

UNION COLLEGE

ACADEMIC CATALOG

2016-2017



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Catalog Home

The Union College Academic Catalog describes the College's academic program, including the Common Curriculum and individual department and program majors, minors, and course offerings, as well as academic policies and regulations. The Academic Catalog also contains information about Union College, including life on campus as well as costs and financial aid.

Accessing the On-line Academic Catalog

This is the home page for the On-line Academic Catalog, which provides the most up-to-date information about courses and programs. You can access sections of the Academic Catalog using the navigational tabs to the left. For example, for requirements of particular majors and minors, click on "Majors, Minors and other Programs" and for information about particular courses, click on "Course Listing."

Downloading the Academic Catalog:

You can download the Academic Catalog in a pdf document. **PLEASE NOTE THAT THE MOST UP TO DATE INFORMATION IS IN THE ONLINE VERSION.**

(Academic Catalog 2016-2017 as of September 1, 2016)

The information in this Academic Catalog was prepared as of August 18, 2016. Provisions of this publication are not to be regarded as an irrevocable contract between the student and Union College. The College reserves the right to make changes in its course offerings, degree requirements, regulations and procedures, and fees and expenses as educational and financial considerations require.

Union College does not discriminate on the basis of age, sex, race, color, religious belief, disability, sexual orientation, or national origin. The College's policy of nondiscrimination extends to all areas of college operations, including but not limited to admissions, student aid, athletics, employment, and educational programs. All the rights, privileges, programs, and activities generally accorded to all full-time matriculated students of the College are accorded on a nondiscriminatory basis.

Academic Calendar 2016-2017

FALL TERM 2016

Friday	Aug. 5th	Fall term comprehensive fee due
Wednesday-Friday	Aug 31st-Sep 2nd	International Student Orientation
Sunday	Sept. 4th	Residence halls open for First Year and New Transfer students only
Sunday-Tuesday	Sept. 4th-6th	First Year and Transfer student orientation
Tuesday	Sept. 6th	First Year and Transfer student advising and registration
Tuesday	Sept. 6th	Residence halls and houses open for returning Upperclass students
Wednesday	Sept. 7th	Fall term classes begin; add/drop starts for returning students
Wednesday-Friday	Sept. 7th-9th	Fall term data confirmation (Off-campus and commuter students only)
Tuesday	Sept. 13th	Last day to add an open course without instructor's written approval
Tuesday	Sept. 13th	Last day to add/drop without a late fee
Tuesday	Sept. 20th	Last day to drop a course without a "W" and to finalize fall class schedule
Tuesday	Sept. 27th	Last day to declare a course "Pass-Fail"

Friday	Oct. 7th	Winter term course prescheduling materials available online
Monday-Friday	Oct. 10th-28th	Academic advising for winter term courses; students must consult with faculty advisors
Friday-Sunday	Oct. 21st-23rd	Homecoming and Family Weekend
Monday	Oct. 31st	Graduation application due for Class of 2017
Monday-Thursday	Oct. 31st-Nov. 3rd	Winter term prescheduling appointments; by class
Tuesday	Nov. 1st	Last day to drop a course with a "W"
Tuesday	Nov. 15th	Fall term classes end
Wednesday	Nov. 16th	Reading day
Thursday-Tuesday	Nov. 17th-22nd	Fall term final exam period
Wednesday	Nov. 23rd	Residence halls and houses close
Wednesday	Nov. 30th	Fall term grades due

WINTER TERM 2017

Friday	Dec. 2nd	Winter term comprehensive fee due
Monday	Jan. 2nd	Residence halls and houses open
Tuesday	Jan. 3rd	Winter term classes begin; add/drop starts
Tuesday-Wednesday	Jan. 3rd-4th	Winter term data confirmation (Off-campus and commuter students only)
Monday	Jan. 9th	Last day to add an open course without instructor's written approval
Monday	Jan. 9th	Last day to add/drop without a late fee
Monday	Jan. 16th	Last day to drop a course without a "W" and to finalize winter class schedule
Monday	Jan. 23rd	Last day to declare a course "Pass/Fail"
Friday	Feb. 3rd	Spring term prescheduling materials available online
Monday-Friday	Feb. 6th-24th	Academic advising for spring term courses; students must consult with faculty advisors
Monday	Feb. 27th	Last day to drop a course with a "W"
Monday-Thursday	Feb. 27th-Mar.2nd	Spring term prescheduling appointments; by class
Friday	Mar. 10th	Last day of winter term classes
Monday-Thursday	Mar. 13th-16th	Winter term final exam period
Friday	Mar. 17th	Residence halls and houses close
Monday	Mar. 20th	Winter term grades due

SPRING TERM 2017

Friday	Mar. 24th	Spring term comprehensive fee due
Sunday	Mar. 26th	Residence halls and houses open
Monday	Mar. 27th	Spring term classes begin; add/drop starts
Monday-Tuesday	Mar. 27th-28th	Spring term data confirmation (Off campus and commuter students only)
Friday	Mar. 31st	Last day to add an open course without instructor's written approval
Friday	Mar. 31st	Last day to add/drop without a late fee
Friday	Apr. 7th	Last day to drop a course without a "W" and to finalize spring class schedule
Friday	Apr. 14th	Last day to declare a course "Pass/Fail"
Friday	Apr. 28th	Fall term prescheduling materials online
Monday-Friday	May 1st-19th	Academic advising for fall term courses; students must consult faculty advisors
Monday	May 8th	Registration for summer classes begins
Friday	May 12th	Steinmetz Symposium
Saturday	May 13th	Prize Day
Friday	May 19th	Last day to drop a course with a "W"
Friday-Sunday	May 19th-21st	Alumni Weekend - ReUnion 2017
Monday-Thursday	May 22nd-24th	Fall term prescheduling appointments; by class
Friday	Jun. 2nd	Last day of spring term classes
Monday-Thursday	Jun. 5th-8th	Spring term final exam period
Friday	Jun. 9th	Residence halls and houses close at 3 p.m. for students not involved in Commencement
Sunday	Jun. 11th	Commencement
Sunday	Jun. 11th	Residence halls and houses close at 6 p.m.
Monday	Jun. 12th	Registration for summer classes ends
Wednesday	Jun. 14th	Spring term grades due
Monday	Jun. 19th	Summer term classes begin

