The course will focus on diagnosis; assessment; specific therapeutic treatments; ethical issues; and gender, cultural, and developmental differences in symptoms, diagnosis, and response to treatment.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 240 [WI] Abnormal Psychology 3.0 Credits
Offers advanced course in the general study of personality. Focuses on the way our society defines, explains, and handles behavior perceived as deviant and "normal." Requires field trip. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 242 Psychology of Disability 3.0 Credits
Psychological and social consequences of physical disability for the disabled person and his or her family and social network. Emphasis on disabilities of the sensory and nervous systems. Practicum component.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 244 Culture and Personality 3.0 Credits
This course focuses on comparing specific human behaviors (e.g. aggression, health), roles (e.g. gender), and psychological processes (e.g. cognition, emotion, perception) across cultures in order to ascertain similarities and differences among cultures around the globe. This course has an interdisciplinary focus.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 245 [WI] Sports Psychology 3.0 Credits
Covers sports psychology, which is the science of understanding, modifying, and predicting athletic performance or sports participation. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 250 [WI] Industrial Psychology 3.0 Credits
Covers theories, experiments, and problem-solving efforts of behavioral scientists in industrial settings for students interested in interpersonal relations, management, leadership, personnel, and applied psychology. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 252 Death and Dying 3.0 Credits
Explores death and dying from various perspectives, including the philosophical, psychological, sociocultural, and personal.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 254 Psychology of Sexual Behavior 3.0 Credits
Examines psychology of the individual coping with the sexual aspects of life.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 260 Psychological Research I 3.0 Credits
This course provides an introduction to the issues, techniques and methodologies associated with conducting psychological research. Topics to be covered include the logic of research in psychology, important issues in deciding how to study various psychological phenomena, ethical issues and guidelines in conducting psychological research, design and analysis of psychological research, assessing threats to internal and external validity, methods used in the interpretation of psychological data, and writing research reports in the style used by research psychologists.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 264 Computer-Assisted Data Analysis I 3.0 Credits
Covers data analysis using a mainframe statistical package covering basic elementary techniques of data reduction, manipulation, and statistical analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 265 Computer-Assisted Data Analysis II 3.0 Credits
Covers more advanced statistical techniques, such as regression, correlation, analysis of variance, and multiple regression.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]) and PSY 264 [Min Grade: D]

PSY 290 History and Systems of Psychology 3.0 Credits
Examines the historical foundations of modern psychology, with emphasis on the growth, contributions, and decline of major systems and theories.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 305 Science and Pseudoscience in Psychology 3.0 Credits
Science and Pseudoscience in Psychology. Fosters critical thinking skills regarding the evaluation of paranormal, unusual, or extraordinary phenomena (e.g. ESP, recovered memories of abuse). Examines ways that a human cognition leads to strange beliefs despite contradictory data. The distinctions between science and pseudoscience are highlighted.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 310 Drugs & Human Behavior 3.0 Credits
Covers the fundamentals of drug effects on the nervous system and behavior, with emphasis on abused substances and drugs used in the treatment of behavioral disorders.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D])

PSY 320 [WI] Educational Psychology 3.0 Credits
Covers role and relevance of psychology in the teacher-learner relationship, with independent application of research techniques in an individual field study. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 322 Advanced Developmental Psychology 3.0 Credits
Provides in-depth exploration of child and adolescent physical, cognitive/intellectual, and psychosocial development. Students have the opportunity to observe children and their caregivers through videotaped vignettes created to bring developmental principles to life.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: (PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]) and PSY 120 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 325 Psychology of Learning 3.0 Credits
Introduces basic principles of the science of learning. Emphasizes I. P. Pavlov's classical conditioning, B. F. Skinner's operant conditioning, and applications to counseling and therapy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 330 Cognitive Psychology 3.0 Credits
Covers human thought processes, including perception and pattern recognition, learning and memory, language, problem-solving, and decision-making.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 332 Human Factors and Cognitive Engineering 3.0 Credits
Discusses ways of designing machines, operations, and work environments so that they match human capacities and limitations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 336 Psychology of Language 3.0 Credits
This course is a survey of the theories and methodologies in the psychology of language. It covers topics such as language acquisition, comprehension, and production, as well as the relation between language and thought and the question of the uniqueness of language in the animal kingdom.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 337 Human-Computer Interaction 3.0 Credits
Applies cognitive and experimental psychology to understanding how to improve the design and usability of interactive computing systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 342 Counseling Psychology 3.0 Credits
Covers theory and practice of establishing helping relationships. Includes role-playing, analyzing, and observations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 345 Narrative Psychology 3.0 Credits
This course explores the historic contributions to the narrative tradition in psychology and its current research and theoretical concerns. We will discuss contributions to the construction of meaning from bioethics and medical humanities, qualitative research, the neuroscience of memory, literary theory, and social, cognitive, and developmental psychology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 350 Advanced Social Psychology 3.0 Credits
Provides in-depth exploration of topics in the social influence process, including current research in social cognition, attitude change, and group dynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 150 [Min Grade: D]

PSY 352 Environmental Psychology 3.0 Credits
Multidisciplinary study of the interrelationship between human behavior and the natural, built, and social environments.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 355 Health Psychology 3.0 Credits
Health Psychology is designed to: concentrate on the application of psychological theories and variables to compromising and health enhancing behaviors; demonstrate the psychological management of chronic illness; and the role of psychologists written medical and health settings. For example, it focuses on the effects of stress on the body, the mind-body connection, and how psychology can affect physical well-being.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 356 Women's Health Psychology 3.0 Credits
Explores the major psychological and behavioral factors influencing health and illness among women. Topics, such as lifecycle challenges (PMS and reproductive health), chronic diseases, and new directions in health promotion are addressed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 357 The Psychology of Eating Disorders and Obesity 3.0 Credits
Covers determinants of eating behavior and body weight as well as psychological treatments for them. Factors influencing eight regulation will be reviewed. The causes, consequences, and treatments for anorexia and bulimia nervosa and binge eating disorder will be reviewed. Finally, the courses will review the causes, consequences and treatments for obesity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 360 [WI] Experimental Psychology 3.0 Credits
Provides a study of the basic scientific fundamentals of the experiment with emphasis upon the critical thinking this method represents in establishing psychological principles. Contrasts are made to such modern pseudosciences as parapsychology. A final experiment is required of all students in this course. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 265 [Min Grade: D]

PSY 364 Computer-Assisted Data Analysis I 3.0 Credits
Covers data analysis using a mainframe statistical package covering basic elementary techniques of data reduction, manipulation, and statistical analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 365 Computer-Assisted Data Analysis II 3.0 Credits
Covers more advanced statistical techniques, such as regression, correlation, analysis of variance, and multiple regression.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 364 [Min Grade: D] and (PSY 112 [Min Grade: D] or PSY 101 [Min Grade: D])

PSY 368 Critical Psychology 3.0 Credits
In this course we examine underlying values and beliefs of the field and place them in the context such as inequity, social justice, power relations, and what type of knowledge counts, to arrive at a more critical understanding of the practices and theories in psychology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 370 Forensic Psychology 3.0 Credits
This course describes the psychological processes involved in the legal system. The material delves into the growing field of psychological study and application in the legal field.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 380 Psychological Testing and Assessment 3.0 Credits
Enables the student to gain an understanding of the proper uses and applications of psychological evaluation by focusing on psychometric properties and reviewing selected tests and evaluation procedures commonly employed by psychologists in research and clinical practice.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 280 [Min Grade: D] and PSY 360 [Min Grade: D]

PSY 410 Neuropsychology 3.0 Credits
Provides a study of the relationship between human brain function and behavior. Examines basic anatomy of the brain and focuses on principles of human neuropsychological functioning. Studies cortical and "higher cognitive functioning" in depth through a focus on both normal and brain-injured individuals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 440 Advanced Personality Seminar 3.0 Credits
Examines historical and contemporary trends and methods in personality research and assessment. Students have an opportunity to evaluate strengths and limitations of these trends and methods, as well as develop their own ideas.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 140 [Min Grade: D] and (PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D])

PSY 442 Theories & Practices in Clinical Psychology 3.0 Credits
Provides an overview of clinical psychology theory and practice including professional issues, assessment strategies, and psychotherapy theories. Students have the opportunity to develop their own philosophy of clinical psychology and to apply theories to case examples.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 445 Positive Psychology 3.0 Credits
The course provides an overview of the emerging subfield of psychology known as "positive psychology". This area focuses on investigating and understanding positive aspects of well-being and health, including various human strengths, such as resilience, optimism, spirituality, hope, and problem-solving.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 450 Autism Spectrum Disorders 3.0 Credits
This course introduces students to research and issues involving individuals with autism spectrum disorders. Topics include societal perceptions of the disorder, epidemiology, advocacy, assessment and evaluation, adult issues, and legal issues. Course includes an overview of common interventions. Students plan and carry out interviews with individuals with autism as part of the final project.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: PSY 120 [Min Grade: C]

PSY 460 Advanced Experimental Psychology: Laboratory Applications and Techniques 3.0 Credits
Introduction to variety of laboratory techniques; survey of how basic psychological theories and knowledge influence actual practice in the psychological laboratory. Laboratory exercises will focus on development of the research skills necessary for independent research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 477 Senior Seminar I 3.0 Credits
In-depth exploration of selected topics. Projects selected by students in consultation with professor.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 478 Senior Seminar II 3.0 Credits
Continuation of PSYCH 477.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

PSY 480 Directed Studies in Psychology 0.5-12.0 Credits
Provides supervised reading and studies in special fields of contemporary psychology. See department brochure for topics and terms offered.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PSY 490 [WI] Psychology Senior Thesis I 4.0 Credits
An in-depth exploration of selected topics. Projects are selected by students in consultation with a faculty member. The students conduct these projects over the course of three terms in which they take PSY 490, 491, and 492. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY and classification is Senior.

PSY 491 [WI] Psychology Senior Thesis II 4.0 Credits
An in-depth exploration of selected topics. Projects are selected by students in consultation with a faculty member. The students conduct these projects over the course of three terms in which they take PSY 490, 491, and 492. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY and classification is Senior.
Prerequisites: PSY 490 [Min Grade: D]

PSY 492 [WI] Psychology Senior Thesis III 4.0 Credits
An in-depth exploration of selected topics. Projects are selected by students in consultation with a faculty member. The students conduct these projects over the course of three terms in which they take PSY 490, 491, and 492. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY and classification is Senior.
Prerequisites: PSY 491 [Min Grade: D]

PSY 499 Independent Study 1.0-3.0 Credit
This Independent Study provides the opportunity for an undergraduate student to engage in the study of a particular area of psychology that is not covered in-depth by an existing course. Typically, this independent study would focus on a narrower topic (e.g., autism, school violence, bullying, psychology of sleep, etc.) than a given course (e.g., abnormal psychology). Moreover, the nature of the study would be more in-depth than can be accomplished in a traditional course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Russian

Courses

RUSS 101 Russian I 4.0 Credits
Introductory Russian. Includes listening, speaking, and reading, with individual audiolingual practice. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

RUSS 102 Russian II 4.0 Credits
Continues RUSS 101. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: RUSS 101 [Min Grade: D]

RUSS 103 Russian III 4.0 Credits
Continues RUSS 102. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: RUSS 102 [Min Grade: D]

RUSS 201 Russian IV 4.0 Credits
Intermediate Russian. Includes listening, speaking, reading, and writing, with individual audiolingual practice. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: RUSS 103 [Min Grade: D]

RUSS 202 Russian V 4.0 Credits
Continues RUSS 201. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: RUSS 201 [Min Grade: D]

RUSS 203 Russian VI: Conversation & Composition 4.0 Credits
Continues RUSS 202. Provides intensive practice in comprehension and written and oral communication. Emphasizes development of writing skills and increased oral competence in everyday situations. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: RUSS 202 [Min Grade: D]

RUSS 301 Russian VII 3.0 Credits
Advanced Russian. Provides reading, writing, and extensive conversational practice. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: RUSS 203 [Min Grade: D]

RUSS 302 Russian VIII 3.0 Credits
Provides advanced practice in translation, comprehension, and written and oral communication. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: RUSS 301 [Min Grade: D]

RUSS 303 Russian IX 3.0 Credits
Continues RUSS 302. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: RUSS 302 [Min Grade: D]

RUSS 399 Advanced Independent Study in Russian 0.5-12.0 Credits
Provides supervised study of special subjects in Russian language and literature. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

RUSS 411 Introduction to Russian Stylistics 3.0 Credits
Fourth year of Russian. Provides advanced practice in translation, comprehension, and written and oral communication. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: RUSS 303 [Min Grade: D]

RUSS 431 Introduction to Russian Literature 3.0 Credits
Provides intensive reading, writing, and conversational practice in Russian, based on selected texts in Russian literature. Offered twice each year.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: RUSS 303 [Min Grade: D]

RUSS 451 Introduction to Business & Professional Russian 3.0 Credits
Fourth year of Russian. Provides intensive oral practice and written work in business, professional, and commercial Russian. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: RUSS 303 [Min Grade: D]

RUSS 480 Russian Minor Thesis Course 4.0 Credits
Independent research study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study. At the end of the course, the student is required to produce a paper and oral defense on the topic of his paper.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

RUSS 499 Independent Study in Russian 0.5-12.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Sociology

Courses

SOC 101 Introduction to Sociology 3.0 Credits
Introduction to what sociology is and what it studies. Topics will include socialization, group dynamics, gender roles, structural inequality, race and ethnic group relations, stratification, deviance, and population studies. Special attention will be paid to core institutions (e.g. family, education, religion, political and economic systems) as well as theories and methods of guiding sociological investigation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 110 Sociology of the Future 3.0 Credits
Examines current theories, trends and projections for social change in the coming decades. Focuses on the role played by such factors as technological advancement, climate change, global capitalism and social movements in shaping the future.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 115 Social Problems 3.0 Credits
Provides a sociological analysis into the causes and possible cures for a variety of social problems. Focuses on topics such as unemployment, crime, poverty, corporate concentration of wealth and power, racism, immigration, health care, and environmental degradation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 120 Sociology of the Family 3.0 Credits
Examines structure and functions of the family and the roles, relationships, problems, and opportunities of family living from a variety of perspectives. Uses lectures, field experiences, and discussion.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 125 Sociology of Aging 3.0 Credits
Introduces the multidisciplinary scientific study of the causes and consequences of aging, its history, methods of research, major theoretical approaches, and empirical findings.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 137 Issues in Science and Religion 3.0 Credits
This survey course examines the interconnections and differences of science and religion, including the scientific and religious theories of such topics as Cosmology, Human Origins, Prayer and Consciousness. Fundamental to the exploration of these theories are the examination of the historical, philosophical, psychological and sociological implications of these topics for society.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 150 Sex and Society 3.0 Credits
This course examines how sexualities are socially produced and re-produced. Topics of study include gender and sexuality; changing social meanings of variant sexual orientations and practices; the effect of birth-control technologies, sexually transmitted infections and sexual violence on sexual norms; the commodification of sex and the social control of sex.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 204 Criminology 3.0 Credits
Criminology is the scientific study of crime, criminal behavior and societal responses to crime and to crime victims. Students will study theories of crime causation, crime types, ethics of research, data collection and methods of crime prevention and control. Issues such as capital punishment, gun control and restorative justice will be debated.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 205 Criminology & Criminal Justice 3.0 Credits
Introduces the scientific study of crime and criminals. Analyzes the theoretical and empirical literature on causation and control. Examines our criminal justice system and approaches to corrections.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 210 Race and Ethnic Relations 3.0 Credits
Examines cultural diversity, racial and ethnic identity; racism, discrimination and prejudice, as well as minority-majority group relations both globally and at home. Special attention will be paid to the history and present status of various major racial and ethnic groups in the United States including African Americans, Latinos, Asian Americans as well as "white" ethnicities.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 215 Sociology of Work 3.0 Credits
Examines the transformation of work in 21st century America. Focuses on problems of the "post industrial" workforce: big service sector, shrinking real wages, huge growth in temporary and part-time jobs. Special attention to global factors affecting the career path of recent college graduates.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 220 Wealth and Power 3.0 Credits
Examines the extent of differences in wealth and political power in modern society and looks at the origins and implications of those differences.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 225 Sociology of Technology & Aging 3.0 Credits
This course will provide and introduction to the emerging field of "gerontechnology," i.e., technological tools designed to help older and chronically ill persons maximize their independence and manage their health issues. Special attention will be paid to the social, policy, design and ethical aspects of technology acceptance and implementation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 230 Women & Men in a Changing Society 3.0 Credits
Explores the status and roles of modern women and men, with emphasis on changes in family relationships, career options, and lifestyle alternatives.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 235 Sociology of Health 3.0 Credits
Examines the history, economics, and politics of our health-care system and the effects of technology on the quality of health care.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SOC 101 [Min Grade: D] or ANTH 101 [Min Grade: D]

SOC 240 Urban Sociology 3.0 Credits
Provides an overview of the contemporary process of urban change and of key problems and policy issues. Concentrates on five concerns: the evolution of urban economics; life and culture in the city today; race, ethnicity, gender, and class of urban populations; urban politics and social forces; and new directions in urban development.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 250 Research Methods I 3.0 Credits
Covers research design, measurement, sampling, survey research, field experiments, content analysis, interviewing techniques and ethics pertaining to research on human subjects. Prepares students to carry out simple empirical research projects as well as to become more sophisticated readers of sociological research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 260 [WI] Classical Social Theory 3.0 Credits
Critically examines the ideas of the classical sociological theorists (e.g., Marx, Durkheim, and Weber). This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 268 Sociology of Sport 3.0 Credits
The course examines the cultural and social aspects of sport. Students will be introduced to sport as a ubiquitous institution in American society as well as the essential characteristics and functions of sport from both a sociological and historic perspective.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 270 Theory of Applied and Community Sociology 3.0 Credits
Introduces the theory and methods of participatory research, focusing on exemplary case studies. The roots of participatory sociology in liberation theology, feminism, and Deweyian pragmatism are presented.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 275 Issues in Domestic Violence 3.0 Credits
Domestic Violence is a major public health problem. This course will describe DV in the context of multiple response systems including health care, police, advocacy, and criminal justice. We will explore how DV affects men, women and children and examine societal conditions that allow DV to occur and continue.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 310 Topics in Political Sociology 3.0 Credits
Examines social bases of politics; political power, bureaucracy, and social structure; sources and development of democracy and dictatorship; and political attitudes, movements, and parties.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 4 times for 12 credits
Restrictions: Cannot enroll if classification is Freshman

SOC 311 Topics in Sociology of Religion 3.0 Credits
Examines the sociological basis of religion, religious thought and movements as well as the organization and social function of religion on social institutions and groups.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 4 times for 12 credits

SOC 312 Topics in Sociology of Science and Technology 3.0 Credits
Examines the sociological basis of scientific theorizing, knowledge production and research as well as the organization and social function of scientific labor and the impact of applied science on social institutions and groups.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 4 times for 12 credits