Mission Statement and General Information

Union College Mission Statement

Union College, founded in 1795, is a scholarly community dedicated to shaping the future and to understanding the past. Faculty, staff, and administrators welcome diverse and talented students into our community, work closely with them to provide a broad and deep education, and guide them in finding and cultivating their passions. We do this with a wide range of disciplines and interdisciplinary programs in the liberal arts and engineering, as well as academic, athletic, cultural, and social activities, including opportunities to study abroad and to participate in undergraduate research and community service. We develop in our students the analytic and reflective abilities needed to become engaged, innovative, and ethical contributors to an increasingly diverse, global, and technologically complex society.

Adopted by the Faculty on May 23, 2008.

Approved by the Board of Trustees on May 31, 2008.

General Information

Union's Faculty: The student-faculty ratio at Union is 10:1. Ninety-eight percent of the teaching faculty holds the doctorate or terminal degree (excluding library staff, some of whom hold faculty rank).

Union's Students: More than 5,000 apply for placement in the first-year class. Exact statistics vary from year to year, but approximately 71 percent of the applicants are in the top decile of their secondary school class. The majority of the College's students are from the Northeast, with about 72 percent from New York and New England; 39 states and territories and 38 other countries also are represented. More than half receive financial aid from the College. About 88 percent of each class completes the degree requirements within six years.

Enrollment: Union College enrolls approximately 2,200 full-time undergraduates.

Accreditation: Union College is accredited by the Middle States Commission on Higher Education, 3624 Market St., Philadelphia, PA 19104, (267-284-5000). The College was last reaffirmed on November 19, 2015. The Middle States Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation. The programs in chemistry are certified by the American Chemical Society. The bioengineering, computer engineering, electrical engineering, and mechanical engineering programs are accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The Board of Trustees: The governing body of the College is the Board of Trustees. The Board of Trustees holds title to the property, is responsible for the administration of the College and its funds, and determines the policies under which programs are offered. The chief executive officer is the president, who also serves as chancellor of Union University, comprising Union College, Albany Medical College (1839), Albany Law School (1851), Dudley Observatory (1852), Albany College of Pharmacy (1881), and Union Graduate College (2003). Each institution has its own governing board and is responsible for its own programs. The Board of Governors of the University serves both to advise and to expand the areas of voluntary cooperation.

Alumni: The College's 27,000 alumni are represented by the Alumni Council, which is incorporated under the laws of the State of New York. The council has at least two representatives from each class, possibly more depending on the size of the class. It helps operate the alumni program through a group of standing committees and an executive committee, in conjunction with the Alumni Office. Alumni are welcome on campus every day of the year, with special emphasis on Homecoming and Family Weekend in the fall and ReUnion Weekend in late spring. ReUnions are held officially every five years, although all alumni are invited back to campus every year. Alumni clubs are organized wherever local alumni wish to use such an organization as a center of their college activity. The College's quarterly magazine, *Union College*, is sent to all alumni and to parents of undergraduates.

About Union College

A Brief History

Union College traces its beginnings to 1779. Several hundred residents of northern New York, certain that Burgoyne's defeat at Saratoga two years before would mean a new nation, began the first popular demand for higher education in America. These residents pursued that dream for 16 years until, in 1795, Union became the first college chartered by the Regents of the State of New York. The first trustees consciously attempted to bring their new college into the mainstream of their world. The very name, Union, carried echoes of the new national union. More immediately and directly, it recognized the fact that the College was an outgrowth of a new sense of community among the several religious and national groups in the local population. Union's founders were determined to avoid the narrow sectarianism characteristic of earlier American colleges; today, Union is one of the oldest nondenominational colleges in the country.

Union did not share the heavily classical bias of most colleges of the day. Its motto ("*Sous les lois de Minerve nous devenons tous freres et soeurs*," or "We all become brothers and sisters under the laws of Minerva") is significantly of French rather than Latin origin. Union was among the first to introduce French on an equal level with Greek and Latin. In the 1820s, when the classical curriculum was the most widely accepted field of study, Union introduced a bachelor's degree with greater emphasis on history, science, modern languages, and mathematics. This liberality of educational vision characterized Union during the early years of the term of Eliphalet Nott, president from 1804 to 1866. Science and technology became important concerns; chemistry was taught before 1809, a degree in scientific studies was added, and in 1845 Union became the first liberal arts

college to offer engineering. The College was one of the first to offer work in American history and constitutional government and did pioneer work in the elective system of study.

By about 1830, Union was graduating as many students as any other college in America. Along with Harvard, Yale, and Princeton, it was spoken of as one of the big four. Students came from the South and West as well as the East. Among them were the father of Franklin D. Roosevelt, the grandfather of Winston Churchill, a president of the United States (Chester A. Arthur, Class of 1848), seven cabinet secretaries, 15 United States senators, 91 members of the House of Representatives, 13 governors, 50 important diplomats, more than 200 judges, 40 missionaries, 16 generals, and 90 college presidents, including the first presidents of the University of Illinois, the University of Iowa, the University of Michigan, Vassar College, Smith College, and Elmira College.