SOC 315 HIV/AIDS and Africa 3.0 Credits
This course focuses on the social construction of HIV/AIDS – it explores the culture, social, epidemiologic, political, psychological, philosophical, economic, public health, and public policy dimensions of HIV/AIDS on a global level, especially in sub-Saharan Africa. Students examine case studies, interviews and documentaries on HIV/AIDS in Africa.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SOC 101 [Min Grade: D]

SOC 320 Sociology of Deviant Behavior 3.0 Credits
Examines theories of deviance, focusing on their attribution of causation and the implications for correction and/or control at both the individual and societal levels. Includes topics such as alcoholism, mental illness, criminality, and other deviant behaviors.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 325 Introduction to Urban and Environmental Planning 3.0 Credits
This course serves to introduce students to the field of urban and environmental planning. In doing so, this course seeks to expose students to the skill sets used by planners: including the planning process; citizens participation models; community needs assessment; data analysis and presentation; plan implementation and evaluation; and professional ethics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 330 Developing Nations and the International Division of Labor 3.0 Credits
Focuses on the ways in which the international economy affects the class structure, politics, and development of developing nations. Focuses particularly on multinational corporations and on the successes and failures of import-substitution and export-oriented industrialization programs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 335 Sociology of Education I 3.0 Credits
First course of a two-term sequence. Provides a general introduction to the sociology of education through the study of social, political, and cultural forces operating on public education in the United States and Britain. Examines theories, methods, and case studies to explore issues of identity formation, inequality, and class reproduction in an attempt to understand the role of schooling in contemporary life.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 336 Sociology of Education II 3.0 Credits
Continues SOC 335. Students will be involved as literacy coaches tutoring critical literacy skills. Upon completion of 40 hours of tutoring, students will receive a Certificate of Literacy Teaching.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SOC 335 [Min Grade: D]

SOC 340 Globalization 3.0 Credits
This course investigates the causal factors for the emergence of what is known as globalization, global economy, global village, etc. It covers the effects of global changes on national political systems, on ecology and on local cultures. The role of the US and reactions to the new world order will also be considered.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 341 Environmental Movements in America 3.0 Credits
Focuses on key collective actors and institutions that are involved in the creation of U.S. environmental policies, including historical and cultural processes of change involving social movements, environmental advocacy organizations, foundations, and the media.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 343 The American Experience of the Wilderness 3.0 Credits
Focuses on the ecological systems and the biodiversity; various social constructions and ideologies surrounding the idea of wilderness that inform practices toward nature; and the development of wilderness protection efforts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 344 Social Movements 3.0 Credits
Focuses on historical and social processes by which social movements arise, set in motion of social change, and the outcomes of social movement efforts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 345 Sociology of the Environment 3.0 Credits
Examines acts of nature vs. acts of man, food and health, environmental politics, social movements and environmental issues, environmental and development policies, and environmental and global change.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 346 Environmental Justice 3.0 Credits
Focuses on the political economy of environmental injustice and the impact of social movements addressing it; impact of chemical pollutants on human health; and the scientific and legal issues surrounding the study and regulation of pollutants.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SOC 347 Introduction to Environmental Policy Analysis 3.0 Credits
Introduction the development and implementation of U.S. environmental policy, including historical development, political process, methods of analysis and creation of laws, regulations and budgets.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 349 Sociology of Disasters 3.0 Credits
Focuses on social aspects of disasters, such as: collective behaviors (panic, crime, improvisation); warning, evacuation and perception of risk; social responses to natural and technical disasters; scientific uncertainties and technical disasters; social produced age, gender, racial/ethnic and social class vulnerabilities to disaster; terrorism-caused disasters; and disaster preparedness and prevention.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 350 Research Methods II 3.0 Credits
Building on Research Methods (SOC 250) this course provides the student with the opportunity to apply research methods by implementing their own individual and group projects. Focus is on research design, developing research questions and hypotheses, instrument construction, data collection, simple data analysis and reporting.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SOC 250 [Min Grade: D]

SOC 364 Computer-Assisted Data Analysis 3.0 Credits
This course focuses on using specialized software for organizing and manipulating empirical databases as well as performing basic applied statistical analyses. Attention will be paid to the selection, set up, execution and interpretation of procedures for both univariate and bivariate analysis. These procedures will include, but not be limited to, univariate measures of central tendency and dispersion; categorical data analysis; t-tests and crosstabulation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SOC 250 [Min Grade: D]

SOC 365 Computer-Assisted Data Analysis II 3.0 Credits
Building on SOC 364, this course covers more advanced statistical techniques such as regression, correlation, analysis of variance and multiple regression.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SOC 364 [Min Grade: D]

SOC 370 Practicum in Applied and Community Sociology 0.5-5.0 Credits
This course is central to the newly adopted emphasis of the sociology major on participatory research. These courses are intended as the practicum and supervised project-oriented research work for community organizations and agencies.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman

SOC 380 Special Topics in Sociology 3.0 Credits
This course will explore current issues and debates in Sociology. It will be conducted as a seminar. The topic will vary each term.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

SOC 395 Seminar in Sociology 3.0 Credits
The sociology majors' seminar is taken every year for repeating credit. A peer monitored seminar in which students discuss and support each other's research and scholarship. It features guest faculty and non faculty discussants, and provides majors with a focused exposure to the process of research and scholarship.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 5 times for 15 credits
Restrictions: Can enroll if major is SOC.

SOC 435 Seminar - Organization of American States 3.0 Credits
Prepares students to participate in a model session of the Organization of American States (OAS). Covers international political economy, structure and operation of OAS, characteristics of designated country, and public speaking and debate. Open to students in international area studies and sociology. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Can enroll if major is COMM or major is IAS or major is SOC.

SOC 460 [WI] Contemporary Social Theory 3.0 Credits
Covers a broad range of theories that guide contemporary sociological thought This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SOC 260 [Min Grade: D]

SOC 470 Social Change & Planning 3.0 Credits
This course will focus on sociological scholarship that either explains social change or seeks to promote social change through applied research or planning. The format of the course is an advanced seminar in which students will produce a series of participatory reaction papers to a variety of presentations by faculty and guest presenters.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Senior.

SOC 490 Sociology Research Seminar I 4.0 Credits
An in-depth exploration of selected topics. Projects are selected by students in consultation with a faculty member.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Senior.

SOC 491 Sociology Research Seminar II 4.0 Credits
Continuation of SOC 490.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Senior.
Prerequisites: SOC 490 [Min Grade: D]

SOC 492 Sociology Research Seminar III 4.0 Credits
Continuation of SOC 491.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SOC 491 [Min Grade: D]

SOC 495 Directed Studies in Sociology 0.5-12.0 Credits
Provides supervised study that allows students to explore topics of their own choosing individually.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Spanish

Courses

SPAN 101 Spanish I 4.0 Credits
Introductory Spanish. Includes listening, speaking, reading, and writing. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SPAN 102 Spanish II 4.0 Credits
Continues SPAN 101. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SPAN 101 [Min Grade: D]

SPAN 103 Spanish III 4.0 Credits
Continues SPAN 102. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SPAN 102 [Min Grade: D]

SPAN 201 Spanish IV 4.0 Credits
Intermediate Spanish. Includes grammar review, listening, speaking, and reading. Recommended for students who wish to attain oral competence. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SPAN 103 [Min Grade: D]

SPAN 202 Spanish V 4.0 Credits
Continues SPAN 201. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SPAN 201 [Min Grade: D]

SPAN 203 Spanish VI: Conversation & Comprehension 4.0 Credits
Provides intensive practice in comprehension and written and oral communication. Emphasizes development of writing skills and increased oral competence in everyday situations. Offered all terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SPAN 202 [Min Grade: D]

SPAN 311 [WI] Introduction to Spanish Stylistics 3.0 Credits
Provides advanced practice in comprehension and written and oral communication, based primarily on periodicals and contemporary media. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SPAN 203 [Min Grade: D]

SPAN 312 [WI] Spanish Stylistics 3.0 Credits
Continues SPAN 311. Provides extensive study of the techniques of translation and communication. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SPAN 311 [Min Grade: D]

SPAN 313 [WI] Advanced Spanish Stylistics 3.0 Credits
Continues SPAN 312. Provides advanced training in oral and written communication in Spanish. Particularly recommended for students who have pre-proficiency status, Spanish minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 331 Introduction to Spanish Literature Studies 3.0 Credits
Advanced Spanish. Reading, writing, and extensive conversational practice based on masterpieces of Spanish literature.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 332 Studies in Spanish and Spanish American Literature 3.0 Credits
Includes reading and oral and written analysis of representative texts in Spanish and Spanish-American literature, including familiarization with the historical and cultural contexts. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 333 Advanced Spanish and Spanish American Literature 3.0 Credits
Continues SPAN 332. Provides advanced study of Spanish and Spanish-American literature. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 351 Introduction to Business & Professional Spanish 3.0 Credits
Advanced year. Provides intensive oral practice and written work in business, professional, and commercial Spanish. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 352 Business & Professional Spanish 3.0 Credits
Advanced business and professional Spanish. Advanced practice in oral and written Spanish for business and the professions. Based on advanced texts, periodicals, and technical journals.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 8 times for 24 credits
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 353 Advanced Business & Professional Spanish 0.5-20.0 Credits
Provides advanced study in business and professional terminology, with emphasis on the structure and protocols of the business world. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 371 Special Studies in Spanish Civilization & Culture 3.0 Credits
Presents an integrated approach in Spanish to the civilization, culture, history, and literature specific to the areas in which the language is spoken, with emphasis on the development and evaluation of cultural values. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 399 [WI] Advanced Independent Study in Spanish 0.5-12.0 Credits
Provides supervised study of special subjects in Spanish language and literature. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

SPAN 411 [WI] Special Studies in Advanced Spanish Stylistics 3.0 Credits
Continues SPAN 313. Particularly recommended for students who have proficiency status, Spanish minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 431 [WI] Special Studies in Advanced Spanish and Latin American Literature 3.0 Credits
Continues SPAN 333. Particularly recommended for students who have proficiency status, Spanish minors, and students interested in graduate study and/or international careers. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 451 Special Studies in Advanced Spanish for Business and the Professions 3.0 Credits
Continues SPAN 353, with emphasis on the structure and protocols of the European Union. Particularly recommended for students who have proficiency status, Spanish minors, and students interested in graduate study and/or international careers. Offered as needed.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 471 [WI] Special Studies in Spanish and Latin American Civilization 3.0 Credits
Presents an integrated approach, at the advanced level, to the civilization, culture, history, and literature of a given period specific to the areas in which Spanish is spoken, with emphasis on the development and evaluation of cultural values. Offered as needed. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: SPAN 312 [Min Grade: D]

SPAN 480 Spanish Minor Thesis Course 4.0 Credits
Independent research study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study. At the end of the course, the student is required to produce a paper and oral defense on the topic of his paper.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

SPAN 499 [WI] Special Topics in Spanish 0.5-12.0 Credits
Recommended for Spanish minors and for students with proficiency status. Offered all terms. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Women's Studies

Courses

WMST 101 Introduction to Women's Studies 3.0 Credits
Offers an interdisciplinary, cross-cultural survey of the ways in which gender interacts with race, age, and class to shape human consciousness and determine the social organization of human society.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

WMST 230 Arab Women Writers 3.0 Credits
From Maghrebian Algeria and Morocco to Middle Eastern Egypt and Iraq and Lebanon, Arab women writers depict life in their countries or an unnamed desert state, from the 1940's to the Iraq War, raising critical questions about society, politics, economics and woman's place in doing so.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

WMST 235 African Francophone Women Writers 3.0 Credits
An introduction to the writing of some Francophone women writers from West and Sub-Saharan Africa. With each writer, the status, roles and challenges of women in their respective countries and societies will be examined.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

WMST 240 Women and Society in a Global Context 3.0 Credits
Studies women in a global society with one major area covered during each offering. Offered each year to accommodate one major world area.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

WMST 250 African American Herstories 3.0 Credits
Students gain insights into three distinct historical periods of African American (American) History and a cross section of African American life through the reading, analysis, and discussion of selected African American women's autobiographies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

WMST 275 Women's Health & Human Rights 3.0 Credits
This course explores the relationships between women's health and human rights under political and socially constructed influences. Health and well being are intricately associated with fundamental rights. We will conduct a comprehensive overview of women's health by engaging in lectures, class discussions, readings, journaling, group work, interviews and in-class activities.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

WMST 280 Special Topics in Women's Studies 3.0 Credits
Gives students an opportunity to apply the interdisciplinary methodology of women's studies to a focused topic. Topics to be announced. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

WMST 299 Independent Study in Women's Studies 12.0 Credits
Independent study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

WMST 301 Seminar in Feminist Theory 3.0 Credits
Studies theoretical perspectives offered by feminist scholars in a range of disciplines from literature to politics. Proceeds from the assumption that feminist approaches yield different answers to traditional questions and pose new questions for critical inquiry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: WMST 101 [Min Grade: D]

WMST 308 Queer Theory 3.0 Credits
In an attempt to theorize the meaning of "queer" (and, in turn, its counterparts - "normal" and "straight") and to articulate what "queer theory" is/does, this course will examine major attempts to challenge the concept of "normal" and explicate the meaning and use of the concept "queer".
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

WMST 320 Masculinities 3.0 Credits
An exploration of how masculinity is lived its multiple forms, traditional and alternative, in contemporary Western society. This course aims to arrive at a theory of masculinity – what does it mean to be "masculine"?.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman

Writing

Courses

WRIT 210 [WI] The Peer Reader in Context 3.0 Credits
This course focuses on reading and writing practices. Students engage in autobiographical explorations and examine writing center theory and practice. After successful completion, students may apply to become a Drexel Writing Center Peer Reader.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (ENGL 101 [Min Grade: C] and ENGL 102 [Min Grade: C])

WRIT 220 [WI] Creative Nonfiction Writing 3.0 Credits
A writing workshop in which in which students will read and write nonfiction; emphasis is placed on experimenting with different forms as the personal essay, literary journalism, nature writing, science writing and editing and preparing manuscripts for publication. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 225 [WI] Creative Writing 3.0 Credits
A workshop course in composing imaginative forms of personal expression, including poems, short stories, plays, and personal essays. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 301 [WI] Writing Poetry 3.0 Credits
A writing workshop in which students will read and write poetry; emphasis is placed on experimenting with different forms of poetry, editing, and manuscript preparations for publication. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 302 Writing Fiction 3.0 Credits
A creative writing workshop course focusing on fiction. Students read and write short stories. Students develop skills by creating complete fictional works and critiquing the work of other students. Emphasis placed on narrative structure, prose style, pacing, voice and tone, appropriate material, character, plot, description, dialogue, and editing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 303 Writing Humor and Comedy 3.0 Credits
A creative writing course focusing on humor and comedy. Students read and write satire, essays, social commentary and special forms. Students develop skills by creating complete works and critiquing the work of other students. Emphasis is placed on writing for specific audiences, narrative structure, prose style and editing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 304 [WI] Special Topics in Writing 3.0 Credits
A variable topics course in writing in which students will read and write in different genres, according to the specific topic (i.e., Writing Fiction; Joking, Comedy and Laughter: Memoir and Autobiography: Nature Writing); emphasis is places on editing and manuscript preparation for publication. This is a writing intensive course.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits
Restrictions: Cannot enroll if classification is Freshman or Sophomore
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 306 Writing About the Media 4.0 Credits
This course teaches students how to write about media events and artifacts (books, movies, theatre, music, etc.), both as individual works and in a larger cultural context. It also teaches them about the kinds of media outlets which publish reviews and the style of writing these outlets favor.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D] and ENGL 103 [Min Grade: D]) or ENGL 105 [Min Grade: D]

WRIT 310 Literary Editing & Publication 3.0 Credits
A course focusing on the techniques of editing, copyediting, proofreading, graphic selection and placement, the development of qualitative standards in manuscript selection for literary texts as well as connecting useful editorial/publication practice and social concerns in the fields of literary production.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 312 The Practice of Professional Writing 3.0 Credits
This seminar acquaints students with the broad spectrum of work in professional writing, including reading and discussion of assigned research on various aspects of writing, and panel discussions with guest speakers, experienced professional writers and managers who work writers. Students research a writing-related field or topic.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 400 [WI] Writing in Cyberspace 4.0 Credits
Students explore the world of cyberspace, learning about cyberpunk, hyperfiction and the literary theory related to them, operating in a MOO, and developing a website for a specific audience. Students consider these online environments critically and reflect on their significance. No previous computer experience required.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore

WRIT 405 Internship in Literary Publishing 2.0 Credits
Internship in Literary Publishing offers students practical experience in journal publication. One such example is Painted Bride Quarterly, which is produced both electronically and in print.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 6 credits
Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

Graduate Course Descriptions

Bioscience & Biotechnology

Courses

BIO 500 Biochemistry I 3.0 Credits
Covers the fundamentals underlying the energetics and kinetics of macromolecular interactions of enzymes, membranes and nucleic acids in living systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 501 Biochemistry Laboratory I 2.0 Credits
Accompanies BIO 500.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C], BMES 501 [Min Grade: C] (Can be taken Concurrently)

BIO 509 Comparative Physiology Laboratory 2.0 Credits
Computational laboratory examining quantitative facets of vertebrate physiology through simulation experiments. Complements BIO 510 Comparative Physiology. Example systems examined include gas and solute exchangers, open vs. closed circulations, and thermoregulatory controllers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 510 [Min Grade: C] (Can be taken Concurrently)

BIO 510 Comparative Physiology 3.0 Credits
Physiology of vertebrate and invertebrate animals focusing on how organisms meet environmental challenges (e.g., aquatic respiration). Focus is on mechanisms of homeostasis, particularly those significantly different from processes in human physiology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 526 Immunology 3.0 Credits
Covers the fundamental concepts f innate and adaptive immunity, including the molecular and cellular mechanisms that generate responses to a broad spectrum of infectious threats, self/non-self recognition, immune regulation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 530 Microbial Genetics 5.0 Credits
Covers genetic organization and regulation in viruses (primarily bacteriophages), bacteria, fungi, and algae; techniques of genetic manipulation of microbial genomes; genetic interactions of microbes under natural conditions; and the use of microbial modification in industrial processes.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 532 Advanced Cell Biology 3.0 Credits
This course covers the essentials of cell biology and discusses the life and behavior of cells in the context of the molecules that underlie and drive these processes. In particular, the course focuses on regulation and how integration and coordination is required for normal cell behavior.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 540 Readings in Molecular and Cellular Bioscience and Biotechnology 3.0 Credits
A reading course for first year graduate students based on current manuscripts from the primary literature. The goals of this course are from students to be exposed to the most current findings using primary literature, become skilled in critically reading the primary literature, and to gain experience in making presentation based on a set of papers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 551 Genetic Regulation of Development 3.0 Credits
Covers molecular and genetic control of morphogenesis and cellular differentiation. Focuses of differential gene function and the interaction between the nucleus and the cytoplasm.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 562 Biology of Neuron Function 3.0 Credits
Covers molecular and cellular mechanisms underlying neuron function. Topics include: molecular and cellular biology of neurons and neural development; molecular biology and physiology of sensory and motor neurons; molecular biology of muscle function; molecular and cellular basis of learning and memory in model organisms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 565 Neurobiology of Disease 3.0 Credits
The objective of the course is to provide a basic understanding of molecular and cellular biology of disorders of the human nervous system. Advances developed from experimental models that have armed clinicians and basic scientists with new tools for diagnosis and treatment of disease and injury will be presented.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 566 Endocrinology 4.0 Credits
Describes the classical hormones, their regulation and major clinical abnormalities. New directions in endocrinology, such as cellular regulation and cellular mediators of hormonal action are also considered. The major focus of the course will be on mammals, although some examples involving other vertebrates will be included.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 570 Teratology 3.0 Credits
This course will expand on the concepts of developmental biology by examining the agents that interfere with normal development. We will be exploring these agents through presentations and discussion of current peer reviewed literature. The focus will be on an understanding of mechanisms of action and how they are influenced by dose, pharmacology and genetics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 601 Research Methods 3.0 Credits
This course will provide graduate students in the biological and environmental sciences with the fundamentals needed to develop effective research questions and to design sound approaches to address these questions. A critical component of this course will be development of a research proposal with feedback from the instructor and student colleagues.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is BIO or major is ENVS.

BIO 610 Biochemistry of Metabolism 3.0 Credits
Covers how enzymes function and form metabolic pathways, how the pathways fit into cell physiology, and how these pathways are regulated. Overall considers how organisms digest nutrients and utilize them to support life. The terminology and technology commonly employed in contemporary biochemistry laboratories are emphasized.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 611 Biochemistry Laboratory II 2.0 Credits
Accompanies BIO 610.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: BIO 610

BIO 613 Genomics 3.0 Credits
This course aims to elucidate current technologies, theory, and applications of genomic research. Though a large emphasis will be placed on the use of genomic tools to study human health, we will also study the genomes, transcriptomes, and proteomes of bacteria, fungi, plants, and other animals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 615 Proteins 3.0 Credits
Discusses protein structure, function, and isolation. Emphasizes biochemical, biophysical, and molecular biological techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 616 Biochemistry of Major Diseases 3.0 Credits
This course focuses on the biochemical bases of several selected human disorders including neoplasm, cardiovascular disorders, diabetes and obesity. Biochemical changes and their regulation by signaling pathways under the disease conditions will be examined. The relevance of diagnosis and treatment will be discussed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 620 Biomembranes 3.0 Credits
Covers biochemical properties of membranes and membrane components, including phase properties, structure, organization, permeability, transport, and biosynthesis of membrane components.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 625 Nucleic Acids 3.0 Credits
Discusses nucleic acid biochemistry. Emphasizes nucleic acid separation techniques, sequencing, and synthesis techniques, as well as methods of physical analysis. Uses current and classical literature as information sources.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 630 Cell Biology of Disease 3.0 Credits
An introduction to the pathobiology of human disease as it relates to principles of cytoskeleton and membrane biology. The course reviews basic intracellular mechanisms and examines how they go awry in respiratory, heart and kidney diseases, diabetes, cancer, neurodegeneration and during viral and microbial infections.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 631 Bioinformatics I 3.0 Credits
This course uses a combination of lecture and hands-on exercises to develop computational, algorithmic, and database navigation skills utilized in the analysis of genes and genomes. Topics include genomic databases, genome annotation, sequence alignment, metagenomic analyses, and phytogenetics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 633 Bioinformatics I Laboratory 2.0 Credits
In this course, students develop and apply computational skills in bioinformatics to address a quarter-long research project. Topics generally focus on the ecology and evolution of microbes, which have become much easier to study thanks to the advent of molecular tools and software for the analysis of DNA sequences.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 631 [Min Grade: C] (Can be taken Concurrently)

BIO 635 Advanced Genetics and Molecular Biology 3.0 Credits
Covers classical prokaryotic and eukaryotic genetics; DNA/RNA structure; DNA replication, transcription, translation and their regulation; major molecular techniques used in the analysis of genes and genomes. Includes readings from primary literature, covering recent advances and classical experiments in genetics, genomics and molecular biology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 640 Biometry 3.0 Credits
Provides a computational introduction to probability and data analysis via descriptive and inferential statistics for biological scientists with an emphasis on understanding statistics as probability statements about the inherently noisy data commonly encountered by biologists.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 641 Data Analysis in Biosciences 3.0 Credits
Covers the application of computer programs to the analysis of biological data. Focuses on the use of software for microcomputers and mainframes (SAS) for analysis of data and interpretation of results. Also covers use of computers for experiment design. Offered once per year in alternate terms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 642 Modeling Methods in Biology I 3.0 Credits
Offers practical experience in modeling simple biological systems. Presents applications of linear, trigonometric, and exponential functions in biology. Covers the use of differential and integral calculus, simple differential equations, and the Eulerian approach to simulation; emphasizes practical computational use of such tools in biological problems. Offered in alternate years.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 122

BIO 643 Modeling Methods in Biology II 3.0 Credits
Offers a practical introduction to modeling of dynamic biological processes, including deterministic and stochastic processes. Emphasizes the development and construction of working models of real biological systems and interpretation of results. Discusses both mechanistic and empirical/predictive models. Covers Euler and Runge-Kutta techniques, and feedback loops. Emphasizes practical simulation throughout. Allows students to develop their own model of a real-world biological process. Offered in alternate years.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is BMS.
Prerequisites: BIO 642 [Min Grade: C]

BIO 644 Human Genetics 3.0 Credits
Covers the fundamentals and principles of genetics with an emphasis on their relevance to human genetics and disease. Topics include human genetic disorders, pedigree analysis and genetic testing, cytogenetics, epigenetics of cancer, gene therapy, stem cell research and human genomics and biotechnology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 646 Stem Cell Research 3.0 Credits
This course will focus on recent and important topics relevant to stem cell research and development. Topics will include nuclear reprogramming and epigenetics, environmental influences on stem cell differentiation, stem cells and cancer, stem-cell-based therapies for heart and neurogenerative disorders, stem cells and ageing, and politics of stem cell research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 648 Signal Transduction 3.0 Credits
This course will focus on the mechanisms of cell-cell communication and signal transduction in eukaryotic organisms. It will present an overview for the general mechanisms of different signaling pathways, and will also discuss in detail the molecular mechanisms by which these signal transduction pathways are regulated in a developmental context.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 649 Recombinant DNA Laboratory 5.0 Credits
This course gives a practical introduction to the basis of recombinant DNA manipulation in the laboratory. Students learn the theory behind how DNA functions and how to experimentally test these functions in the laboratory setting. Basic and advanced techniques are covered in this course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 650 Virology 3.0 Credits
Discusses major viral groups, including biochemistry and molecular genetics of viral replication, structure, gene expression, latency, and role in disease.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 660 Microbial Physiology 3.0 Credits
Covers the physiology and metabolism of microorganisms. Emphasizes aspects unique to prokaryotes, including envelope structure, chemotaxis, transport systems, modes of nutrition, biosynthesis, growth, and mechanisms of action of antibiotics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 663 Molecular Mechanisms of Neurodegeneration 3.0 Credits
This is an advanced course on the current, primary literature in the area of neurodegeneration. Students are expected to be conversant in areas of Genetics, Cell Biology, Molecular Biology, Biochemistry, and Neurobiology. This is a discussion course based on reading current manuscripts from the primary literature.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 532 [Min Grade: C]

BIO 670 Medical Microbiology 3.0 Credits
Covers infectious diseases in humans, including mechanisms of pathogenicity, techniques of diagnosis, modes of transmission, and methods of treatment.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 675 Advanced Immunology 3.0 Credits
Covers failure in hose defense, immunotherapies, clinical concepts in immunology, and emerging concepts in immunology research. Material is presented in a combination of a Lecture and Journal club format with a focus on class participation, presentation and discussion.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 526 [Min Grade: C]

BIO 679 Issues in Scientific Research 3.0 Credits
The course will cover topics related to the appropriate and correct conduct of personnel in a research setting. Issues will be discussed dealing with choosing a research mentor, how to record data, authorship and publication, and the correct and ethical treatment of animal and human subjects.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: BIO 500 [Min Grade: C]

BIO 680 Special Topics 9.0 Credits
Covers special topics of current interest on an individual or group basis.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

BIO 799 Independent Study 3.0 Credits
Provides independent study in Biological Sciences.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

BIO 864 Graduate Research Seminar 1.5 Credit
This research seminar is a forum for Biology PhD students to present on their research to faculty and graduate student peers. Discussion of the scientific content as well as feedback on presentation style and quality follows every presentation.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Can enroll if major is BIO or major is ENVS and program is MS or MSES or PHD.

BIO 865 Biology Department Research Seminar 1.5 Credit
This weekly research seminar provides a forum for international and national leaders in Biology to present the latest finding from their specialty.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

BIO 898 Master's Thesis 0.5-20.0 Credits
Master's thesis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

BIO 997 Research in Bioscience 0.5-20.0 Credits
Research.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

BIO 998 Ph.D. Dissertation 1.0-12.0 Credit
Ph.D. dissertation.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Chemistry

Courses

CHEM 521 Inorganic Chemistry I 3.0 Credits
Covers the principal models of inorganic chemistry: structure and bonding, interactions in the solid state, coordination compounds, complexation equilibria, and acid-base models.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 522 Inorganic Chemistry II 3.0 Credits
Covers group theory in inorganic chemistry, including crystal field descriptions of transition metal chemistry and qualitative molecular orbital approach to and spectroscopic methods for inorganic molecules.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 521 [Min Grade: C]

CHEM 523 Inorganic Chemistry III 3.0 Credits
Covers constitutions and properties of organometallic compounds, including carbonyls and nitrosyls. Also covers kinetic properties of mononuclear and biometallic centers. Includes computer modeling/display of inorganic structures.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 522 [Min Grade: C]

CHEM 530 Analytical Chemistry I 3.0 Credits
Covers principles and techniques of optical methods of analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 531 Analytical Chemistry II 3.0 Credits
Covers physical and chemical methods of separation, including distillation, solvent extraction, and chromatographic and ion-exchange techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 532 Analytical Chemistry III 3.0 Credits
Covers electroanalytical principles and techniques of potentiometry, voltametry, and coulometry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 541 Organic Chemistry I 3.0 Credits
Covers spectroscopic methods for the determination of the structure of organic molecules.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 542 Organic Chemistry II 3.0 Credits
Covers static and dynamic stereochemistry; conformational theory; relationships between structure and reactivity in organic reactions; and applications to asymmetric synthesis, physical measurements, and biochemical mechanisms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 543 Organic Chemistry III 3.0 Credits
Covers mechanisms of organic reactions and the techniques of studying them.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 551 Radiochemistry 3.0 Credits
Covers radioactivity; interaction of radiation with matter; radiation detectors; nuclear reactors; hot atom chemistry; carbon-14 dating; and neutron activation analysis and its applications to pottery dating, environment, lunar studies, and forensics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 554 Chemical Kinetics 3.0 Credits
Focuses on experimental and theoretical consideration of chemical reaction rates.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 555 Quantum Chemistry Of Molecules I 3.0 Credits
Covers general properties of operators; Schrodinger's equation and its solutions for a particle in a box; harmonic oscillator, tunneling problems, rigid rotor, and the hydrogen atom; approximation methods; and absorption of radiation and selection rules.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 557 Physical Chemistry I 3.0 Credits
Schrodinger's equation and particle-wave duality, atomic structure and spectra, optical spectroscopy on molecules (rotational, vibrational and electronic spectra) molecular symmetry, design of modern spectrometers, magnetic resonance spectroscopy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 558 Physical Chemistry II 3.0 Credits
Covers statistical mechanics of distinguishable and indistinguishable particle systems, and thermodynamic functions for both systems and chemical equilibrium.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 557 [Min Grade: C]

CHEM 561 Polymer Chemistry I 3.0 Credits
Covers step growth, polymerization (including polyesters, polycarbonate, nylon, epoxies, urethanes, and formaldehyde-based polymers), step growth kinetics, molecular weight distributions, infinite networks and gelation, techniques of polymerization, ring opening polymerization, thermodynamics of polymer solutions, biological polymers, inorganic polymers, biomedical applications, and electrically conducting polymers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 562 Polymer Chemistry II 3.0 Credits
Includes chain growth polymerization (free radical, ionic, coordination, group-transfer, radiation-induced, and electrochemical polymerizations), kinetics of chain growth polymerization, molecular weight distributions, polymerization/depolymerization equilibria, techniques of polymerization, kinetics of polymerization, reactions of polymers, degradation of polymers, chain conformation and configuration, rubber elasticity, and copolymerization.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 563 Polymer Chemistry III 3.0 Credits
Covers polymer characterization and analysis; morphology; molecular weight determination, including end group analysis, and colligative properties (vapor pressure lowering, elbullometry, cryoscopy, osmometry); light scattering; viscosity; gel permeation chromatography; sedimentation; diffusion and permeation; polymer identification; plasticizers; x-ray diffraction; thermal behavior; and spectroscopic techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 561 [Min Grade: C]

CHEM 571 Chemistry of Biomolecules 3.0 Credits
This course is a chemistry-based approach to understanding the basic structure, chemical reactivity, and biological function of biomolecules – including amino acids, peptides, proteins, carbohydrates, nucleic acids, and lipids. A special emphasis will be given to topics in the frontiers of biomolecular research at the interface between chemistry and biology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 656 Quantum Chemistry of Molecules II 3.0 Credits
Continues CHEM 555. Covers matrix theory and group theory, atomic structures, and self-consistent field methods including the Hartree-Fock theory. Introduces theory of chemical bonding.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 555 [Min Grade: C]

CHEM 657 Quantum Chemistry of Molecules III 3.0 Credits
Continues CHEM 656. Covers the theory of chemical bonding, scattering theory, and detailed Hartree-Fock calculations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 656 [Min Grade: C]

CHEM 659 Physical Chemistry III 3.0 Credits
Covers interaction of molecules with electromagnetic radiation, including internal quantum states and structure of atoms and simple molecules, applications of atomic and molecular spectroscopy, and lasers in chemistry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 558 [Min Grade: C]

CHEM 680 Special Topics 9.0 Credits
Provides extended study of topics of particular interest to the class. Taught by various members of the faculty as appropriate for the given topic. Covers topics including computers in chemistry, magnetic resonance, organic synthesis, electrochemistry, mass spectrometry, electronic materials, molecular modeling, atmospheric chemistry, metallobiochemistry, radiochemistry, heterocycles, and photochemistry of small molecules.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CHEM 751 Magnetic Resonance In Chemistry 3.0 Credits
Covers basic principles of electron spin resonance and nuclear magnetic resonance; interpretation of chemical shifts, spin-spin couplings, and spin relaxation; and two-dimensional nuclear magnetic resonance.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 752 Biophysical Chemistry 3.0 Credits
Thermodynamics and kinetics to aqueous biological systems. Properties and behavior of biological macromolecules.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 753 Chemical Instrumentation 5.0 Credits
Provides hands-on training in the use of various spectroscopic (FT-IR, UV/VIS, fluorescence, AA), chromatographic (packed and capillary column GC, HPLC), and electrochemical (potentiometry, coulometry, polarography) techniques. Involves lectures with self-paced laboratory work.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

CHEM 755 Mass Spectrometry 3.0 Credits
Covers basic interpretive skills for organic and biochemical analysis; basic ion optics design using SIMON; survey of ionization methods, ion selection or separation techniques, and detectors; and applications in chemistry and biology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 767 Chemical Information Retrieval 0.5-20.0 Credits
Examines methods for retrieving literature information, via standard tabulations, journals, and abstracts, using hard-copy and electronic sources. Includes techniques for online searching of databases such as Chemical Abstracts, Beilstein, and crystallographic depositories.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 771 Organometallic Chemistry 3.0 Credits
Covers compounds with metal-carbon bonds, including molecular and electronic structures and bonding descriptions, constitutions, reactivities, and syntheses of main-group and transition metal carbonyl, alkene, alkyne, alkyl, and arene complexes and clusters.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 521 [Min Grade: C]

CHEM 772 Inorganic Biochemistry 3.0 Credits
Covers chemistry of metal ions in biological systems and biomimetic ligands and complexes. Includes metal ion chemistry in aqueous environments and structure and behavior of metalloproteins.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 521 [Min Grade: C]

CHEM 773 The Solid State 3.0 Credits
Covers types of bonding in solids, lattice specific heat, phonons, thermal conductivity, free electron gas, band theory of metals and semiconductors, intrinsic and extrinsic semiconductivity, and magnetic properties and superconductivity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 774 Electrochemistry for Chemists 4.5 Credits
Covers potentiometric, coulometric, voltammetric, and potential-step methods for eliciting electron-transfer thermodynamic and kinetic information from chemical and biological systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 780 Nuclear Magnetic Resonance Laboratory 3.0 Credits
This course provides theory and technical applications of Nuclear Magnetic Resonance to the solution of structural problems in Chemistry.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 782 Electronics for Chemical Instrumentation 4.0 Credits
Covers digital electronics for chemical instrumentation, including Boolean algebra and its applications to digital circuits, implementation of basic Boolean operations with solid-state devices, and applications of digital circuits to chemical instrumentation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 783 Electronics for Chemical Instrumentation II 3.0 Credits
Instrument components such as temperature, pressure, and light radiance controllers, etc. will be designed in the lectures and built and tested in the laboratory on the test board built by the student. It contains regulated +15, -15 and 5 regulated power supplies. Same sided wire wrap sockets allow amplifiers and other circuit elements to be easily and reliably mounted and connected. The test board belongs to the student.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 788 Atmospheric Radioactivity 0.5-20.0 Credits
Covers naturally occurring and anthropogenic radionuclides of significance in the earth's atmosphere, including their application as tracers of air mass movement, atmospheric dynamics, and other characteristics. Discusses important methods and techniques of measurement. Requires a term paper from students receiving 5 hours of credit.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 789 Experimental Design and Statistics in Chemistry 3.0 Credits
Covers descriptive statistics; single and multiple linear regression techniques for analytical calibration; analysis of variance methods; basic experimental design, including full and fractional factorial techniques; and experimental optimization using steepest ascent and simplex techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 792 Advanced Organic Synthesis I 3.0-5.0 Credits
Covers organic functional group transformation and manipulation. Includes oxidations, reductions, additions to pi bonds, substitution reactions including aromatic substitutions, and reactions of electron-deficient intermediates.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CHEM 793 Advanced Organic Synthesis II 3.0,5.0 Credits
Covers carbon-carbon bond forming reactions, organometallic reagents, cycloaddition reactions, and multistep synthesis of complex organic molecules including natural products.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

CHEM 794 Topics in Organic Reactor Mechanics 0.5-9.0 Credits
Covers current topics in organic reaction mechanisms, with emphasis on understanding the fundamental rules that govern the course and reactivity of chemical reactions.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Prerequisites: CHEM 541 [Min Grade: C] and CHEM 542 [Min Grade: C]

CHEM 796 Heterocyclic Chemistry 0.5-20.0 Credits
Explores general trends in the synthesis, reactions, and properties of oxygen, nitrogen, and sulfur heterocycles, with emphasis on their applications to the synthesis of bioactive materials.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 541 [Min Grade: C]

CHEM 797 The Organic Chemistry of Sulfur and Selenium 0.5-20.0 Credits
Covers fundamentals of organosulfur and organoselenium chemistry, with emphasis on the application of these elements to asymmetric synthesis and the synthesis of natural products.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: CHEM 541 [Min Grade: C] and CHEM 542 [Min Grade: C]

CHEM 862 Topics in Inorganic Chemistry 0.5-9.0 Credits
Covers specialized principles of inorganic chemistry plus contemporary advances in the field. May be repeated for credit when topics vary.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CHEM 865 Chemistry Research Seminar 9.0 Credits
Provides presentation and discussion of current research topics in chemistry.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CHEM 866 Topics in Polymer Chemistry 3.0 Credits
Covers fundamental concepts in conductivity, magnetism and optical properties, or organic and polymeric materials; elements of the organic solid state; chemical and electrochemical synthesis; structure characterization; and properties and applications of these polymers.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CHEM 868 Topics in Analytical Chemistry 5.0 Credits
Surveys new or developing instrumental or chemical analysis techniques. Covers spectroscopic, chromatographic, and/or electrochemical techniques for analysis of solutions or surfaces.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CHEM 898 Master's Thesis 0.5-9.0 Credits
M.S. thesis.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CHEM 997 Research 1.0-12.0 Credit
Requires students to select a topic for investigation and obtain the approval of the staff member in charge of the project. The hours and credits are determined for each individual.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

CHEM 998 Ph.D. Dissertation 1.0-12.0 Credit
Ph.D. dissertation.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit
Restrictions: Can enroll if major is CHEM.