Nott's ingenious schemes for financing higher education, including a statewide lottery, also were instrumental in building Union's reputation. Innovations under the leadership of Andrew Van Vranken Raymond, president from 1894 to 1907 include the establishment of a Department of Electrical Engineering and Applied Physics, headed by the "electrical wizard" of the General Electric Company, Charles P. Steinmetz. The new department gave impetus to the development of strong programs in science and technology and attracted attention and applications to the College.

The 20th century brought other changes to Union. In 1970, the College adopted co-education and welcomed the first class of two dozen women transfer students. Today, roughly half of Union's students are women. More recently, the College has added programs in Asian Studies, Bioengineering, Film Studies, Nanotechnology, and Neuroscience.

In 2004, the Minervas were inaugurated to broaden the educational experience for students, faculty and staff. Every incoming student is assigned to one of seven Minerva Houses, joining upperclass students, faculty and staff in a house affiliation. Each Minerva, with its own budget and governing council, is a center for intellectual and social activity. Union's fraternities and sororities continue a proud tradition of service. Theme Houses are a popular option for students who seek residential affiliation with others who are committed to themes such as community service, environmental awareness, art, music and language.

The College has done important experimental work in interdepartmental studies, which is reflected in a number of programs that cut across the lines of academic disciplines. Organized interdepartmental majors are offered in numerous areas, and the College has also developed programs that enable students to work toward both a bachelor's degree and an advanced degree. The Common Curriculum (General Education) has received national recognition, and the College has an innovative program of Writing Across the Curriculum. Efforts to renew and enhance the College's academic programs and curricula continue to be supported by major foundations.

Presidents of Union College

John Blair Smith	December 9, 1795 - May 1799
Jonathan Edwards Jr.	July 1799 - August 1, 1801
Jonathan Maxcy	September 1802 - July 1804
Eliphalet Nott	August 1804 - January 29, 1866
Laurens Perseus Hickok	March 1, 1866 - June 30, 1868
Charles Augustus Aiken	October 12, 1869 - June 1871
Eliphalet Nott Potter, Class of 1861	Summer of 1871 - July 31, 1884
Harrison Edwin Webster, Class of 1868	Mid-1888 - January 1894
Andrew Van Vranken Raymond, Class of 1875	May 5, 1894 - mid-1907
Charles Alexander Richmond	April 1, 1909 - January 20, 1928
Frank Parker Day	January 20, 1929 - August 10, 1933
Dixon Ryan Fox	July 1, 1934 - January 30, 1945

Carter Davidson	March 1, 1946 - January 31, 1965
Harold Clark Martin	July 1, 1965 - June 30, 1974
Thomas Neville Bonner	July 1, 1974 - August 31, 1978
John Selwyn Morris	August 1, 1979 - August 31, 1990
Roger Harold Hull	September 1, 1990 - June 30, 2005
Stephen Charles Ainlay	July, 1 2006 -

The College Grounds

The Union College campus, officially known as the College Grounds, occupies 100 acres in Schenectady, a city of 60,000 founded by the Dutch in 1661. The Grounds are the College's third home. In 1813, shortly after the College decided to move to the new location, the French architect and landscape planner Joseph Ramée laid out the new campus - the first unified campus plan in America. He designed a great central courtyard, flanked on three sides by buildings and open to the west, with a round pantheon as the focus of the courtyard.

The distinctive Ramée style, with its arches and pilasters in white, remains the dominant motif in Union College architecture. Additions to the campus have included the Science-Engineering Center; Achilles Center; Frank Bailey Field; the Morton and Helen Yulman Theater; and the F.W. Olin Center, and the Peter Irving Wold Center for Science and Engineering. Recent additions include the Henle Dance Pavillion, just east of Yulman Theater and Wicker Wellness Center on the southeast corner of Alumni Gymnasium.

Alumni Gymnasium, the Murray and Ruth Reamer Campus Center, and Schaffer Library have received major renovations and expansion, the historic Nott Memorial has been restored to become a display and discussion center, and a \$25 million project revitalized the neighborhood to the immediate west of campus by creating apartment-style housing for 160 students, a community center, and a residence hall for 230 students. Other facilities include the Viniar Athletic Center, home of women's and men's basketball; the Taylor Music Center, a state-of-the art classroom, rehearsal and performance facility; Breazzano Fitness Center in Alumni Gymnasium; the new Center for Bioengineering and Computational Biology; and the opening of seven Minerva Houses: Beuth House, Breazzano House, Golub House, Green House, Messa House, Sorum House and Wold House.

North of the central campus lie the eight acres of formal gardens and woodland known as Jackson's Garden, begun in the 1830s by Captain Isaac Jackson of the Mathematics Department. Through the garden runs Hans Groot's Kill, the brook that bounds through Union's Grounds in the College song. A durable local legend, never confirmed by historians, holds that the villagers of Schenectady burned a local maiden at the stake there in 1672, and that the ghost of the dead girl has haunted Jackson's Garden ever since.

At the center of the Grounds, on the spot designated by Ramée for his pantheon, stands Union's most unusual building, the distinctive, 16-sided Nott Memorial. Begun in the 1850s and completed in 1875, it has been hailed by architectural historians as an important example of American Victorian architecture and is a National Historic Landmark. Facing the Nott Memorial is Memorial Chapel, built in 1925 as a monument to the Union College graduates who lost their lives in World War I. Along its walls hang portraits of the former presidents of the College. Memorial Chapel is home to the renowned Union College Concert Series, which presents the world's finest chamber musicians. It also serves as the venue for major College convocations.