Communication

Courses

COM 500 Reading & Res Communication 3.0 Credits
Introduces graduate study in the communication program. Presents issues and concepts for this course and other graduate courses. Focuses on issues such as reading complex texts, both theoretical and research-oriented. Also introduces the range of fields in professional communication.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 510 Technical Writing 3.0 Credits
An intensive workshop course in writing technical abstracts, proposals, manuals and reports. Focuses on developing reader-centered documents for a variety of audiences and purposes through the use of a number of styles. Aids students in developing greater awareness of the varieties of rhetorical situations and styles found in their careers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 520 Science Writing 3.0 Credits
An intensive workshop course in communicating scientific information to the public, including reading and discussion of science journalism. Focus is placed on how to translate and reinterpret technical and scientific information for a general readership.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 530 Techniques and Science of Photography 3.0 Credits
Introduces the techniques of photography. Enhances students understanding of photography to better enable them to use photographs and services of photographers as communicative media.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 540 Technical and Science Graphics 3.0 Credits
Covers the design and production of graphic materials for technical and scientific purposes. Allows students to begin to understand the visual aspects of communication. Focuses on the use of type, art, and photographs to reinforce the written message.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 550 Video Production for Science & Technology 3.0 Credits
Introduce the techniques of studio and field video production for technical and science subjects. Teaches students to produce their own video for training purposes or information access.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 570 Technical and Science Editing 3.0 Credits
Covers techniques of formal editing, including project and copy editing. Requires students to read, discuss and edit numerous types of documents from professional, government and industry sources.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 605 Sports Journalism 3.0 Credits
This course enables students to gain a deeper understanding of the meaning-making power of sports journalism. In it, we explore the changing role of the sports journalist, from the mythmaking and hero-worship seen during the field's infancy, to the detachment and devotion to the craft of journalism that marked sports reporting beginning in the mid-20th Century.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 610 Theories of Communication and Persuasion 3.0 Credits
Examines the application of theories and models of communication and persuasion. Introduces theories underlying technical communication and issues informing the discipline. Draws readings from a number of disciplines, such as rhetoric, cognitive psychology, discourse analysis, linguistics, and communication.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 611 Interconnections: Science, Technology, Literature and the Arts 3.0 Credits
Examines issues concerning relations among science, technology, literature, and the arts, and leads students to learn something if the nature of science and technology and explore the contribution of literature, the arts, and aesthetic theory to effective science and the technical communication.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 612 Ethics for Science and Technical Communication 3.0 Credits
Studies principles and concepts of ethics for technical and scientific writers, editors and publishers. Examines moral presuppositions of the profession as they pertain to technical and scientific communications, to the effects of computer technologies on ethical practices in the workplace, and to the responsibilities of editors for preventing fraud.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 613 Ethics for Public Communication 3.0 Credits
This course is a seminar in journalism and public relations ethics. Topics discussed include: professional responsibilities of journalists with respect to truth-telling and objectivity in reporting the news; ethical issues surrounding morally offensive radio and television content; ethical issues concerning what is and is not covered by the news and manipulative advertising.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 616 Campaigns for Health and Environment 3.0 Credits
This reading and writing intensive, seminar-style course explores theories and practical aspects of environmental information campaigns and community-based social marketing campaigns. The theories and frameworks presented in this course apply to health issues as well as environmental issues. This course has a strong applied component.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 617 [WI] Environmental Communication 3.0 Credits
This reading and writing intensive course will explore communication about environmental issues. Topics can include advocacy campaigns, social marketing, environmental journalism, media coverage of environmental issues, green marketing, the environment in popular culture, risk communication, and public participation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 620 Message Design and Evaluation 3.0 Credits
Examines research and theory on the design of messages. Introduces research methodologies appropriate for the evaluation of scientific and technical communications. Examines research in document design and usability, testing and other strategies for collecting, analyzing and presenting data.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 625 Cultural Significance of Fame 3.0 Credits
This course explores our fascination with fame and celebrity, and the desire of so many people to achieve fame: from Alexander the Great to American Idol. Key issues include: the mass media's role in creating the cultural significance of fame, psychological characteristics of fame seekers, and changes in what it means to be a fan of the famous.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 630 Software Documentation 3.0 Credits
Teaches the principles and goals involved in writing, revising, and testing computer documentation, both paper and on-line. The focus will be on the end user documentation, although the principles involved may also apply to systems documentation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 635 Electronic Publishing 3.0 Credits
Electronic Publishing gives students applied and theoretical knowledge of professional electronic publishing. Students will focus on issues relating to writing and integrating text and graphics to create websites and on-line publications. Students will also consider how issues in document design and usability analysis can be used to evaluate websites.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

COM 640 Desktop Publishing 3.0 Credits
This course focuses on designing and developing publications using Desk Top publishing software. Students develop a publication plan for a specific organizational situation and learn basic design principles. Classes deal with planning, designing, writing and budgeting publications. Students concentrate on two major kinds of publications, brochures and newsletters, and will also learn about smaller publications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 650 Telecommunications Policy in the Information Age 3.0 Credits
The historical, governmental, social, economic and political structures of telecommunications policies are examined. Special emphasis is placed on how assumptions concerning living in an information age affect policies, philosophies, structures and outcomes, especially at a global level.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 655 Ethnography of Communication 3.0 Credits
Following an examination of theories about interaction in speech, the course provides and in-depth look at qualitative communication studies. Both transcripts of talk in natural settings and videos of actual interactions will be used. Considers such topics as story telling (narrative), self-presentation in talk (performance and identity), the construction of gender in communication, literacy, and cross-cultural approaches to politeness.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 657 Media Effects Advanced Seminar 3.0 Credits
In this course we will examine the contemporary facts and the discourse on media effects. The focus will be on electronic media.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 660 Investigative Journalism 3.0 Credits
An intensive hands-on course in researching and writing investigative news stories. Students will select and cover beats and submit a series of in-depth articles on deadline.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 663 Event Planning 3.0 Credits
This course will provide the student with the theoretical and practical fundamentals in understanding the complexities of producing special events across all major industries.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 665 Journalists, Courts and the Law 3.0 Credits
Students explore and apply techniques for covering the court system, and explore case law and recent key legal developments that have reshaped how journalists do their jobs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 500 [Min Grade: C] and COM 660 [Min Grade: C]

COM 670 Medical Writing 3.0 Credits
Students learn about the major branches of medical writing and editing, for both medical and pharmaceutical contexts. The course includes the following topics: writing for professional, commercial and popular audiences, preparing FDA submissions, reading and researching medical literature, using medical statistics, interviewing subjects and writing ethically.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 673 Medical Journalism 3.0 Credits
This course teaches students how to research and write articles geared to the medical field for the mass media and public relations, and to evaluate the scientific merit of medical research relative to the pressures on scientists, doctors, researchers, companies and universities to garner media attention.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 675 Grant Writing for the Arts and Humanities 3.0 Credits
Students develop the skills needed to write an effective grant proposal. Topics include idea development, analyzing a team's capabilities to complete a project, developing a clear plan of attack, locating funding sources, honing research skills, and effectively using graphic elements in proposal design.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 680 Public Relations Writing and Strategies 3.0 Credits
An intensive, advanced public relations course covering public relations theory, strategies and writing. Students will apply theory and tactics in the development of crisis communication plans and issue management strategies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 685 International Public Relations 3.0 Credits
This course is a comprehensive overview of international issues in PR including history and evolution of the field, image-formation and image-change processes, PR in war and conflict, effects of different political and legal systems on PR, actual PR practices in different countries and regions of the world.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 686 International Communication 3.0 Credits
This course is taught within the paradigm of media ecology. Such issues as the historical context, theoretical concepts, economic and structural aspects of international communication is considered. The effects of culture, language, religion, history, politics, and tradition on the process of international communication are also examined.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 687 International Negotiations 3.0 Credits
This course examines theoretical and practical elements of international negotiations. Students are taken into the work of diplomats, policymakers, and corporate leaders negotiating agreements and are guided through psychological, sociological, and political dimensions of the talks process. By the end of this course students will be able to analyze negotiations scientifically and professionally.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 690 Special Topics 3.0 Credits
Covers selected topics in technical and science communication. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

COM 701 Contemporary Social Theory 3.0 Credits
This course is a graduate level introduction to social theory, familiarizing students with original works by the major theorists of the late 19th century to the present. Students will especially examine the production of social theory as an ongoing conversation about the predicaments of modernity and post-modernity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 702 Communication Theory I 3.0 Credits
This course is an introduction to the study of persuasion and media effects. Readings include elements of persuasion and compliance seeking, as well as how persuasion takes effect through mass media. Course draws liberally from contemporary research in communication literature.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 703 Communication Theory II 3.0 Credits
Through readings of major theoretical ideas and voices, and occasional case examples, this course introduces students to theories of discourse and semiotics, including the role that language plays in social construction, discourse and post modernity, theories of the sign, structuralism and post-structuralism, pragmatics and language ideology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 704 Research Methods in Communication 3.0 Credits
This course familiarizes students with various quantitative research methods in communication research including analysis, survey research and experiments. Each state of the research process will be explored from hypotheses to defining and operationalizing variables. To effective sampling, to analysis and write-up. Also introduces students to a wide range of original research studies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 705 Data Analysis in Communication 3.0 Credits
Students are introduced to statistics for communication research, including quantitative analysis techniques for survey data and content analysis. Casual models, sampling and basic ideas of correlation and regression are discussed. Course is a hands-on approach with equal attention to technique and theoretical understanding, using SPSS software.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 710 Mass Communication and American Social Thought 3.0 Credits
Mass communication was at the center of most of the hopes and anxieties of the 20th Century. Would mass communication promote democracy or totalitarianism, support the powers-that-be or challenge them, make us more or less intelligent, enhance real life or distort it, etc.? In the end, what do we want mass communication to be and do in the 21st Century?.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 715 Media, Advocacy and Public Spaces 3.0 Credits
Half of the world's population lives in cities. With this increase, notions of public space, rights of access, land use and development become highly contested. Students will conduct their own ethnographic fieldwork in urban environments that address issues of conflict that take place in or engage with urban public spaces.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 720 Critical Theory 3.0 Credits
This course provides an overview of critical theory. It starts with the creation of the critical Frankfurt School, and reviews the works of Gramsci, Adorno, Horkheimer and Marcuse. It then focuses on the expansion of critical theory by Jurgen Habermas through consideration of his Theory of Communicative Action.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: COM 701 [Min Grade: C]

COM 725 Political Communication 3.0 Credits
This course introduces students to the background concepts and literature in multiple areas of political communication. Material ranges from rhetoric and public relations to mass communication theory. The course objective is to equip students with the skills so that they can go on to pursue scholarly research in these areas on their own. Among other things, students will learn how to write and analyze speeches; evaluate more and less adroit responses to questions; assess media coverage of political affairs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

COM 799 Independent Project in Technical and Science Communications 12.0 Credits
Provides advanced independent study in technical or science communication. May be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

COM 801 Seminar in Contemporary Theory 3.0 Credits
This is a special topics seminar course that will introduce students to different currents in contemporary social theory, especially through in-depth reading and discussion of a single major theorist or theoretical school. Course may be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

COM 802 Seminar in Discourse and Semiotics 3.0 Credits
This is a special topics seminar course that will explore in-depth a particular theoretical or research approach to the study of language and signs. Students will work with major theoretical approaches as well as research in the area. Course may be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

COM 803 Seminar in Structural and Cultural Dynamics 3.0 Credits
Through in-depth exploration of a specific research topic, this seminar course will introduce students to what is called the sociological imagination. The course examines special topics that will illuminate such broad sociological approaches as political economy, cultural analysis, neo-institutionalism or post-modernism. Course may be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

COM 804 Seminar in Research Methodology 3.0 Credits
This course focuses on a single research method. The course takes students through the inception of research ideas, research design, implementation and data-analysis/write up as the mean to understanding the limitations and possibilities of the research process according to methodology. Course paper involves student research design practicum. Course may be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

COM 805 Seminar in Communication Ethics 3.0 Credits
By in-depth examination of a single issue in research ethics, this course develops student awareness of ethical issues in processes like peer review, human subjects research evaluation, and public consumption of knowledge generated by scholarly investigation. Course may be repeated for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits

COM 998 PHD Dissertation Research in Communications 1.0-12.0 Credit
Requires supervised research, including literature research, data collection, and writing of doctoral thesis.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Environmental Policy

Courses

ENVP 522 Environmental Law 3.0 Credits
Examines administrative law applicable to the management of environmental programs, including constitutional constraints on the responsibilities of administrators and major court decisions on environmental issues. Covers due process, inspection, citizen actions, evidence and other matters.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (ENVR 501 [Min Grade: C] or ENVS 501 [Min Grade: C]) and (ENVR 511 [Min Grade: C] or ENVS 511 [Min Grade: C] or ENVR 521 [Min Grade: C] or ENVS 521 [Min Grade: C])

ENVP 523 Environmental Regulations 3.0 Credits
Reviews the development and implementation of environmental regulations. Acquaints students with the federal regulatory process. Focuses on the process of regulation proposal and examines the intent and coverage of the major environmental regulations, with emphasis on Section 40 of the Code of Federal Regulations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (ENVR 501 [Min Grade: C] or ENVS 501 [Min Grade: C]) and (ENVR 511 [Min Grade: C] or ENVS 511 [Min Grade: C] or ENVR 521 [Min Grade: C] or ENVS 521 [Min Grade: C])

ENVP 570 International Environmental Policy 3.0 Credits
Examines the prospects for effective environmental policymaking in the contemporary nation-state system. Reviews international environmental issues, agreements and institutions. Studies theories of international relations in order to develop a conceptual framework for analyzing the strengths and weakness of the nation-state system.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 650 Resource & Environmental Economics 3.0 Credits
This course is an introduction to the application of economics to resource and environmental issues. The cause highlights the theoretical foundations for resolving complications due to the unique features of natural resources and the environment. We us empirical issues in the broad area of resource and environmental economics to illustrate these concepts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 720 Environmental Cost-Benefit Analysis 3.0 Credits
This course deals with cost-benefit analysis in the environmental content. We examine the theoretical basis for welfare measurement and then proceed to examine various methods for monetary valuation of environmental goods, with an emphasis on empirical implementation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVP 650 [Min Grade: C]

ENVP 760 Social Change & Environment 3.0 Credits
Introduces the processes of social change and the key collective actors and institutions involved in the creation of U.S. environmental policies. Provides an understanding of the historical and social processes by which environmental policy is created and changed through a political process among a number of different coalitions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 771 Theory and Practice of Environmental Policy Analysis 3.0 Credits
Examines the theoretical models of policy analysis and their practical applications. Develops an understanding of the theoretical, social, political, and ethical context of policy research, and translates this understanding into an applied practice of policy analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 772 Methods of Environmental Policy Analysis 3.0 Credits
Focuses on the methods used in carrying out policy analyses. Develops the student's capacity to conceptualize, design, and conduct policy research. Focuses on the qualitative and quantitative methods used in carrying out policy research. Specific methods covered include secondary data analysis, survey research, content analysis, unobtrusive measures, and case studies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 773 Environmental Policy Analysis Practicum 3.0 Credits
Involves the application of research skills to conduct policy research. Provides students with the opportunity to conduct policy research in a specific topic of interest under faculty guidance.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 774 Environmental Policy Economic Analysis 3.0 Credits
This course presents theories and applications in the design of economic instruments for controlling environmental problems. We also examine briefly economy-wide factors driving how firms and households react to these policies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVR 650 [Min Grade: C]

ENVP 865 Special Topics 0.5-5.0 Credits
Covers topics of current interests to faculty and students; specific topics for each term will be announced prior to registration. May be repeated for credit if topics vary.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ENVP 870 Human Dimensions of Global Climate Change 3.0 Credits
This course examines the human dimensions of global climate change. It focuses on three questions: 1) What are the social factors driving CO2 emissions? 2) What are the major impacts that climate change will have on human society, and 3) How can society mitigate or adapt to a changing climate?.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 875 Environmental Justice 3.0 Credits
Seminar course focusing on the concept of environmental justice/injustice; empirical evidence of inequalities; theories of environmental injustice; politics of environmental health and illness; legal remedies at local and international level; and the environmental justice movement.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVP 880 Environment and Society 3.0 Credits
Examines the relationships among human society, including economic and political institutions, cultural beliefs, and individual behaviors, and the natural environment. Examines, through a historical perspective, the role that social organizations play in either fostering an ecologically sustainable society or in accelerating ecological destruction.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

Environmental Science

Courses

ENVS 501 Chemistry of the Environment 3.0 Credits
Covers principles of physical and organic chemistry applicable to the study and evaluation of environmental conditions, especially the pollution of air, water, and soil (including chemical changes and reactions in the environment).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 506 Biostatistics 3.0 Credits
Covers measures of biostatistics, including central value and dispersion, sampling and distribution, statistical inference, analysis of variance, regression and correlation, and time series. Emphasizes application.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 511 Evolutionary Ecology 3.0 Credits
Studies the basic principles of evolution and ecology, including natural selection, the ecological niche ecological succession, and the food web, and effects of human activities on ecosystems. Views humans as a species.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 520 Field Methods of Paleoecology 3.0 Credits
This course is based around student participation in an ongoing excavation of a Cretaceous vertebrate fossil locality. Students learn excavation techniques and principles of paleoecology through analyses of collected data. This meets for one full day per week. Transportation provided. May be repeated twice for credit.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 2 times for 6 credits

ENVS 528 Conservation Biology 3.0 Credits
This course will detail the loss of biodiversity and explore related issues, including the theories and practices of conservation biology and the solutions currently being formulated to enhance the preservation of species on our planet. The course will explore potential limitations to these strategies and provide an appreciation of the relevance of ethics, economics and politics to biodiversity conservation while promoting the potential for individual action to influence conservation efforts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 538 Biodiversity 3.0 Credits
This course explores major patterns of biodiversity that biologists have documented across the planet. The course begins with an overview of major types of biodiversity, focusing on species diversity, and methods for measuring and analyzing biodiversity. Next it explores major patterns of biodiversity that are fundamental to ecology and conservation, and theories for the causes of biodiversity patterns.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 561 Introduction to Hydrology 3.0 Credits
This course offers an introduction to climate and weather, precipitation, evaporation and transpiration, drainage basins and hydrographs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 564 Animal Behavior 3.0 Credits
The mechanisms, ecology and evolution of the activities of animals in relation to their natural environment. Topics include development and control (neutral and hormonal) of behavior, adaptations for survival, feeding, and predator avoidance, strategies of habitat selection, communication, reproduction, and social behavior.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: ENVS 565

ENVS 565 Animal Behavior Laboratory 2.0 Credits
An observational study of the behavior of a captive group of social animals at the Philadelphia Zoo including species selection, background research, ethogram construction, 16 hours of quantified observations, analysis of data and written report. Graduate students supervise weekly assignment review sessions, organize peer review sessions and revise the laboratory manual.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Corequisite: ENVS 564

ENVS 575 Invertebrate Paleontology 4.0 Credits
This course focuses on the evolution of hard-bodied invertebrates from the Cambrian period to today. Topics include taxonomy, taphonomy, biostratigraphy, and paleoecology. Natural selection, functional morphology, extinction and adaption are emphasized. The lab focuses on hands-on fossil identification.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 577 Vertebrate Paleontology 3.0 Credits
This course focuses on the evolution of vertebrates from the Cambrian Period to today. Topics include cartilaginous and bony fishes, amphibians, turtles, crocodiles, pterosaurs, birds, and mammals. Natural selection, cladistics, functional morphology, adaptation and extinction are emphasized.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 582 Field Botany of the New Jersey Pine Barrens 4.0 Credits
This course focuses on plant identification skills that are necessary to conduct scientific botanical surveys. The vascular flora of the New Jersey Pine Barrens, including rare plant species, is emphasized with special reference to habitat and community analyses. Non-vascular species are examined but not emphasized.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 5 credits
Prerequisites: ENVR 511 [Min Grade: C] or ENVS 511 [Min Grade: C]

ENVS 583 Ecology of the New Jersey Pine Barrens 4.0 Credits
Course focuses on the ecology of the New Jersey Pine Barrens. Students learn field survey methods, identify index species (flora and fauna), perform community analyses, and use equipment for measuring abiotic variables (soil and water). Field exercises focus on key aspects of the regional ecology: fire, soil and water.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVS 511 [Min Grade: C] or ENVR 511 [Min Grade: C]

ENVS 588 Marine Field Methods 4.0 Credits
Course focus is on the ecology of local marine environments. Students learn marine field survey methods, identification of marine organisms, habitat analyses, and use of equipment for measuring abiotic variables. Students sample fish, plankton and invertebrate species aboard the 25 foot Drexel research vessel, Peter Kilham.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVS 511 [Min Grade: C] or ENVR 511 [Min Grade: C]

ENVS 601 Advanced Environmental Chemistry 3.0 Credits
Covers thermodynamic and kinetic principles and their application to the study of chemical changes and reactions in the water or air environments.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVR 501 [Min Grade: C] or ENVS 501 [Min Grade: C]

ENVS 605 Atmospheric Chemistry 3.0 Credits
Introduces the principles of atmospheric physics and photochemical kinetics as a prelude to understanding the atmospheric chemical system. Examines the chemistry of the natural atmosphere to prepare for the understanding of how pollutants interact with natural species. Considers pollution of the stratosphere and the troposphere.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVR 501 [Min Grade: C] or ENVS 501 [Min Grade: C]

ENVS 608 Fate of Pollutants in Air and Water 3.0 Credits
Theoretically delineates the physical and chemical mechanisms that define the fate of a pollutant and applies them to models and environmental systems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVR 501 [Min Grade: C] or ENVS 501 [Min Grade: C]

ENVS 613 Advanced Population Ecology 3.0 Credits
One of the greatest issues concerning life on Earth and human impact on the planet is whether species will survive or go extinct. This course explores how wild populations change over time and investigates the concepts and quantitative methods used to determine the viability of plant and animal populations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 614 Advanced Community Ecology 3.0 Credits
Community ecology is the study of how populations of organisms interact with each other and the physical environment. Students will investigate the underlying principles that explain and predict interactions among populations of organisms, and how these principles can be used to conserve and manage wild animal and plant communities.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 624 Microbial Ecology 3.0 Credits
Studies the relationships of microbes with plants, animals, and the environment, both biotic and abiotic components. Examines the key role of microbes in the functioning of ecosystems affecting decomposition, disease, nutrient cycling, and energy flow. Studies these processes and the role of microbes in the natural functions of ecosystems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVR 516 [Min Grade: C] or ENVS 516 [Min Grade: C]

ENVS 626 Molecular Ecology 3.0 Credits
Through a combination of lecture, discussion, and computational exercises, students will learn how molecular tools have been used to study genetic variation. They will then learn how these studies have provided answers to previously unanswered questions in fields including ecology, evolution, behavior, conservation, and forensics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 627 Molecular Ecology Laboratory 2.0 Credits
Through a combination of laboratory and computational exercises, students will develop a toolkit for applied molecular studies of ecology and evolution. The course will focus on initiating or continuing a novel research project relating to one of several topics within the field of molecular ecology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 630 Aquatic Ecology 3.0 Credits
Studies the relationship between aquatic plants and animals and their environment. Introduces the study of the ecology of lakes, rivers, ponds and streams.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 636 Principles of Toxicology I 3.0 Credits
This course reviews general human physiology and the acute and chronic effects of toxicants on physiological mechanisms. Basic principles of dose-response relationships, target organ toxicity, and exposure characterization are incorporated. Students are expected to have had an introductory course in human physiology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 637 Principles of Toxicology II 3.0 Credits
This course expands upon knowledge gained in Principles of Toxicology I by focusing on the absorption, distribution, biotransformation and excretion of toxic substances. Current advances in the study of carcinogenesis and mutagenesis are also discussed, as well as toxicological research methods, animal and plant toxins, food toxicology, and pesticides.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVR 636 [Min Grade: C] or ENVS 636 [Min Grade: C]

ENVS 690 Marine Ecology 3.0 Credits
Studies major processes in the marine environment, especially relationships between organisms and the factors that influence their abundance.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 692 Ichthyology and Herpetology 3.0 Credits
Many species of fishes, amphibians and reptiles face extirpation from their former ranges and some face total extinction within our lifetime. This course investigates major regional and global issues concerning viability of these organisms and addresses solutions using concepts of population ecology, community ecology, physiological ecology and conservation biology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 700 Evolution 3.0 Credits
Covers historical evidence for and principal mechanism of organic evolution, including the origin of life and new groups of organisms in the past and present, and the genetic basis for evolution. Discusses current research in evolutionary biology and ecology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 708 Environmental GIS 3.0 Credits
This introductory course is technically oriented and will provide a foundational understanding of GIS in an environmental context. Covers GIS principles and practices and applies spatial investigation procedures to analyze geographic data, including mapping and computer systems, attribute and spatial data models, data organization in GIS, GIS data analysis, and future trends for this technology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 710 Physiological Ecology 3.0 Credits
Examines mechanisms by which physiological factors affect and limit the distribution and abundance of animals, including physiological and behavioral thermoregulation, heat and cold tolerance, acclimation, metabolism, osmoregulation and dehydration tolerance, feeding strategies, digestion and feeding patterns, energy and water budgets, toxins, and optimality theory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 711 Aquatic Toxicology 3.0 Credits
Applies the principles of toxicology to fish and aquatic invertebrates. Includes applications of laboratory and field tests to evaluate aquatic effects, and methods of data analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 712 Biophysical Ecology 3.0 Credits
Covers energy balances and methods of heat transfer in organisms, including convection, conduction, radiation, evaporation, and metabolism, and stead-state and transient energy balances, including mass balances, water uptake, and evaporation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 722 Tropical Ecology 3.0 Credits
Covers the ecology of tropical forests, including biogeography, history, current processes, and effects of economic developments of rain forest and dry forest of the Old and New World tropics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 723 Tropical Field Studies 3.0 Credits
Ecology of tropical rain forests and dry forests. We will explore physical and biological factors that result in formation of these forests, effect of human impacts on these forests, effectiveness of management of these forests and the future of these forests in Costa Rica in the field.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: ENVS 722 [Min Grade: C] (Can be taken Concurrently)

ENVS 726 Environmental Assessment 3.0 Credits
Examines the National Environmental Act of 1969 and its implementation according to the regulations of the Council on Environmental Quality. Discusses air, water, noise, biological cultural, and socioeconomic impacts. Includes methods of impact analysis and means to compare alternative actions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 751 Stream Analysis and Pollution Control 3.0 Credits
Covers the ecological response of natural waters to organic and inorganic pollution. Includes mathematical models for the analysis of the water quality of lakes and streams.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (ENVR 501 [Min Grade: C] or ENVS 501 [Min Grade: C]) and (ENVR 516 [Min Grade: C] or ENVS 516 [Min Grade: C])

ENVS 757 Bioremediation 3.0 Credits
Examines the development of microorganisms and engineering technologies for the remediation of industrial and hazardous wastes. Includes government regulations and use of novel microorganisms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: (ENVR 616 [Min Grade: C] or ENVS 616 [Min Grade: C]) and (ENVR 624 [Min Grade: C] or ENVS 624 [Min Grade: C])

ENVS 797 Research 20.0 Credits
Requires actual formulation and investigation of a research problem and a written report.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ENVS 799 Independent Study 9.0 Credits
Provides independent study in environmental science.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ENVS 864 Graduate Research Seminar 1.5 Credit
The BEES Graduate Research Seminar is a weekly series of scientific presentations by faculty, graduate students and outside speakers. The seminars are opportunities for learning about and discussing ongoing research in the Department and current issues in biodiversity, earth and environmental science.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 865 Special Topics 9.0 Credits
Covers topics of current interest to faculty and students. Specific topics for each term are announced prior to registration. May be repeated for credit if topics vary.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ENVS 891 Research Methods I 3.0 Credits
Introduces research methods and literature, procedures for the collection and analysis of data, and preparation of technical papers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

ENVS 898 Master's Thesis 20.0 Credits
Master's thesis.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

ENVS 998 Ph.D. Dissertation 20.0 Credits
Requires each student working on a dissertation to file a written report each term with his or her supervisory committee and the program graduate advisor.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

History

Courses

HIST 501 Introduction to Science, Technology and Society 3.0 Credits
Introduces the study of science, technology, and society. Samples different approaches to the study of STS, including methods of problem selection and research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 550 History of Comparative Industrialization 3.0 Credits
While the specific topics vary by instructor, this reading seminar considers the development of industrial nations though time: the earliest industrial nations; the political, economic, military, and social causes and consequences of industrialization; and the processes of industrialization and technology transfer. Undergraduate seniors may be allowed to take the course with permission of the instructor.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 560 History of Information Science and Technology 3.0 Credits
This course examines the industrialization of information since the Enlightenment. Methodologies from material culture, political economy, and social theory will be among the analytical tools students employ in deepening their understanding of the mutual shaping between historical circumstances and society's approach to information processing, storage, and retrieval.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 583 History of Medicine and Disease 3.0 Credits
Focuses on the ways sickness and medical treatment touch larger political, social, and cultural questions in the modern period, with special attention to epidemic disease. Takes a comparative approach, devoting considerable attention to both Western and non-Western contexts.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

HIST 584 Historiography of Science 3.0 Credits
An introduction to the advanced study of the history of science. This course explores major themes, debates, and theoretical approaches in the discipline.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

HIST 585 Technology in Historical Perspective 3.0 Credits
Surveys the history of technology in the modern, industrial Western world. Uses humanities techniques to analyze various factors that have shaped the development of technology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

HIST 586 Explorations in Technology and Gender 3.0 Credits
Explores the interconnections of technological change and conceptions of gender.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

HIST 590 Themes in the History of Science 3.0 Credits
Examines a particular theme in the history of science.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

HIST 591 Themes in the History of Technology 3.0 Credits
Examines a particular theme in the history of technology.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for NaN credits
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

HIST 696 Seminar in Science, Technology, and Society 3.0 Credits
Provides an in-depth research seminar in science, technology, and society, organized around a particular theme selected by the instructor.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits

HIST 697 Practicum: Science and Technology in Action 3.0 Credits
Provides a practicum in science, technology, and society. Focuses on practice in a science or engineering discipline through study of a recent invention or scientific project.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: HIST 696 [Min Grade: C]

HIST 698 Master's Thesis 0.5-9.0 Credits
Independent research supervised by an STS faculty member toward completion of a required Master's Thesis.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 18 credits

HIST 699 Independent Study in History 0.5-12.0 Credits
Independent study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Linguistics

Courses

LING 560 Introduction to Linguistics 3.0 Credits
Introduction to Linguistics provides a foundation in the analysis of language, including topics of phonology, morphology, syntax, and semantics. Using a problem-based approach, students examine areas of language use such as first and second language acquisition, the analysis of world languages other than English, and variation in language use (sociolinguistics).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

Mathematics

Courses

MATH 504 Linear Algebra & Matrix Analysis 3.0 Credits
Course topics include the QR decomposition, Schur's triangularization theorem, the spectral decomposition for normal matrices, the Jordan canonical form, the Courant-Fisher theorem, singular value and polar decompositions, the Gersgorin disc theorem, the Perron-Frobenius theorem, and other current matrix analysis topics. Applications of the metrical are outlined as well.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 505 Principles of Analysis I 3.0 Credits
Metric spaces, compactness, connectedness, completeness. Set theory and cardinality, Continuity, differentiation, Riemann integral.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 506 Principles of Analysis II 3.0 Credits
A continuation of MATH 505. Uniform convergence, Fourier series, Lebesque integral in Euclidean spaces, differential calculus in Euclidean spaces, inverse and implicit functions theorems, change of variable in multiple integrals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 505 [Min Grade: C]

MATH 507 Applied Mathematics I 3.0 Credits
Covers matrix theory, linear transformations, canonical forms, matrix decompositions, and factorizations, including the singular value decomposition, quadratic forms, matrix least squares problems, and fast unitary transforms. Introduces computational linear algebra.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 508 Applied Mathematics II 3.0 Credits
Covers the techniques of mathematical modeling in the physical and biological sciences using discrete and combinatorial mathematics, probabilistic methods, variational principles, Fourier series and integrals, integral equations, calculus of variations, asymptotic series and expansions, and eigenvalue problems associated with Sturm-Liouville boundary value problems. Topics vary from year to year.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 507 [Min Grade: C]

MATH 509 Applied Mathematics III 3.0 Credits
Continues the theme of MATH 508. Topics vary from year to year.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 508 [Min Grade: C]

MATH 510 Applied Probability and Statistics I 3.0 Credits
Covers basic concepts in applied probability; random variables, distribution functions, expectations, and moment generating functions; specific continuous and discrete distributions and their properties; joint and conditional distributions; discrete time Markov chains; distributions of functions of random variables; probability integral transform; and central limit theorem.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 511 Applied Probability and Statistics II 3.0 Credits
Covers probability plots and graphical techniques for determining distribution of data, including sampling and sampling distributions, law of large numbers, parametric point estimation, maximum likelihood estimation, Bayes estimation, properties of estimators, sufficient statistics, minimum variance unbiased estimators, and parametric interval estimation. Introduces hypothesis testing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 510 [Min Grade: C]

MATH 512 Applied Probability and Statistics III 3.0 Credits
Covers hypothesis testing, analysis of variance, multiple regression, and special topics. Introduces linear models.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 511 [Min Grade: C]

MATH 520 Numerical Analysis I 3.0 Credits
Covers polynomial interpolation, numerical solutions of nonlinear equations, numerical integration (Newton-Cotes, Gauss quadrature, error estimates of various numerical methods, and function approximation (polynomial, Fourier, Pade).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 521 Numerical Analysis II 3.0 Credits
Covers numerical linear algebra and matrix computation, direct and iterative methods for solving linear systems and eigenvalue problems, least square problems, various matrix factorizations (QR, singular value decomposition, LU and Cholesky), and Krylov subspace methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 522 Numerical Analysis III 3.0 Credits
Covers numerical solutions of ordinary and partial differential equations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 520 [Min Grade: C]

MATH 523 Computer Simulation I 3.0 Credits
Covers computer simulation of pseudo-random variables, including Monte Carlo methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 510 [Min Grade: C]

MATH 524 Computer Simulation II 3.0 Credits
Covers discrete and continuous event simulation models and techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 523 [Min Grade: C]

MATH 525 Topics in Computer Simulation 3.0 Credits
Covers statistical analysis of simulation data, variance reduction techniques, and advanced topics in simulation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 524 [Min Grade: C]

MATH 530 Combinatorial Mathematics I 3.0 Credits
Covers graphs and networks, with an emphasis on algorithms. Includes minimum spanning trees, shortest path problems, connectivity, network flows, matching theory, Eulerian and Hamiltonian tours, graph coloring, and random graphs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 531 Combinatorial Mathematics II 3.0 Credits
Covers mathematical tools for the analysis of algorithms, including combinatorics, recurrence relations and generating functions, elementary asymptotics, and probabilistic methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 530 [Min Grade: C]

MATH 532 Topics in Combinatorial Math 3.0 Credits
Covers topics in discrete mathematics, including asymptotic enumeration, number theory, probabilistic combinatorics, and combinatoric algorithms.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 531 [Min Grade: C]

MATH 533 Abstract Algebra I 3.0 Credits
Covers groups, transformation groups and group actions, isomorphism and homomorphism theorems, Sylow theorems, symmetric groups, rings, and fields.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 534 Abstract Algebra II 3.0 Credits
Covers factorization domains, Euclidean domains, and polynomial rings, and modules, vector spaces, and linear transformations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 533 [Min Grade: C]

MATH 535 Topics in Abstract Algebra 3.0 Credits
This third course in the Abstract Algebra sequence covers a selection of topics in advanced modern algebra such as symmetries, representation theory, algebraic geometry, homological algebra, Galois Theory and coding theory.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 9 credits
Prerequisites: MATH 533 [Min Grade: C] and MATH 534 [Min Grade: C]