Also near the center of campus is Schaffer Library, which not only houses an extensive collection but also provides comfortable and modern space for reading, research and collaborative study. The library staff offers support for research and teaching in a variety of ways including in-class presentations, individual consultations, online research guides and informal inquires at the reference desk. The Schaffer Library provides access to electronic books, journals and databases, while on campus or off, 24 hours a day. Special Collections and Archives holds several of the College's most prized possessions, including an elephant folio edition of Audubon's *Birds of America*, which the College purchased directly from the artist; the Trianon editions of William Blake's works; the first books bought for the library in 1796; and the original College charter. The Library also houses the Union College Permanent Collection of fine art and scientific instruments. The collection includes over 2,800 works of art and material culture, including significant resources from internationally recognized artists and objects from Eastern and Ancient cultures. The collection also includes the original Ramée drawings for the campus and the Olivier Models. The Artist Installation Series is in the Learning Commons and Union's fine art collection is on display throughout the library. There is always an interesting exhibition of the College's treasures on display in the Lally Reading Room and the Beuth Atrium.

Flanking the library and connected to it by a curved colonnade are Karp Hall and Lippman Hall. Karp Hall, dedicated in January 2015, is the newly renovated home for the Departments of English and Modern Languages. Lippman Hall - dedicated in Fall 2011 and named in honor of Robert Lippman '50 through a gift by his son, Jim '79 - houses Economics, History, Political Science and Sociology. On nearby South Lane, Lamont House was renovated in 2012 as the new home of Anthropology, Classics, Philosophy and Religious Studies programs.

Filling the area in front of the library and between the two classroom buildings is Roger Hull Plaza (named for the former Union president), an open space with benches and flower beds. This campus crossroads was furnished and landscaped in part with gifts from parents of Union College students. It serves as the site for such formal ceremonies as Commencement and for informal meetings and conversation.

The Science and Engineering complex, which includes the Science and Engineering Building, Bailey Hall, Steinmetz Hall and Butterfield Hall, is the home of the Departments of Biological Sciences, Chemistry, Computer Science, Electrical and Computer Engineering, Mathematics, Mechanical Engineering, Physics and Psychology. Mathematics and Psychology are in Bailey Hall, Computer Science in Steinmetz Hall, and Bioengineering and Neuroscience in Butterfield Hall. In this complex, and available for student use, are such research tools as a nuclear magnetic resonance spectrometer, a Pelletron accelerator, X-ray diffraction equipment, a centrifuge, and a scanning electron microscope capable of examining a surface area 200,000 times smaller than what can be seen with a conventional light microscope.

The nearby F.W. Olin Center's interactive computerization capabilities make the building adaptable for use by nearly every academic department and student. The Geology Department is located here, and, in addition to a variety of collaborative computer classrooms and laboratories, the center has a multi-media auditorium and a 20-inch, remote-controlled telescope.

The Peter Irving Wold Center for Science and Engineering was made possible by a gift from John Wold '38. The interdisciplinary Center serves as a platform for learning, research and innovation which solidifies the College's role as a national leader in the integration of science, engineering and the liberal arts. The three-story 35,000-square-foot research and education facility houses space for interdisciplinary programs such as Biochemistry, Environmental Science and Engineering, a high performance computer lab, state-of-the-art laboratories and classrooms, and flexible incubator labs for leading edge interdisciplinary research. Recent additions to Wold include labs for robotics and 3-D printing.

The Feigenbaum Center for Visual Arts is in North Colonnade in the former Philosophical Hall, which held the first analytical chemistry laboratory specifically opened for college students, and is home to the Department of Visual Arts. Also in the North Collonade, is the Taylor Music Center which includes the Fred L. Emerson Auditorium, a performance and teaching space with state-of- the-art recording technology. Surrounding the performance hall are practice rooms, high-tech classrooms and faculty offices. The Yulman Theater and Henle Dance Pavilion, overlooking Jackson's Garden, complete the performing arts facilities.

The focal point of the Murray and Ruth Reamer Campus Center is a commons area, part of a multi-level atrium that extends to a patio overlooking Jackson's Garden. The building also houses an auditorium, a dining hall, food court, a two-level bookstore, and a variety of office and activity rooms for student organizations such as *Concordiensis*, the student newspaper; WRUC, the first radio station to offer regularly scheduled broadcasts; *The Garnet*, the yearbook; the literary magazine, *Idol*; and the student activities office.

Alumni Gymnasium houses Breazzano Fitness Center, made possible by a gift from David Breazzano '78, a spacious facility with an extensive assortment of equipment for cardio fitness and weight training. The building also has an eight-lane swimming pool with seating and a diving area; racquetball/squash courts; and multi-use rooms for dance, aerobics and yoga programs.

Achilles Center houses Messa Rink, the renovation of which was made possible by a gift from Frank Messa '73, as well as athletic training and strength and conditioning programs.

Old Chapel, the former chapel and student meeting hall, is still used for many meetings.

South College, built in 1814, contains Sorum House and Green House, two of the College's Minerva Houses. North College, its counterpart on the other side of Library Field, is the home of Messa House and Wold House. Beuth House, Breazzano House and Golub House complete the Minerva House system.

Other residence halls are Davidson and Fox Houses; West College, home for many first-year students; Richmond House; Raymond House; Potter House; College Park Hall; and apartments along Seward Place to the west of campus.

Further Information

Academic Matters
Dean of Faculty, Feigenbaum Hall
(518) 388-6102

Academic Records
Registrar, Silliman Hall
(518) 388-6109

Admission to Union College
Office of Admissions, Grant Hall
(518) 388-6112 or (888) 843-6688

Alumni Affairs and Records
Alumni Office, Abbe Hall
(518) 388-6168

Business Matters
Finance Office, McKean House
(518) 388-6039

Student Aid and Scholarships
Financial Aid Office, Grant Hall
(518) 388-6123

Student Affairs
Dean of Students, Reamer Campus Center
(518) 388-6116

Student Loans
Finance Office, McKean House
(518) 388-6039

Public Information/Publications
Office of Communications, 69 Union Avenue
(518) 388-6131

Address:
Union College
807 Union St.
Schenectady, N.Y. 12308
(518) 388-6000

www.union.edu

U.S. Department of Education: www.ed.gov

Admissions

The Admissions Committee is concerned with the candidate's ability to profit from and contribute to the academic, intellectual, and extracurricular life of the College.