MATH 536 Topology I 3.0 Credits
Covers general topological spaces, metric spaces, and function spaces; open sets, limit points, limits of sequences, convergence, separation axioms, compactness, connectedness, continuity, homeomorphism, and product of N-spaces; and specialized applications to the real line, Euclidean N-space, and well-known function spaces.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 537 Topology II 3.0 Credits
Continues MATH 536.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 538 Manifolds 3.0 Credits
Topics will be selected from the following: Differential structures, immersion theorems, tangent bundle, vector fields and distributions, integral manifolds, integration on manifolds, differential forms, general Stokes Theorem, applications to physics and engineering.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 540 Numerical Computing 3.0 Credits
Intended to introduce students to contemporary computing environments and the associated tools. Uses contemporary software tools and specific applications from science and engineering to illustrate numerical and visualization methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 544 Advanced Engineering Mathematics I 3.0 Credits
Covers solution techniques for ordinary differential equations, including series techniques, Legendre and Bessel functions, Sturm-Liouville theory, and Laplace and Fourier techniques. Introduces symbolic computation as time permits.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 545 Advanced Engineering Mathematics II 3.0 Credits
Covers partial differential equations, including separation of variables and its applications to standard equations. Introduces Green's functions for differential equations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 544 [Min Grade: C]

MATH 546 Advanced Engineering Mathematics III 3.0 Credits
Covers complex analysis, including complex differentiation and integration, Cauchy's theorems and residue theory, and their applications; conformal maps; and applications to fluid flow.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 545 [Min Grade: C]

MATH 553 Sci Comp & Visualization I 3.0 Credits
Covers scientific computing, with an emphasis on numerical computing and visualization techniques. Includes techniques of computational geometry, including an introduction to methods used to describe the shapes of free-form curves, surfaces, and volumes, and applications to computer-aided design and other areas of scientific computing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 540 [Min Grade: C]

MATH 554 Sci Comp & Visualization II 3.0 Credits
Covers scientific visualization, using a computational environment that includes high-performance workstations and supercomputers, and application in science and engineering. Includes applications to finite element and difference methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 553 [Min Grade: C]

MATH 555 Topics in Sci Comp & Visualiz 3.0 Credits
Covers special topics chosen from contemporary problem areas in scientific computing and visualization, including digital image processing, wavelet transforms and their numerical treatment, numerical conformal mapping, and contemporary problem areas in scientific computing and visualization.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 554 [Min Grade: C]

MATH 572 Financial Mathematics: Fixed Income Securities 3.0 Credits
The course is a mathematical introduction to interest rates and interest rates related instruments including loans, bonds, mortgages and swaps. The course emphasizes the mathematical aspects of the subject and computational implementation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 610 Advanced Probability and Statistics I 3.0 Credits
Covers generalized inverse matrices, distributions of quadratic forms, full-rank models and regression, models not of full rank, and specific examples.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 511 [Min Grade: C] and MATH 512 [Min Grade: C]

MATH 611 Advanced Probability and Statistics II 3.0 Credits
Covers theoretical development of probability theory, including measure theory, random variables, distribution functions, and expectations; convergence concepts; law of large numbers; random series; characteristic functions; and central limit theorem and ramifications.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 510 [Min Grade: C]

MATH 612 Topics In Advanced Probability and Statistics 3.0 Credits
Covers topics including distribution theory, large sample theory, multivariate analysis, sequential analysis, decision theory, non-parametric inference, survival analysis, experimental design, and statistical computation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 511 [Min Grade: C] and MATH 512 [Min Grade: C]

MATH 613 Stochastic Processes I 3.0 Credits
Covers conditional probabilities, expectations, Markov chains, classification of states, recurrence and absorption probabilities, asymptotic behavior, random walk, birth and death processes, and ruin problems.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 510 [Min Grade: C] and MATH 611 [Min Grade: C]

MATH 614 Stochastic Processes II 3.0 Credits
Covers queuing theory, waiting line models, embedded Markov chain method, and optimization problems. Includes applications and simulation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 613 [Min Grade: C]

MATH 615 Topics in Stochastic Processes 3.0 Credits
Covers topics including branching processes, Brownian motion, renewal processes, compounding stochastic processes, martingales, and decision-making under uncertainty.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 613 [Min Grade: C]

MATH 620 Partial Differential Equations I 3.0 Credits
Covers derivation and classification of partial differential equations; elementary methods of solution, including Fourier series and transform techniques; linear and equilinear equations of the first order; hyperbolic, elliptic, and parabolic type equations; maximum principles; existence, uniqueness, and continuous dependence theorems; Riemann's method; method of characteristics; Green's functions; and variation and numerical methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 621 Partial Differential Equations II 3.0 Credits
Continues MATH 620.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 622 Partial Differential Equations III 3.0 Credits
Continues MATH 621.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 623 Ordinary Differential Equations I 3.0 Credits
Covers existence and uniqueness theorems, properties of solutions, adjoint equation, canonical forms, asymptotic behavior, phase space, method of Isocline, classification of singular points, linear two-dimensional autonomous systems, non-linear systems, stability theory, Lyapunov's methods, quadratic forms, construction of Lyapunov's function, boundedness, limit sets, applications to controls, linear equations with periodic coefficients, Floquet theory, characteristic multipliers and exponents, existence of periodic solutions to weakly non-linear systems, jump phenomena, subharmonic resonance, and stability of periodic solutions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 624 Ordinary Differential Equations II 3.0 Credits
Continues MATH 625.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 625 Ordinary Differential Equations III 3.0 Credits
Continues MATH 626.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 630 Complex Variables I 3.0 Credits
Covers Cauchy's theorem, Morera's theorem, infinite series, Taylor and Laurent explanations, residues, conformal mapping and applications, analytic continuation, and Riemann mapping theorem.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 631 Complex Variables II 3.0 Credits
Covers entire functions, Picard's theorem, series and product developments, Riemann Zeta function, and elliptic functions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 630 [Min Grade: C]

MATH 632 Topics in Complex Variables 3.0 Credits
Covers topics including global analytic functions, algebraic functions, and linear differential equations in the complex plane.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 631 [Min Grade: C]

MATH 633 Real Variables I 3.0 Credits
Covers algebra of sets, topology of metric spaces, compactness, completeness, function spaces, general theory of measure, measurable functions, integration, convergence theorems, and applications to classical analysis and integration.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 634 Real Variables II 3.0 Credits
Covers Fubini theorem, Radon-Nikodym theorem, LP-spaces, linear functionals on LP-spaces, Riesz-representation theorem, topological integration, Riesz-Markoz theorem, Luzin's theorem, basic complex functions, analytic functions, and complex-integration.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 633 [Min Grade: C]

MATH 635 Real Variables III 3.0 Credits
Covers topics including differentiation theory, Fourier series and transforms, and singular integrals.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 634 [Min Grade: C]

MATH 640 Functional Analysis 3.0 Credits
An introduction to abstract linear spaces, including normed linear spaces, Hilbert spaces, Banach spaces, and their duals. Fundamental theorems such as the Hahn-Banach theorem, open mapping and closed graph theorems will be covered, along with possible applications to differential and integral equations and fundamentals of distribution theory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 504 [Min Grade: C] and MATH 506 [Min Grade: C]

MATH 641 Harmonic Analysis 3.0 Credits
Covers modern techniques and applications of harmonic analysis, including Fourier series, Fourier transforms and related topics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 640 [Min Grade: C]

MATH 642 Operator Theory 3.0 Credits
An introduction to basic spectral theory of linear operators, theory of compact operators, and theory of unbounded operators.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 640 [Min Grade: C]

MATH 643 Integral Equations I 3.0 Credits
Covers theory and application of linear integral equations, including the Hilbert-Schmidt theory. Introduces non-linear and singular integral equations and numerical methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 645 Transform Theory I 3.0 Credits
Covers selected topics from wavelet transforms, including properties; asymptotic analyses; and applications of the integral transforms of Laplace, Fourier, Mellin, and Radon.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 640 [Min Grade: C]

MATH 646 Transform Theory II 3.0 Credits
Covers selected topics from wavelet transforms and applications, convolution equations, and the calculus of distributions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 640 [Min Grade: C] and MATH 645 [Min Grade: C]

MATH 660 Lie Groups and Lie Algebras I 3.0 Credits
Covers matrix groups, topological groups, locally isomorphic groups, universal covering groups, analytic manifold, Lie groups; the Lie algebra of a Lie group, differential forms, and Lie's three theorems; analytic subgroups of a Lie group and compact Lie groups; and semisimple Lie algebras, general structure of Lie algebras, Cartan subalgebras, modules and representation, and computational techniques in representation theory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 661 Lie Groups and Lie Algebras II 3.0 Credits
Continues MATH 660.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 662 Lie Groups/Algebras III 3.0 Credits
Continues MATH 661.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 670 Methods of Optimization I 3.0 Credits
Provides a rigorous treatment of theory and computational techniques in linear programming and its extensions, including formulation, duality theory, simplex and dual-simplex methods, and sensitivity analysis; network flow problems and algorithms; systems of inequalities, including exploiting special structure in the simplex method and use of matrix decompositions; and applications in game theory and integer programming.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 671 Methods of Optimization II 3.0 Credits
Covers necessary and sufficient conditions for unconstrained and constrained optimization. Includes computational methods including quasi-Newtonian and successive quadratic programming, and penalty and interior methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 672 Methods of Optimization III 3.0 Credits
Covers advanced topics in mathematical programming, including interior point methods in linear programming; stochastic optimization; multi-objective optimization; and global minimax, functional, and non-linear least squares optimization methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 670 [Min Grade: C] and MATH 671 [Min Grade: C]

MATH 673 Calculus of Variations 3.0 Credits
Introduction to calculus of variations. Covers applications to geometry, classical mechanics and control theory, Euler-Lagrange equations, problems with constraints, canonical equations, Hamiltonian mechanics, symmetries and Noether's theorem, Hamilton-Jacobi theory, introduction to optimal control, maximum principle, and Hamilton-Jacobi-Bellman equations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 680 Special Topics 0.5-9.0 Credits
Covers special topics of interest to students and faculty.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

MATH 699 Independent Study in Math 0.5-6.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

MATH 701 Algebraic Combinatorics 3.0 Credits
This course covers methods of Abstract Algebra that can be applied to various combinatorial problems and conversely, combinatorial methods to approach problems in representation theory, algebraic geometry, and homological algebra.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: MATH 533 [Min Grade: C] and MATH 534 [Min Grade: C]

MATH 723 Mathematical Neuroscience 3.0 Credits
This is an introduction to mathematical and computational techniques for analyzing neuronal models. Topics include conductance based models, neuronal excitability, bursting, neural networks, and compartmental models, as well as phase plane analysis, slow-fast systems, elements of applied bifurcation theory, and simulating differential equation models using MATLAB.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 799 Independent Study in Math 6.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

MATH 898 Master's Thesis 0.5-20.0 Credits
Master's thesis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

MATH 997 Research 1.0-12.0 Credit
Research.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

MATH 998 Ph.D. Dissertation 1.0-12.0 Credit
Ph.D. dissertation.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Nutrition & Food Science

Courses

NFS 510 Profession of Dietetics 3.0 Credits
This course will introduce the learner to the profession of dietetics. Topics covered will include: educational preparation and credentialing of registered dietitians and the organizational units responsible for these functions; professional roles and practice areas of dietitians; professional responsibilities of the credentialed dietitian; the Academy of Nutrition and Dietetics and other professional organizations; and, trends affecting the dietetics profession.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 525 Nutritional Assessment Through the Life Cycle 3.0 Credits
This course is designed to introduce students to and provide hands-on experience with the four primary methods of nutritional assessment: dietary, anthropometric, laboratory, and clinical assessment. Assessment methodology appropriate to each stage of the life cycle, including infants, children, adolescents, adults and elderly, will be used.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 530 Macronutrient Metabolism 3.0 Credits
Covers absorption, utilization, digestion, storage, and excretion of carbohydrates, lipids, and proteins.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 531 Micronutrient Metabolism 3.0 Credits
Covers absorption, utilization, digestion, storage, and excretion of vitamins, macrominerals, and microminerals.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 543 Medical Nutrition Therapy I 3.0 Credits
In-depth coverage of nutrition assessment and the Nutrition Care Process. Pathophysiology of selected acute & chronic disease states and their associated medial problems, with focus on using the Nutrition Care Process to meet the medical nutrition needs of patients.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit
Prerequisites: NFS 525 [Min Grade: C] and BIO 610 [Min Grade: C]

NFS 544 Medical Nutrition Therapy II 3.0 Credits
Pathophysiology of selected acute & chronic disease states and their associated medical problems, with focus on using the Nutrition Care Process to meet the medical nutrition needs of patients.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit
Prerequisites: NFS 543 [Min Grade: C]

NFS 545 Nutrition in Critical Care 3.0 Credits
Pathophysiology of selected critical care conditions and their associated medial problems, and the use of the Nutrition Care Process to meet the medical nutrition needs of patients. Also covers nutrition support including use of enteral and parenteral nutrition.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit
Prerequisites: NFS 544 [Min Grade: C]

NFS 546 World Nutrition 3.0 Credits
Discusses the nutritional status of peoples in various parts of the world, the incidence and treatment of deficiency diseases, problems of the food supply and efforts to improve it, and other timely aspects of this comprehensive problem.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 550 Foodservice Systems Management 3.0 Credits
In-depth treatment of food purchasing, financial management of foodservices, cost controls, marketing in foodservice, equipment layout and design, and management/leadership theories and applications.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is HNUT.

NFS 601 Research Methods 3.0 Credits
Covers current techniques and evaluation methods for human nutrition research. Focuses on human subject aspects and critique of the literature.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 602 Methods of Nutrition Research 3.0 Credits
Laboratory methods current in nutrition research techniques. The emphasis will be on methods of instrumental analysis.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 609 Individualized Supervised Practice Pathway 1.0-3.0 Credit
The Individualized Supervised Practice Pathway is designed to prepare competent, entry-level dietitians for positions in medical nutrition therapy, outpatient nutrition counseling, food service management and community nutrition. The program will provide a curriculum for the student to experience and practice the many roles of the dietitian under the supervision of the preceptor.
College/Department: College of Nursing Health Professions
Repeat Status: Can be repeated 11 times for 36 credits

NFS 625 Nutrition and Exercise Physiology 3.0 Credits
The principles of exercise science and their interaction with nutrition are explored in-depth. The physiological and biochemical effects of training are examined in relation to sports performance and prevention of chronic diseases prevalent in developed countries.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 629 Readings in Nutrition Science 3.0 Credits
Covers advanced nutritional aspects of selected subjects in metabolism via an in-depth survey of current research literature in the field.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 630 Nutrition Counseling 3.0 Credits
Emphasizes nutrition counseling techniques for use with individuals and small groups, including development of nutrition education materials as well as verbal and non verbal communication skills.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 634 Women's Issues in Nutrition 3.0 Credits
Deals with the interface between nutrition, medicine, psychology, sociology, and anthropology as it relates to the female life cycle. Emphasizes pregnancy, lactation, maternal obesity, eating disorders, menopause, and society's roles for women in relation to food.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 640 Nutrition of the Schoolchild 3.0 Credits
Covers normal growth patterns and nutrition requirements for children of school age (K to 12). Stresses nutritional problems of schoolchildren, attitudes toward food, the role of the school lunch in nutrition, and evaluation of school lunches in relation to total nutritive needs.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 641 Nutrition in Later Maturity 3.0 Credits
Considers physiologic changes and nutritional requirements in later maturity and applications to dietary planning in the home and in the institution. Stresses economic, management, and community resources for meeting dietary needs and special nutrition problems of the elderly.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 680 Special Topics 0.5-9.0 Credits
Covers selected topics of study in the field of nutrition and food.
College/Department: College of Nursing Health Professions
Repeat Status: Can be repeated multiple times for credit

NFS 690 Community Nutrition 3.0 Credits
Surveys nutrition services of city, state, and national organizations. Develops suggestions for the development of a community program with appropriate educational methods and illustrative materials.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 695 Nutrition Education in K-12 3.0 Credits
Curriculum development for nutrition and food study in elementary and secondary schools; instructional materials; methods of teaching.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 696 Methods of Teaching Dietetics 3.0 Credits
Analyzes teaching situations in dietetics, including development of educational programs and instructional methods and materials for implementation in a clinical or management dietetics setting.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 732 Weight Management and Eating Disorders 3.0 Credits
Investigate current aspects of the treatment of obesity and eating disorders through nutrition therapy by studying research from medical science, nutrition knowledge, and dietary modalities.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 799 Independent Study 12.0 Credits
Provides an independent study in human nutrition.
College/Department: College of Nursing Health Professions
Repeat Status: Can be repeated multiple times for credit

NFS 849 Readings in Therapeutic Nutrition 3.0 Credits
Covers current literature pertaining to nutrition in various conditions such as malabsorption, inborn errors of metabolism, diabetes mellitus, diseases of the gastrointestinal tract, diseases of the liver, and surgical conditions. Discusses nutrition assessment and parenteral and enteral nutrition.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

NFS 997 Research 1.0-12.0 Credit
Requires students, in consultation with an appropriate faculty adviser, to identify a specific food and/or nutrition problem area of mutual interest, carefully document its background, and present research reports for study. All thesis students use this number. May be repeated for credit.
College/Department: College of Nursing Health Professions
Repeat Status: Not repeatable for credit

Physics - Environmental Science

Courses

PHEV 541 Atmospheric Physics I 3.0 Credits
Covers chemical composition, transformation, and evolution; radiation spectra, absorption, scattering, and heat transfer; thermodynamics and cloud and precipitation microphysics; surface fluxes, thermal structure, and energy balance; and optics and acoustics, including observational methods and remote-sensing techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 544 Large Scale Atmospheric Dynamics I 3.0 Credits
Covers theoretical thermodynamics and atmospheric energetics, including flow on a rotating sphere, general circulation, barotropic and baroclinic instability, and cyclonic circulations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 545 Large Scale Atmospheric Dynamics II 3.0 Credits
Continues PHEV 544.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 547 Small Scale Atmospheric Dynamics I 3.0 Credits
Covers theory of turbulent flows and perturbation analysis of waves; boundary-layer processes, including diffusion, and storm microphysics and dynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 548 Small Scale Atmospheric Dynamics II 3.0 Credits
Continues PHEV 547.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHEV 644 Atmospheric Numerical Prediction Techniques 3.0 Credits
Applies modern numerical methods to the prediction of atmospheric motions, including initialization and assimilation methods, filtering, verification, and testing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