Three factors are considered in evaluating each application:

- The candidate's record in secondary school, including grades, the challenge and quality of courses taken, and rank in class
- The recommendations of the secondary school
- The personal qualities and extracurricular record of the candidate

The Admissions Committee attempts to broaden geographic and socioeconomic distribution of the student body by giving preference to students who live or attend schools in regions not well represented in the College and to students who will broaden the range of backgrounds and lifestyles within the College community.

The candidate's potential contribution to the Union community is also taken into consideration. Union is a close-knit community and, as such, depends heavily upon the constructive participation of each individual in the life of the College.

Application and Admission Procedures

Applications should be filed by January 15 of the final year in secondary school, with the exception of applications to the Leadership in Medicine program which are due by November 15. The Admissions Committee generally announces its decisions at the end of March and no later than April 15. There is no application fee.

Admitted candidates must reserve places by paying the \$500 admissions and security deposit on or before May 1. The admitted applicant then becomes a degree candidate entitled to a place in the class with all the rights and privileges of a Union student. Reservations submitted without the deposit are considered incomplete. If the degree candidate withdraws for any reason or is removed from candidacy for the degree before successfully completing three terms at Union, the admissions and security deposit is retained by the College in consideration of the degree candidate's placement in the class. After the student successfully completes three terms, if all obligations of the student to the College, financial and otherwise, are satisfied, the deposit may be refunded upon withdrawal (within the specified guidelines), removal, or graduation.

Requirements for Admissions: The Admissions Committee will carefully consider applications from candidates whose preparation is unusual and who, for good reason, do not meet the norms as stated below. Normally, a minimum of 16 units (courses) of secondary school preparation are required for admission. These should include certain fundamentals such as English, a foreign language, mathematics, social studies, and science. The following units are prescribed:

For Liberal Arts: Students should have four years of English, at least two years of a foreign language, and a minimum of two and one-half years of college preparatory mathematics. Students planning to major in chemistry, physics, and mathematics should have at least three and one-half years of mathematics.

For Engineering: Students planning to complete the engineering curriculum should have elementary and intermediate algebra, geometry, trigonometry, chemistry, physics, and four years of English. Although more advanced mathematics work is not required, it will prove helpful.

For the Leadership in Medicine Program: Students applying for the accelerated B.S./M.S. or M.B.A./M.D. program sponsored by Union College, Union Graduate College, and Albany Medical College must present at least four years of English, one year of biology and chemistry, and at least three years of college preparatory mathematics. A year of physics is recommended but not required.

Interviews and Group Information Sessions: Interviews are strongly recommended. Appointments may be made in advance of the proposed visit by calling (518) 388-6112 or using www.union.edu/visit. Personal interviews are offered weekdays from May 1 to January 15. Off campus interviews are offered by alumni. Register at www.union.edu/alumniinterview from August 15 to December 15.

Student-guided tours are available in conjunction with group information sessions weekdays and on many Saturdays throughout the year. Interviews are available for students who will be seniors from May 1 until January 31. Transfers may visit and interview at any time. Contact the Admissions Office for daily schedules or consult www.union.edu/visit.

School Reports and Recommendations: The secondary school report form, requesting a recommendation from the guidance counselor and a transcript of the academic record, is part of the Common or Coalition Application. The transcript should include a listing of the courses in progress as well as completed courses. A report of mid-year grades is required. The Admissions Committee requires that each candidate request a letter of recommendation from one of his or her secondary school teachers. The recommendation may be submitted online through the Common or Coalition Application or sent directly to the Admissions Office by the teacher. All materials must be on file with the Admissions Office by February 1.

College Entrance Examinations: Standardized testing is optional for most applicants. The SAT I with writing and two SAT II exams (in mathematics and a science) or the ACT with writing are required of those applicants considering the Leadership in Medicine program. For the 3+3 Accelerated Law Program, applicants must submit either the SAT I or the ACT. The November test date is the last test date available to applicants to Leadership in Medicine; December for the 3+3 Accelerated Law Program. Testing is strongly recommended for U.S. residents for whom English is not a first language; the TOEFL, ACT or SAT I fulfill that requirement. Applicants must arrange to have official score reports sent to the College by the College Board or by the American College Testing Program. Under terms of its membership in these organizations, the College cannot honor reports sent by the candidate or secondary school.

Early Decision: A significant number of Union's applicants request Early Decision. The College recommends this program to all candidates who have decided that Union is their first choice college. A candidate who wishes to be considered for Early Decision must check the appropriate space on the application for admission. An early decision application carries with it the commitment that the candidate will enroll if admitted. Regular applications to other colleges may be filed, with the understanding that these will be withdrawn if the candidate is accepted to Union.

Applications and requests for Early Decision must be received by the College by November 15 for Option I or January 15 for Option II. All other forms and credentials, including the Early Decision Agreement, must also be received by November 15 or January 15, respectively. Early Decision

candidates will be notified of the decision by December 15 for Option I and by February 1 for Option II. Candidates not offered admission under the Early Decision Program may either be issued a denial of admission or may be deferred to the regular applicant group and reconsidered.

Early Admission: In recent years, a number of high school students have expressed an interest in accelerated completion of high school requirements and early admission to the College. The Admissions Committee will consider candidates for early admission providing that, on the basis of high school achievement, they have demonstrated the potential to do college-level work. Interviews are required of candidates requesting early admission.