Physics

Courses

PHYS 501 Mathematical Physics I 3.0 Credits
Covers various topics in mathematical physics and their numerical implementations, including calculus of residues and further applications of complex variables; vector spaces, Fourier series, and generalized functions; integral transforms; theory and application of ordinary and partial differential equations; special functions; boundary value and initial value problems; Green's function theory and applications; and integral equations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 502 Mathematical Physics II 3.0 Credits
Continues PHYS 501.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 503 Mathematical Physics III 3.0 Credits
Calculus of residues and further applications of complex variables; vector spaces, Fourier series and generalized functions; integral transforms; theory and application of ordinary and partial differential equations; special functions; boundary value and initial value problems; Green's function theory and applications; integral equations; group theory; nonlinear dynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 506 Dynamics I 3.0 Credits
Covers Lagrangian-Hamiltonian formulations, variational principles, particle kinematics and dynamics, and small oscillations and normal modes.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 507 Dynamics II 3.0 Credits
Lagrangian-Hamiltonian formulations; variational principles; particle kinematics and dynamics; small oscillations and normal modes; Navier-Stokes equations; statistical description of turbulent flows; thermodynamics and energetics of ideal gases; computational fluid dynamics; viscous and compressible flows; boundary-layer flows; hydrodynamic perturbation and stability theory; nonlinear dynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 508 Dynamics III 3.0 Credits
Lagrangian-Hamiltonian formulations; variational principles; particle kinematics and dynamics; small oscillations and normal modes; Navier-Stokes equations; statistical description of turbulent flows; thermodynamics and energetics of ideal gases; computational fluid dynamics; viscous and compressible flows; boundary-layer flows; hydrodynamic perturbation and stability theory; nonlinear dynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 511 Electromagnetic Theory I 3.0 Credits
Covers electrostatics, magnetostatics, electromagnetic waves, boundary value problems of electromagnetic theory, theory of Fresnel and Fraunhofer diffraction, classical electrodynamics, special relativity, waveguides, and radiation theory.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 512 Electromagnetic Theory II 3.0 Credits
Continues PHYS 511.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 513 Electromagnetic Theory III 3.0 Credits
Electrostatics; magnetostatics; electromagnetic waves; boundary value problems of electromagnetic theory; theory of Fresnel and Fraunhofer diffraction; classical electrodynamics; special relativity; waveguides; radiation theory; plasmas.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 516 Quantum Mechanics I 3.0 Credits
Covers axioms of quantum mechanics and the basic mathematical tools, one-dimensional Schrodinger equation, spin and general two-level systems, harmonic oscillator, general theory of angular momentum, hydrogen atom, elements of atomic spectroscopy, quantum theory of scattering, electron spin, addition of angular momenta, stationary and time-dependent perturbation theory, fine and hyperfine structure of the hydrogen atom, interaction of light and matter, and Dirac Equation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 517 Quantum Mechanics II 3.0 Credits
Continues PHYS 516.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 518 Quantum Mechanics III 3.0 Credits
Continues PHYS 517.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 521 Statistical Mechanics I 3.0 Credits
Covers thermodynamics; probability theory; Gibbs-Boltzmann formulation; relation between density of states and entropy; partition functions; ensembles; Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac, phonon, photon, and electron systems; and phase transitions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 522 Statistical Mechanics II 3.0 Credits
Continues PHYS 521.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 523 Statistical Mechanics III 3.0 Credits
Thermodynamics; probability theory; Gibbs-Boltzmann formulation; relation between density of states and entropy; partition functions; ensembles; Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac, phonon, photon, and electron systems; phase transitions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 531 Galactic Astrophysics 3.0 Credits
The goal of this course is to present an introduction to the processes responsible for the formation, structure, evolution, and present-day appearance of the Milky Way and other galaxies. Using the Milky Way Galaxy as a guide, we will develop analytical and numerical tools to help us understand the properties of these magnificent objects, near and far. For the most part, these tools will be based on familiar concepts in classical mechanics and thermodynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 532 Cosmology 3.0 Credits
Covers cosmological models, age and distance scales in the universe, the hot big bang, primordial nucleosynthesis, inflation, baryonic and non-baryonic matter, galaxy formation and evolution, dynamics of structure formation, statistics of cosmological density fields, and cosmic background fluctuations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 541 Atmospheric Physics I 3.0 Credits
Chemical composition, transformation and evolution; radiation spectra, absorption, scattering and heat transfer; thermodynamics and cloud and precipitation microphysics; surface fluxes, thermal structure and energy balance; optics and acoustics: observational methods and remote-sensing techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 542 Atmospheric Physics II 3.0 Credits
Chemical composition, transformation and evolution; radiation spectra, absorption, scattering and heat transfer; thermodynamics and cloud and precipitation microphysics; surface fluxes, thermal structure and energy balance; optics and acoustics: observational methods and remote-sensing techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 543 Atmospheric Physics III 3.0 Credits
Chemical composition, transformation and evolution; radiation spectra, absorption, scattering and heat transfer; thermodynamics and cloud and precipitation microphysics; surface fluxes, thermal structure and energy balance; optics and acoustics: observational methods and remote-sensing techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 544 Large Scale Atmospheric Dynamics I 3.0 Credits
Theoretical thermodynamics and atmospheric energetics; flow on a rotating sphere; general circulation; barotropic and baroclinic instability; cyclonic circulations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 545 Large Scale Atmospheric Dynamics II 3.0 Credits
Theoretical thermodynamics and atmospheric energetics; flow on a rotating sphere; general circulation; barotropic and baroclinic instability; cyclonic circulations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 546 Large Scale Atmospheric Dynamics III 3.0 Credits
Theoretical thermodynamics and atmospheric energetics; flow on a rotating sphere; general circulation; barotropic and baroclinic instability; cyclonic circulations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 547 Small Scale Atmospheric Dynamics I 3.0 Credits
Theory of turbulent flows and perturbation analysis of waves; boundary-layer processes, including diffusion; storm microphysics and dynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 548 Small Scale Atmospheric Dynamics II 3.0 Credits
Theory of turbulent flows and perturbation analysis of waves; boundary-layer processes, including diffusion; storm microphysics and dynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 549 Small Scale Atmospheric Dynamics III 3.0 Credits
Theory of turbulent flows and perturbation analysis of waves; boundary-layer processes, including diffusion; storm microphysics and dynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 553 Nanoscience 3.0 Credits
Physical basis of nanoscale materials and systems including discussion of low-dimensional structures and their physical properties, the self-assembly of nanostructures, applications in various fields of science and technology, and techniques for fabrication and characterization on the nanoscale.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 561 Biophysics 3.0 Credits
A one-course introduction to Biophysics. Topics may include structure of biomolecules, protein stability, electron transfer, protein folding, protein substrates, allostery, and self-assembly. No biological background is assumed.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 562 Computational Biophysics 3.0 Credits
Covers mathematical applications of biological simulations. Using classical and statistical mechanics, we will cover topics including atomic scale simulations, statistical sampling, and models of molecular cellular systems and living processes.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 563 Single Molecule Methods 3.0 Credits
Covers the principles, operations and applications of the most commonly used single molecule methods in biophysics, including scanning probe microscopy and spectroscopy, optical trapping and fluorescence resonance energy transfer techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 571 Nonlinear Dynamics 3.0 Credits
This course introduces the basic ideas of the new science of nonlinear dynamics and develops methods to carry out fundamental computations of fractal dimension, Lyapunov exponents, and topological invariants.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 576 Introduction to Particle Physics 3.0 Credits
This course provides an introduction to the physics of fundamental particles. Topics include the fundamental forces, quarks and leptons, Feynman diagrams, symmetries and conservation laws, relativistic kinematics, bound states, and experimental methods.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 601 Advanced Quantum Mechanics I 3.0 Credits
Relativistic one-particle quantum mechanics; Dirac theory radiation theory; free fields; interactions; quantum electrodynamics; introduction to elementary particle theory; quantum chromodynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 602 Advanced Quantum Mechanics II 3.0 Credits
Relativistic one-particle quantum mechanics; Dirac theory radiation theory; free fields; interactions; quantum electrodynamics; introduction to elementary particle theory; quantum chromodynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 603 Advanced Quantum Mechanics III 3.0 Credits
Relativistic one-particle quantum mechanics; Dirac theory radiation theory; free fields; interactions; quantum electrodynamics; introduction to elementary particle theory; quantum chromodynamics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 626 Solid State Physics I 3.0 Credits
Crystal lattices; Bloch theorem; classical and quantum theory of lattice vibrations; phonons, electron states in solids; calculation of energy bands and Fermi surfaces; dynamics of electrons in metals; electron-electron interactions; plasmons; electron-phonon interactions; polarons; semiconductor and insulator crystals; transport properties of solids; thermal properties; optical properties; magnetism; magnons; superconductivity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 627 Solid State Physics II 3.0 Credits
Crystal lattices; Bloch theorem; classical and quantum theory of lattice vibrations; phonons, electron states in solids; calculation of energy bands and Fermi surfaces; dynamics of electrons in metals; electron-electron interactions; plasmons; electron-phonon interactions; polarons; semiconductor and insulator crystals; transport properties of solids; thermal properties; optical properties; magnetism; magnons; superconductivity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 628 Solid State Physics III 3.0 Credits
Crystal lattices; Bloch theorem; classical and quantum theory of lattice vibrations; phonons, electron states in solids; calculation of energy bands and Fermi surfaces; dynamics of electrons in metals; electron-electron interactions; plasmons; electron-phonon interactions; polarons; semiconductor and insulator crystals; transport properties of solids; thermal properties; optical properties; magnetism; magnons; superconductivity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 631 Relativity Theory I 3.0 Credits
Covers particle and field dynamics in special relativity, tensor calculus for Riemannian space-time manifolds, Einstein's gravitational field equations and their principal solutions in general relativity, black holes, general relativistic variational principles, big bang cosmology, and quantization of general relativity.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 632 Relativity Theory II 3.0 Credits
Continues PHYS 631.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 633 Relativity Theory III 3.0 Credits
Continues PHYS 632.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 643 Physics of the Upper Atmosphere 3.0 Credits
Structure of the methods of probing the upper atmosphere; solar radiation; aurorae; cosmic rays, the ionosphere; geomagnetism, meteors.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 644 Atmospheric Numerical Prediction Techniques 3.0 Credits
Application of modern numerical methods to the prediction of atmospheric motions; initialization and assimilation methods; filtering, verification, and testing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 645 Atmospheric Analysis Techniques 3.0 Credits
Covers analysis and interpretation of meteorological data, including statistical and objective techniques. Uses data sources including satellites, radars, and special observational networks. Includes evaluation of analysis techniques, and initialization and assimilation in numerical models.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 646 Atmospheric Turbulence and Diffusion 3.0 Credits
Introduction to mechanics of turbulence, structure of atmospheric turbulence and its role in diffusion of contaminants.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 676 Nuclear Physics I 3.0 Credits
Review of systematics of experimental phenomena; nuclear structure theory, including shell model, interacting-boson model, Hartree-Fock approaches, and collective models; intermediate energy theory and experiment, including electron, nucleon, and pion scattering and reactions; group theoretical approaches; interfaces of quark-meson-nucleon coexistence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 677 Nuclear Physics II 3.0 Credits
Review of systematics of experimental phenomena; nuclear structure theory, including shell model, interacting-boson model, Hartree-Fock approaches, and collective models; intermediate energy theory and experiment, including electron, nucleon, and pion scattering and reactions; group theoretical approaches; interfaces of quark-meson-nucleon coexistence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 678 Nuclear Physics III 3.0 Credits
Review of systematics of experimental phenomena; nuclear structure theory, including shell model, interacting-boson model, Hartree-Fock approaches, and collective models; intermediate energy theory and experiment, including electron, nucleon, and pion scattering and reactions; group theoretical approaches; interfaces of quark-meson-nucleon coexistence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 699 Independent Study 1.0-6.0 Credit
Independent study in Physics under direction of a faculty member.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 4 times for 12 credits

PHYS 750 Special Topics 0.5-9.0 Credits
Assignment of readings and study in current topics of experimental and theoretical interest.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PHYS 865 Overview of Gradute Physics I 3.0 Credits
Methodology for efficient solution of Ph.D. candidacy exam-type problems; main quantitative theoretical relations and selected problems reviewed in mathematical physics, classical mechanics, electromagnetism, optics, quantum mechanics, thermodynamics, statistical physics, and atomic physics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 898 Master's Thesis 0.5-20.0 Credits
Master's thesis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PHYS 997 Research 1.0-12.0 Credit
Research.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PHYS 998 Ph.D. Dissertation 1.0-12.0 Credit
Ph.D. dissertation.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Public Policy

Courses

PLCY 503 Theory and Practice of Policy Analysis 3.0 Credits
The aim of this course is to develop an understanding of the social, political, and ethical context of policy research, and how this understanding can be translated into an applied practice of policy analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PLCY 504 Methods of Policy Analysis 3.0 Credits
Course focuses on the logic and procedures used in carrying out social research for policy purposes. The aim of the course is to develop the student's capacity to conceptualize, design, and conduct research.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PLCY 506 Institutional Dynamics of the Policy Process 3.0 Credits
Introduces students to the American policy process, looked at through the lens of historical institutional analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PLCY 507 Nonprofit Organizations 3.0 Credits
This course focuses on distinctive features of managing and governing nonprofit organizations and draws on current theories, concepts, and real world examples to explore particular management challenges. Course includes a mix of lecture, discussion, case applications, and presentations by practitioners from the local nonprofit community.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PLCY 509 Sustainability & Public Policy 3.0 Credits
Course introduces students to the concept of sustainability as it relates to policy planning, design, and implementation, and examines how different definitions of sustainability (e.g. environmental, economic, and social) can be translated into best practices, performance benchmarks, and other metrics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PLCY 511 Case Study Literature Review 1.0 Credit
A tutorial course for public policy students to review and report on academic literature relevant to their chosen case study topics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PLCY 504 [Min Grade: C]

PLCY 512 Case Study Document Review 1.0 Credit
A tutorial course for public policy students, to collect and report on original documents(legislation, hearing transcripts, reports, etc.) relevant to their chosen case study topics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PLCY 504 [Min Grade: C]

PLCY 513 Case Study Interviews 1.0 Credit
A tutorial course for public policy students to interview personnel relevant to their chosen case study topics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PLCY 504 [Min Grade: C]

PLCY 514 Case Study Research I 1.0 Credit
A tutorial course for public policy students to engage in literature reviews and/or original research relevant to their chosen case study topics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PLCY 504 [Min Grade: C]

PLCY 515 Case Study Colloquium 1.0 Credit
A group discussion course for public policy students to consolidate and report on their case study research and to comment on the research of other students.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PLCY 504 [Min Grade: C] and PLCY 511 [Min Grade: C] and PLCY 512 [Min Grade: C] and PLCY 513 [Min Grade: C]

PLCY 516 Case Study Research II 1.0 Credit
A tutorial course for public policy students to collect and report on original documents (legislation, hearing transcripts, reports, ect) relevant to their chosen case study topics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PLCY 504 [Min Grade: C] and PLCY 515 [Min Grade: C]

PLCY 517 Case Study Final Project 1.0 Credit
A final tutorial course for public policy students writing their case studies. Students complete and submit their final case study reports. Passage of this course is contingent completing an oral defense of their case studies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PLCY 504 [Min Grade: C] and PLCY 515 [Min Grade: C]

PLCY 590 Special Topics in Public Policy 0.5-12.0 Credits
Course covers on a rotating basis a variety of topics of interest to students in public policy, including (though not limited to) urban policy, environmental policy, and technology.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Publication Management

Courses

PMGT 630 The Publishing Environment 3.0 Credits
Provides an overview of publishing from inception to current time. Covers publishing fundamentals (creation to print), describes publishing formats and genres, and begins development of networking contacts. Discusses future trends and employment opportunities.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PMGT 631 Page Design and Production 3.0 Credits
Analyzes methods of production and make-ready for digital and offset printing. Includes art, halftones, and line art. Includes hands-on experience in book and magazine page design and production.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PMGT 635 Periodicals Publishing 3.0 Credits
Provides the student with a thorough understanding of periodical publishing and the current environment. Students learn how to publish a successful periodical from launch to sales and distribution. Strategy and implementation are stressed. Current publishing methods are emphasized and students gain directly applicable experience.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PMGT 730 Book Publishing 3.0 Credits
Analyzes managerial decisions including acquisitions, design and development, marketing, financial, and copyright implications of books publishing. Includes books of all genres: fiction, non-fiction, scientific, children's and others.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PMGT 731 Computer Image Generation and Telecommunications 3.0 Credits
Surveys computer applications in the field of publishing, including text and graphic image creation and manipulation, data management, fundamentals of telecommunications and data, electronic page makeup, and CD-ROM and Web publishing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PMGT 735 Publication Budgeting & Estimating 3.0 Credits
Analyzes the interrelationship between budgeting, estimating, acquisitions, and marketing; approaches and methods for product estimating; approaches to decision-making for service subcontracting; and the implications of service subcontracting decisions on budgeting, estimating, and marketing.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PMGT 740 Publications Marketing 3.0 Credits
Analyzes and provides case studies and examples of marketing methods specifically related to publishing books, periodicals, and electronic products. Includes print and online campaigns and strategies. Reviews state-of-the-art approaches.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PMGT 745 Electronic Publishing 3.0 Credits
Electronic Publishing gives students applied and theoretical knowledge of professional electronic publishing. Students will focus on issues relating to writing and integrating text and graphics to create websites and on-line publications. Students will also consider how issues in document design and usability analysis can be used to evaluate websites.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PMGT 799 Special Topics 3.0 Credits
Covers special advanced topics in publication management. May be repeated for credit if topic varies.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PMGT 800 Independent Study 9.0 Credits
Involves individual investigation in special areas of publishing not regularly covered in the courses offered. Topics for study must be approved in advance of registration by the graduate adviser and the instructor involved. May be repeated for credit if topic varies.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PMGT 801 Independent Project 0.5-9.0 Credits
Requires a project related to the printing and publishing industries to be designed, under faculty advisement, to meet individual student interests and career goals. Credits in excess of 2 may satisfy elective requirements.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Political Science

Courses

PSCI 541 Technology in Developing Nations 3.0 Credits
Examines the nature of access to technology in developing nations, causes of the North-South technology gap, and possibilities for change in today's global economy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

PSCI 555 International Political Economy and Technology 3.0 Credits
Enables students to comprehend the ever-changing technology-driven global political economy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 557 Globalization and Transition 3.0 Credits
Covers the impact of globalization on the politics and economies of states and populations and the changing dynamics of interactions among them.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

PSCI 570 International Environmental Policy 3.0 Credits
Examines the prospects for effective environmental policymaking in the contemporary nation-state system. Reviews international environmental issues, agreements, and institutions. Studies theories of international relations in order to develop a conceptual framework for analyzing the strengths and weaknesses of the nation-state system.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 571 Science and Technology Policy 3.0 Credits
Examines science and technology policy as a challenge for democracy. Addresses competing social-scientific models of the relationship between politics and technology, focusing on science policy (research and development), communications, and biotechnology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

PSCI 573 Gender, Race and Science 3.0 Credits
Examines the role of gender stratification in scientific professions, with emphasis on barriers to marginalized groups.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

PSCI 574 Alternative Policy Perspective 3.0 Credits
Provides students with a nontraditional foundation for the analysis of public policy. Covers topics such as postmodernism, feminism, and critical theory, and examines these critiques and their implications for policy analysis as a tool for achieving progressive social and policy change.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

PSCI 575 Appropriate Technology for Development 3.0 Credits
Studies technological solutions that meet the needs of developing countries. Involves project exercises in technologies appropriate to specific countries and regions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