International Students

In addition to the application requirements described above, applicants who are citizens of other countries must be proficient in reading, listening, writing, and speaking English as English is the language of instruction at Union. The Admissions Committee strongly recommends that all international students (for whom English is not their first language) submit the results of the Test of English as a Foreign Language (TOEFL) or IELTS examination. The SAT I or ACT is also strongly recommended for international applicants.

Limited financial aid is available to non-U.S. citizens. Union expects international applicants to be able to contribute a minimum of \$7,500 (US) each year toward the cost of attending. All aid is determined by the College's evaluation of a family's financial contribution. To apply for aid, non-U.S. citizens must include a complete copy of the International CSS Profile. Canadian citizens are required to file the CSS PROFILE form with the appropriate agency before February 1. Additional information is available at www.union.edu/financialaid.

Transfer Students

Union welcomes the applications of students wishing to transfer from other two-year and four-year colleges. In making its decisions, the Admissions Committee considers college work completed and the recommendations of appropriate officials at the college presently attended. Students should arrange for transcripts of all college work, a secondary school transcript and recommendations to be sent to the Admissions Office. An interview is recommended, but not required.

Financial aid for transfer students is limited and depends on the economic need of the student, in addition to the academic and extracurricular promise demonstrated. Candidates for financial aid must submit the College Scholarship Service's PROFILE Form and the FAFSA (Free Application for Federal Student Aid) Form to their respective processing agencies by the application deadline.

The admissions process for transfer students follows a separate timetable. For admission to the fall term, transfer applicants must submit their completed applications by April 15. For entry into the winter term, the deadline is November 1; while into the spring term, the applicable date is February 1. All applicants are notified of admissions decision on a rolling basis. Admission for spring and winter terms is on a space available basis only.

Union has articulation agreements with Berkshire County Community College in Pittsfield, MA; and Schenectady County Community College in Schenectady, NY (for children of homeowners in the College Park neighborhood).

Visiting Students

Occasionally, non-matriculated students, who have begun their college education elsewhere, may wish to attend the College on a full-time basis. These students are considered visiting students. They may take courses full-time at the College for a maximum of two trimesters, at which time they must apply for transfer admission and be admitted to the College before continuing their studies. High school students who wish to take a course or courses at Union should inquire about that possibility at the Registrar's Office.

Admissions Timetable

Application: Must be filed by January 15 of the candidate's senior year. Applications for the Law and Public Policy program must be filed by January 1. The deadline for the Leadership in Medicine program is November 15. Transfer applications should be filed by April 15 for Fall term, November 1 for Winter term, and February 1 for Spring term.

School Transcripts: Secondary School Report forms are included in the Common Application and should be completed and filed by school authorities by February 1. Updated transcripts should be requested from the schools at the mid-year and in June.

Entrance Examinations: Standardized testing is optional for most applicants. If the candidate submits testing, the SAT I and SAT II Tests or the ACT must be completed by January of the senior year (by November/December for accelerated programs).

Interviews: Individual interviews are strongly recommended and must be completed by the middle of January.

Financial Aid Applicants: Applicants must file the College Scholarship Service's PROFILE Form and the Free Application for Federal Student Aid (FAFSA) with the appropriate agencies no later than February 1. Citizens of other countries file the International CSS Profile.

Admissions and Financial Aid Decisions: Will be announced before April 15.

Candidate Reply Date: Accepted candidates will be expected to reserve places in the first-year class by May 1.

Early Decision: Two options are available. Applications and credentials received by November 15 will be considered under Option I; decisions will be announced by December 15. Option II provides for receipt of applications and credentials by January 15; decisions will be announced by February 1. By applying Early Decision, the student undertakes a commitment to attend Union College if admitted.

Admissions Office Hours: Weekdays, 8:30 a.m. to 4:30 p.m. Selected Saturdays, 10 a.m. to 2 p.m., April, July through November.

Guided Campus Tours: Weekdays from the Admissions Office, www.union.edu/visit. Selected Saturday tours, April, July through November.

Costs and Financial Aid

Costs

The costs included in this *Academic Catalog* are those in effect at the time of publication. They are subject to change by action of the Union College Board of Trustees. Tuition and fees paid by students cover about 70 percent of the instructional and operating costs of the College. The difference is met by income from endowment and contributions from individuals and organizations that recognize the opportunities offered by Union College.

Comprehensive Fee: The comprehensive fee, which includes tuition, room, board, and fees for all full-time undergraduate programs is \$64,374. A year's tuition allows students to register for three terms, taking three courses per trimester. This amount will be billed in three equal installments, payable on receipt of the bill for each term, in advance of the first day of classes. All full-time undergraduate students are expected to register for three courses per trimester. All continuing matriculated (full-time) students must register for at least three courses in every trimester prior to graduation.

Additional Courses/Fourth Courses: Full-time undergraduate students who are required to pay for additional courses above the normal course load will be charged \$3,790 per course. Refer to "Academic Policies, Fourth Courses" for policies regarding enrollment for fourth courses.

Part-time and non-degree course fees: All students in a part-time undergraduate program, both matriculated and non-degree, will be charged \$5,692 per course. The charge to audit a course is \$2,845.

Dining Services: All full time undergraduate students are required to be on a meal plan. All first-year students are required to be on the 15-meal plan. Upperclass students may choose any of the meal plans offered. Students living off campus may elect the declining balance meal plan, which includes \$200 per term, for a total of \$600 per year and receive a rebate on their student bill equal to \$1,538 per term, for a total of \$4,614 per year. Students living off campus may also elect the 20 block meal plan in addition to the declining balance meal plan. The 20 block plan includes 20 meals plus \$100 in declining balance dollars for an additional charge of \$250.

Credit left on the student's declining balance at the end of the fall or winter term will be credited to the following term. Because the meal plans are exempt from New York State sales tax, any credit remaining at the end of the spring term will be forfeited. Students have the option of adding to their declining balance in increments of \$25. The declining balance credit can be used in any of the College's dining service facilities.

The students ID will also act as a declining balance card, which has the cardholder's picture for identification and a magnetic strip to track the student's cash and meal balance. Students wishing to purchase additional credit may do so in the Dining Service Office or online at <https://unioncollege.managemyid.com>. The card is non-transferable and alterations or misuse can result in disciplinary action. Lost cards should be reported to the Campus Safety Office immediately. Replacement charges are \$25.

Any board student requiring a special diet must comply with the following procedures:

1. A letter from the student's physician must be submitted detailing the specific diet, the reason for the diet, and the expected duration of the diet.
2. A copy of the diet must be sent to Health Services.
3. A follow-up letter from the student's physician must be sent at the end of each term stating the results of the diet and whatever changes, if necessary, must be made in that diet.

Union College holds a club New York State liquor license. The laws governing the locations, sale, and consumption of alcohol on or off campus by student groups or organizations using the dining services will be strictly enforced. Temporary beer and wine permits are necessary for any group wishing to sell beer or wine or charge admission at a social function where beer and wine are being served. Such permits are available through the local A.B.C. Board.

College Housing: Union is a residential college, and all students are expected to live on campus during the course of their undergraduate years, provided housing is available. Each year, prior to the spring housing lottery, the Office of Residence Life will publish guidelines for requesting permission to live off campus. Students living off campus will receive a rebate of \$2,085 per term, for a total of \$6,255 per year. Students who are married or who commute can be exempted from the on-campus requirement. (There are no housing facilities for married students.) Once the residence contract is signed, the student is bound to all College policies as outlined in this *Academic Catalog*, the College's *Student Handbook*, and the terms and conditions of the residence hall contract.

All residence hall rooms are provided with a single telephone connection and an individual network connection for each occupant. Telephone service that is provided at no additional cost includes dial tone for touch tone service; campus and local calling; and custom calling features. The phones for the rooms are provided by the residents. Long distance calling can be provided by the College using personal authorization codes obtainable through the Telecommunications Office, or by other long distance carriers using a calling card. The 100Mbit/second Ethernet network connection provides access to the computers run by the Office of Information Technology Services and to the Internet.

Bookstore Charges: Students may open a charge account at the Bookstore at any time, with a parent as co-signer on the account agreement. These charges will be included on the student account bill. Students with financial holds will have their Bookstore account closed until the balance is satisfied. The Bookstore also accepts cash, checks, and major credit cards as payment.

Student Health Insurance: All full-time undergraduate students are required to be covered by health insurance that meets the minimum requirements established by the College. U.S. Citizens who are covered by their parents' / responsible party's insurance may waive enrollment in the College plan by completing the online waiver at www.gallagherstudent.com/union. Students will be enrolled for insurance provided through the College and charged accordingly if the online waiver is not completed. The waiver is only valid for the current year, therefore it must be completed annually. The deadline to waive is August 12 and is the only means students have of avoiding compulsory enrollment under the College-sponsored plan.

International students are automatically enrolled in the health insurance provided by HTH Worldwide.

Withdrawal Deadlines, Refunds, and Obligations

Planning requirements and financial commitments of the College require strict adherence to the following policies and deadlines regarding withdrawal, refunds, and payment of obligations. Students and parents are expected to acquaint themselves with these regulations and to make decisions with the deadlines and policies clearly in mind.

Withdrawal from a course: If a student drops or withdraws from a course for any reason and as a result takes less than a full course load for the term, tuition will not be prorated for that particular term.

Withdrawal from an international program: Refer to the "**Union College International Programs (Study Away) Withdrawal Policy**" in the International Programs Courses of Instruction section for additional information.

Withdrawal from the College:

1. All students who intend to withdraw from Union must notify the Dean of Students Office in writing.
2. No withdrawal, or leave of absence, or cancellation of registration or reservations is official except by written notice to the Dean of Students. Neither failure to preregister or register, nonpayment of the term bill, nor a request for a transcript constitutes official notice. Requests for deadline extensions should be made in writing, before the deadline, to the Dean of Students.
3. Notification to the Dean of Students must occur by July 1 preceding an upcoming academic year of the intent to withdraw for a term during that year. Failure to inform the College of the intention to withdraw by July 1 will result in a \$250 withdrawal fee. Exceptions may be made in cases of illness or emergency and for seniors requiring fewer than three courses for graduation and electing to withdraw during the

winter term and return for the spring term. Notification of the intent to exercise the latter option must be made in writing to the Dean of Students before the due date of winter term bills.

Tuition Refund/Deferment Policy in the Event of a Withdrawal

Any student who withdraws or takes a leave of absence will be eligible for a refund of the comprehensive fee (less financial aid) based on the following schedule which is calculated as of the last day of attendance.

Withdrawal before the first day of classes	100%
Withdrawal during 1st and 2nd week	75%
Withdrawal during 3rd week	50%
Withdrawal during 4th week	25%
Withdrawal after end of 4th week	No refund

Students are encouraged to request a voluntary medical withdrawal at any time that they believe that physical or mental health concerns are significantly interfering with the ability to be a successful student and/or that the demands of College life are interfering with recovery or safety. A medical withdrawal must be approved by the Dean of Students in consultation with campus health care professionals in accordance with College policy.

A student who starts the term and then withdraws for documented medical reasons from all courses for the term (marked on the academic record as course withdrawals), may choose a refund of the comprehensive fee based on the regular refund schedule (see above). Alternately, a student may request (1) a pro-rated credit for room and board based on the percentage of the term elapsed and (2) a tuition waiver equal to full tuition paid for the term to make up the missed courses later. A tuition waiver may be applied to the student's final term prior to graduation if that is an extra term (beyond the date on which the student's graduation would normally be expected.) A student may request instead that the tuition waiver apply to a fourth course charge in up to three terms in which the student is academically eligible to enroll in a fourth course. Questions about fulfillment of the 12-term residency requirement should be directed to the Dean of Studies.