PSCI 696 Seminar in Science, Technology, and Society 3.0 Credits
Provides an in-depth research seminar in science, technology, and society, organized around a particular theme selected by the instructor.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSCI 698 Science Technology and Society Thesis 0.5-9.0 Credits
Independent research supervised by an STS faculty member toward completion of a required master's thesis.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 19 credits

PSCI 699 Independent Study in Political Science 12.0 Credits
Independent study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

Psychology

Courses

PSY 510 Research Methods I 3.0 Credits
Develops a practical, conceptual understanding of statistical data analysis, the logic of hypothesis testing, and statistical inference. Requires students to identify researchable topics, critically review evidence from prior studies, and prepare proposals for gathering appropriate evidence.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 511 Research Methods II 3.0 Credits
This course will focus on topics regarding the development, execution, analysis, and interpretation of psychotherapy outcome investigations in the clinical psychology across a variety of topical areas (e.g., psychopathology, behavioral medicine).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 510 [Min Grade: C]

PSY 512 Cognitive Psychology 3.0 Credits
Emphasizes understanding normal cognition as a basis for recognizing and identifying when abnormality may exist. Covers topics including perception and pattern recognition; attention, learning, and memory; language and communication; and problem-solving and decision-making.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 514 Behavioral Assessment I 3.0 Credits
Reviews the major principles of learning developed by major theorists in psychology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 515 Clinical Case Conceptualization 3.0 Credits
This course will provide a review of the principles, assumptions, and purpose of clinical case formulation. The course is designed to provide a practical guide of how to integrate various assessment methods such as clinical interviews, direct observation in both analogue and naturalistic settings, applied behavioral analysis, psychological testing, self-report questionnaires, self-monitoring inventories, cognitive assessment, assessment of emotional regulatory processes, interpersonal patterns of behavior, and psychophysiological techniques in order to construct a case formulation leading evidence-based treatment.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 514 [Min Grade: C]

PSY 516 Developmental Psychology 3.0 Credits
Studies the nature of developmental processes across the life -perceptual, intellectual, emotional, social, and neuropsychological-and the factors influencing or limiting them.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 517 Social Cognition 3.0 Credits
This course will examine the broad domain of social cognition, with special emphasis on its relevance for clinical psychology. The purpose of the course is to present current evidence regarding the influence of social cognitive variables on normal and abnormal behavior.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 518 Social Psychology 3.0 Credits
Studies the causes of social influence and the effects of others on behavior and cognitions of the individual, in such areas as attitude formation and change, social perception, affiliation, and attraction.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 520 Psychopathology 3.0 Credits
Familiarizes the student with existing categories of mental disorders, their diagnosis, and their treatment.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 522 Psychological and Intellectual Assessment 3.0 Credits
Covers the theoretical and practical uses of tests designed to measure intellectual, cognitive, and academic abilities, including administration and interpretation of the most widely used measures.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 524 Professional Issues and Ethics 3.0 Credits
Discusses issues in the delivery of professional psychology, including confidentiality, supervision, standards of practice, and ethics in clinical psychology. Uses case studies to emphasize state and APA regulations.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 530 Neuroanatomy and Behavior 3.0 Credits
Explores the structure and function of the central nervous system, with emphasis on the physiological basis of behavior. Covers topics including the senses, nerve function, cognition and brain structure.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 540 Principles of Neuropsychology 3.0 Credits
Introduces the current state of the field and well-recognized and commonly used approaches in the clinical understanding of human brain-behavior relationships.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 542 Neuropsychological Assessment 3.0 Credits
Covers the theory and practical use of major neuropsychological assessment devices, including the Halstead-Reitan and other tests used in contemporary neuropsychology.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 543 Neuropsychological Assess II 3.0 Credits
This course covers principles and practices of neuropsychological testing. Students are taught to administer and interpret major neuropsychological tests and batteries. The focus of the course is on practical knowledge, report writing and neuropsychological clinical practice.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 542 [Min Grade: C]

PSY 550 Multicultural Perspectives in Psychology 3.0 Credits
Provides an overview of the impact of cultural, ethnic and racial factors on the practice of applied psychology with the goal of developing multicultural competency in clinical practice.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 6 credits

PSY 552 Proseminar in Diversity 2.0 Credits
The seminar series will focus on contemporary issues in psychology related to issues of diversity, especially with regard to clinical research and treatment. Seminars will invovle a mixture of group discussions, lectures, and guest speakers.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY.

PSY 560 Teaching and Consultation 1.0,2.0 Credit
Teaching of Psychology is designed to teach psychology graduate students how to teach within the discipline of psychology. Basic principles of psychology, educational and psychological theories, as well as in class demonstrations will comprise course content, as well as discussion of "vignettes" and challenges that teaching assistants are likely to encounter in their early professional development.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 1 times for 3 credits
Restrictions: Can enroll if major is PSY.

PSY 562 Consciousness 3.0 Credits
A survey of the philosophical, behavioral, and biological basis for conscious thought. Particular attention will be paid to the neural correlates of consciousness and the evolution, development and neuropsychology of the self.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY.

PSY 610 Data Analysis in Psychology 3.0 Credits
Deals with the problems confronted by the social scientist in creating and working with a numerical database, including some coverage of the use of computers in calculating both parametric and non-parametric statistics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 612 Psychology of Human-Computer Interaction Design 3.0 Credits
Explores the psychological aspects of human interaction with computing technology, focusing on the design, evaluation, and redesign of usable and useful human-computer interactions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 614 Problem Solving & Creativity 3.0 Credits
Introduces current research on problem-solving and creativity. Includes lectures, classroom demonstrations, and exercises.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 616 Motivation and Emotion 3.0 Credits
Considers the behavioral consequences of psychological levels of motivation and emotion.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 617 Empirical Unconscious Process 3.0 Credits
This course is designed to review empirical evidence concerning the assessments and nature of unconscious processes and to consider the relevance of this information for traditional conceptions of the unconscious and for psychotherapy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 618 Psychology of Loss & Bereavement 3.0 Credits
Covers the study of human attachment and loss, such as death, separation, job loss, and retirement.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 620 Personality Assessment 3.0 Credits
Introduces theories underlying the assessment of personality via the use of objective instruments. Teaches students to administer and interpret a select sample of major personality tests.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 621 Theories of Personality 3.0 Credits
Reviews different theories of personality, including behavioral, psychoanalytic, cognitive, and medical, as they apply to normal human functioning and abnormal behavior.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 624 Behavior Analysis 3.0 Credits
The course will provide an overview of learning theories as applied to both adaptive and pathological behavior. The assumptions underlying learning and conditioning of complex systems will also be presented. A behavior laboratory will provide problem-based projects for students to integrate and analyze their observation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY.

PSY 630 Biological Basis of Behavior and Treatment 3.0 Credits
This course examines neuroanatomy and physiology, with a particular emphasis on the interaction of physiology and anatomy on behavior and clinical syndromes. This course also examines the major classes of psychotropic medications used in clinical practice, with a particular emphasis on empirically supported psychopharmacological treatments and practical considerations relevant to effective clinical and psychopharmacological practice.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 632 Sensory and Motor Systems 3.0 Credits
Examines the physiological function of the sensory and motor systems, from the level of the central nervous system through receptor functions.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 642 Neuropsychological Case Analysis and Integration 3.0 Credits
Reviews the analysis of neuropsychological data, including the integration of historical, interview, behavioral, and formal assessment data. Emphasizes integrating traditional interview and observation techniques and the ability to conceptualize actual clinical cases in oral and written form.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 646 Neuropsychological Assessment of Children and Adolescents 3.0 Credits
Covers instruments and issues related to the assessment of children and adolescents. Involves both didactic and practical training in psychological and behavioral assessment, test interpretation, and report writing for children with various neurological and psychiatric disorders.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 648 Forensic Assessment I 3.0 Credits
Discusses the use of psychological testing procedures as they relate to testimony in court and legal proceedings. Concentrates on the practical and ethical problems for the clinician involved in clinical practice.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 649 Forensic Assessment II 3.0 Credits
The course focuses on distinguishing forensic assessment from other kinds of assessment performed by mental health professionals, and describing core principles that can serve to guide forensic clinicians. Using frequently identified legal issues as a guide; the course provides a combination of practical training and empirical overview of various relevant topics within the area of forensic assessment. Students may have the opportunity to be involved in a supervised forensic assessment during the period over which the course is taught. Course requirements include writing a report based on hypothetical data, and a paper on a topic approved by the instructor.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 648 [Min Grade: C]

PSY 650 Child Psychopathology & Treatment 3.0 Credits
This course will explore empirical literature on the diagnosis, assessment, etiology, course, and treatment of various psychological disorders of childhood and adolescence. Students will understand the DSM-IV-TR diagnostic criteria's application to children, symptom presentation in children, and issues of differential diagnosis. Empirically supported treatments for childhood disorders will be examined.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY.

PSY 690 Master of Science Research I 3.0 Credits
Students will enroll in a three-term Master's Thesis course under the direct supervision of their mentor. The goal is to foster the development of an independent research project under the supervision of their designated research mentor. This is Part one of the 3-part sequence course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY.

PSY 691 Master of Science Research II 3.0 Credits
Students will enroll in a three-term Master's Thesis course under the direct supervision of their mentor. The goal is to foster the development of an independent research project under the supervision of their designated research mentor. This is Part two of the 3-part sequence course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY.
Prerequisites: PSY 690 [Min Grade: C]

PSY 692 Master of Science Research III 3.0 Credits
Students will enroll in a three-term Master's Thesis course under the direct supervision of their mentor. The goal is to foster the development of an independent research project under the supervision of their designated research mentor. This is Part three of the 3-part sequence course.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY.
Prerequisites: PSY 690 [Min Grade: C] and PSY 691 [Min Grade: C]

PSY 710 Data Analysis II 3.0 Credits
The purpose of this course is to acquaint students with the advances statistical tools most frequently used in clinical psychology research. The class will give you a basic theoretical background in the procedure, and it will familiarize you with computer-based analysis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 610 [Min Grade: C]

PSY 711 Data Analysis III: Advanced Topics 3.0 Credits
The purpose of this course is to acquaint students with advanced statistical tools most frequently used in clinical psychology research. The class will give you a basic theoretical background on the procedures, and it will familiarize you with computer-based analysis. Emphasis will be placed on the application and interpretation of statistics.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 610 [Min Grade: C] and PSY 710 [Min Grade: C]

PSY 712 History and Systems 3.0 Credits
Covers the history and various systematic theories of psychology. Explores the conceptual foundations of psychology from its inception to the present day.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 720 Health Psychology 3.0 Credits
Discusses the role of the clinical psychologist in the medical setting. Involves didactic and clinical training focusing on behavioral medicine, sleep disorders, hypnosis, consultation-liaison services, and biofeedback.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 721 Principles of Psychotherapy 3.0 Credits
Introduces fundamental clinical interviewing skills.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 722 Theories of Intervention 3.0 Credits
A review of the major theoretical foundations of psychotherapeutic intervention derived from neuroscience, interpersonal, psychodynamic, and learning theories, including contextual/mindfulness-based approaches. The course will translate the various theoretic foundations toward a united approach to assessment and intervention.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Prerequisites: PSY 721 [Min Grade: C]

PSY 730 Criminal Law and Psychology 3.0 Credits
This advanced seminar focuses on the criminal justice system's treatment of mental disordered offenders. Students will learn about the major mental disorders and the ways in which our criminal law accounts for the impact of those illnesses on a defendant's criminal responsibility.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 734 Social Science Applications to the Law 3.0 Credits
This seminar is designed to inform doctoral students in psychology about the usefulness of social science information in the practice and scholarship of law, at the same time indicating the problems and pitfalls of using such information, particularly at the appellate level. Thus, the seminar explores the interplay and conflict between law and psychology and the many ways in which social science research can or should have an influence on legal decision making.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 740 Neuropsychological Evaluation and Interpretation of Adults 3.0 Credits
Covers the neuropsychological assessment of adult patients with brain injury and the subsequent design of reports and rehabilitation programs. Discusses both assessment instruments and rehabilitation techniques for brain injuries and associated problems. Emphasizes clinical experience with patients.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 746 Neuropsychological Evaluation and Intervention of Children and Adolescents 3.0 Credits
Covers the neuropsychological assessment of younger patients with brain injuries, learning disabilities, or developmental disorders.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 750 Autism Spectrum Disorders 3.0 Credits
In this course we will investigate autism spectrum disorders including characteristics, assessments, systems and family issues, and current theories about the nature and biological basis for autism.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 811 Introduction to Hierarchical Linear Models and Longitudinal Data Analysis 3.0 Credits
Content will focus on an introduction to longitudinal data analysis, an introduction to standard repeated statistical methods, advanced issues, and application in psychological research including GEE and clustered techniques.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY and classification is PhD and program is PHD.
Prerequisites: PSY 610 [Min Grade: C] and PSY 710 [Min Grade: C] and PSY 711 [Min Grade: C]

PSY 812 Cognitive Neuroscience 3.0 Credits
This course provides an overview of the field of Cognitive Neuroscience, including a review of sophisticated modeling and neuro-imaging technologies to answer important questions about behavior, the mind and the brain .
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CLPS or major is LWPY or major is PSY.
Prerequisites: PSY 530 [Min Grade: C]

PSY 815 Evidence-Based Psychotherapy 1.0 Credit
This advanced elective course will provide training in scientifically supported psychological assessment and treatment methods. A range of methods (e.g., Problem-Solving Therapy, Gottman marital therapy, etc.) will be presented through book chapters, videos, role plays, etc.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 3 times for 3 credits
Restrictions: Can enroll if major is PSY and classification is PhD and program is PHD.

PSY 820 Cognitive-Behavioral Therapy 3.0 Credits
This course is designed to provide an introduction to cognitive behavior theory and therapy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 821 Family Therapy 3.0 Credits
Family therapy theories will be reviewed including historically important, current and innovative approaches. In this course students will: 1) learn/integrate concepts and methods of family therapy, 2) appropriately apply these concepts and methods to case material, (3) critically evaluate psychotherapy outcome research relevant to family therapy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CLPS or major is LWPY or major is PSY and classification is PhD.

PSY 822 Pediatric Psychology 3.0 Credits
The focus of pediatric psychology is the understanding, assessing, and intervening in the relationship between physical and psychological health. In this course students will: (1) learn pediatric psychology theory and practice including professional issues, assessment strategies and intervention approaches, (2) apply concepts to develop appropriate and effective treatment plans for case examples.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CLPS or major is LWPY or major is PSY and classification is PhD.

PSY 823 Substance Use 3.0 Credits
This course examines the effects of drugs on human thinking and behavior. Both illicit (street) and licit (prescription) drugs are examined in an attempt to understand how these drugs produce their physiological and psychological effects. The course will focus on understanding the etiology and epidemiology of drug use and drug abuse/dependence, the pharmacology of psychoactive substances, and empirically supported prevention and intervention strategies.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 824 Psychotherapy with Young Children 3.0 Credits
Reviews the different approaches of intervening with clinical issues in children and families.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 825 Seminar in Mind and Body Studies 3.0 Credits
Through a seminar format, this course will provide an exploration and analysis of the scientific literature concerning health and disease, regarding the integration of biomedical, psychological, social, spiritual, and philosophical domains.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 826 Social Problem Solving and Child Psychopathology 3.0 Credits
This elective course presents an overview of interpersonal cognitive problem solving (ICPS) and their prerequisite skills in normal and diagnostically disturbed populations beginning at age four, and is divided into three sections: Correlation Research; Preventive/Treatment Interventions; and the I Can Problem Solve (ICPS) prevention program.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 827 Behavioral Stress Management 3.0 Credits
This graduate level seminar will provide hands-on teaching of various behavioral stress management strategies. These strategies (e.g., progressive muscle relaxation) are the fundamental skills often part of larger anxiety reduction or stress management protocols for a wide variety of psychological problems. The emphasis of this course is on knowing when to apply these strategies and learning how to competently implement these skills for adult populations. The instructor will model the various strategies and students are expected to role play simulated therapy cases.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 828 Weight and Eating Disorders 3.0 Credits
The purpose of this course is to review psychological determinants of body weight and eating behavior as well as psychological treatments for obesity and eating disorders.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 829 Psychopathy 3.0 Credits
This course focuses on the historical concepts/definitions of psychopathy and the use of various assessment methodologies in clinical and forensic populations; review of comorbidity of psychopathy with other Axis I and Axis II disorders. Students will gain experience in the assessment of psychopathy.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is CLPS or major is LWPY or major is PSY.

PSY 830 Advanced Topics in Health Psychology 3.0 Credits
This advanced seminar covers current empirical research in health psychology relevant to theory, epidemiology, and evidence based mental health assessment and intervention, focusing on medical conditions and chronic illnesses that psychologists most often encounter across varied populations, as well as the increased role psychologists play in medical and health settings.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 840 Advanced Cognitive-Behavioral Therapy 3.0 Credits
This course will include didactic training, in class demonstrations, video demonstrations, in-class practice sessions implementing cognitive and behavioral therapy techniques for specific psychological disorders including panic disorder, agoraphobia, obsessive compulsive disorder, depression and post-traumatic stress disorder.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if major is PSY and classification is PhD and program is PHD.
Prerequisites: PSY 820 [Min Grade: C]

PSY 843 Neuropsychological Evaluation of Head Trauma 3.0 Credits
Covers the neuropsychological assessment of patients with head trauma and the subsequent design of reports and rehabilitation programs.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 845 Neuropsychological Evaluation & Intervention of the Elderly 3.0 Credits
Covers the neuropsychological assessment of elderly patients with brain injury, such as primary degenerative conditions (e.g., dementia and Alzheimer's disease).
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 850 Psychology of Disability 3.0 Credits
Reviews disability determination and discusses issues of disability.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 852 Neuropsychological Services Delivery Systems 3.0 Credits
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 854 Psychology of Rehabilitation 3.0 Credits
Discusses issues of psychological assessment and intervention as they apply to rehabilitation.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 865 Special Topics in Psychology 0.5-9.0 Credits
Covers special topics of relevance and significance to the discipline of psychology. May be repeated for credit when topics vary.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated multiple times for credit

PSY 897 Clinical Psychology Practicum Seminar 3.0 Credits
Consistent with APA requirements for accredited programs, the class serves a colloquium function, brings students together to learn about and discuss clinical- and practicum-related issues, and provides a vehicle for information on practice-related issues.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 898 Master's Thesis in Psychology 3.0 Credits
Requires supervised research at the master's level.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 899 Practicum 1.0 Credit
According to APA guidelines, students are required to accumulate clinical training hours during their course of studies. This course is intended to award students credit for each successful year of completed practicum work.
College/Department: College of Arts and Sciences
Repeat Status: Can be repeated 4 times for 4 credits

PSY 998 Ph.D. Dissertation in Psychology 1.0-12.0 Credit
Requires supervised research, including literature research, data collection, and writing of doctoral thesis.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

PSY 999 Internship 1.0-12.0 Credit
Provides advanced, one-year full-time placement in a clinical setting determined by the clinical director and the student.
College/Department: College of Arts and Sciences
Repeat Status: Not repeatable for credit

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