If the withdrawn student does not return within six (6) months, they may be contacted to begin repayment on their student loans. Students should contact their loan servicer for any questions regarding their loan repayment options.

Should a student be unable to return following a medical leave, the student may be eligible for a tuition refund at the discretion of the Dean of Students. Refunds will be calculated as tuition less scholarships and grants.

Refunds will be credited in the following order: Federal Stafford Loans; Federal Supplemental Loan to Students (SLS); Federal PLUS Loans; Federal Perkins Loans; Federal Pell Grant program; Federal Supplemental Educational Opportunity Grant program; other Title IV funds; non-Title IV funds; any remaining credit balance to the student.

Other fees not subject to a refund include health service fees; health insurance; late payment fee; security fines; late registration fee; telephone charges; and declining balance.

Students will not be entitled to any portion of a refund until all Title IV programs are credited and all outstanding charges have been paid.

Registration: All financial obligations must be satisfied before prescheduling. This includes the receipt of funds from student loans and scholarships from sources outside of Union College.

General Financial Obligations: Diplomas and transcripts will be withheld from a student who has not met all of his or her financial obligations to the College. Failure to satisfy financial obligations may result in suspension from the College and the account being sent to an agency for collection, where the student is responsible for collection fees assessed. To return to Union, the student must apply to the dean of students for readmission. Payment of the outstanding tuition balance plus the full amount of the next term's bill will be required before the student is accepted.

Fees

Admission and Security Deposit - \$500

- \$250 will be applied to the orientation program

- \$250 deposit is retained until graduation or withdrawal. If the student does not attend Union, this \$500 deposit is forfeited.

Application Fees (nonrefundable)

- Accelerated Programs and Leadership in Medicine - \$50
- Collection Fee
- \$10-\$25 (a fee of \$10 for the first check, \$15 for the second check, and \$25 for the third check will be charged for each check returned for insufficient funds.)

International Programs

- A \$350 deposit is required to reserve a place in the program.
- Students participating in a **faculty led** term abroad are charged the comprehensive fee for the term plus a \$650 International Program fee. Charges include tuition, room, board, insurance, and group excursions; but exclude round trip airfare to and from the host country program destination.
- Students participating in an exchange program or term abroad **without a Union faculty member** are charged the comprehensive fee for the term. Charges include tuition, room, board, insurance, and group excursions; but exclude round trip airfare to and from the host country / program destination.
- Exchange programs in Lille, France; Aachen, Germany; Antwerp, Belgium; and Istanbul, Turkey have special billing arrangements and students are encouraged to check with the International Programs Office.

Late Fees

- \$100 (assessed for past due student account balances, failure to check-in on schedule and/or late add/drop course transactions)

Student Activity Fee

- Included in the Comprehensive Fee (allocated to student organizations/committees by the student government. Payment is required of all full-time matriculated undergraduate students)

Financial Aid

Union College has a long-standing history of enrolling students who have an outstanding record of personal and academic achievement with a strong commitment to excellence. Since not all qualified students have the financial resources required to attend the College, we have a very comprehensive financial aid program designed to make a Union education an affordable option for all undergraduate students.

Although the College offers some merit awards to recognize the outstanding accomplishments of applicants, the majority of aid resources are awarded based on demonstrated financial need as measured through both the Free Application for Federal Student Aid (FAFSA) and the CSS Profile. All candidates for admission are automatically considered for merit awards. There are no separate applications required.

Applying for Financial Aid

Prospective students who would like to be considered for need-based financial aid must indicate on their admissions application their desire to apply for aid and submit both the Free Application for Federal Student Aid (FAFSA) at www.fafsa.ed.gov and the CSS Profile at <https://www.collegeboard.org/> by February 1. In addition, if the biological parents of the dependent student are separated and/or divorced, the noncustodial parent must also submit the CSS Non-Custodial Profile.

Continuing students must complete the current year FAFSA and Profile and submit all verification documents to the aid office by April 15. A listing of the required verification documents is provided on the financial aid web site.

Aid Awards

Generally awards consist of a combination of scholarships, grants, loans, and part-time employment. In determining the aid award, Union typically includes a part-time job ranging from \$1,500 to \$1,900 as well as some minimal amount of loan. The balance of the award consists of scholarship assistance. The College attempts to meet the full demonstrated need of all of our applicants. Since needs change from year to year, students must submit applications each year to determine their award eligibility.

Initial aid awards will be offered based on the information provided on both the FAFSA and Profile. All enrolling students will be required to submit copies of previous year's tax transcripts to verify the awards that have been offered. Awards may be adjusted when there are differences between FAFSA/Profile estimates and actual figures. If a student receives outside scholarship awards, he or she must notify the financial aid office. If federal need has not been fully met or a student is receiving only merit awards, he or she may be able to keep the outside award in addition to our financial aid offer. If federal need is fully met, the College will reduce the loan or work portion of the package first. For questions about how the award may affect an aid package, please contact the financial aid office.

Disbursement of Aid

Financial aid awards will be disbursed to a student's account provided that the award has been income verified and all required documents have been completed online or submitted directly to the aid or finance office. Typically the aid will be disbursed at the beginning of each term and subsequent disbursements will occur on a weekly basis.

Annual Renewals

Since family circumstances change from year to year, need is re-evaluated annually. Continuing students will receive a reminder via email from the Department of Education for the renewal of their FAFSA application. In addition, the Financial Aid office will provide detailed information on its web site regarding the renewal application process. In addition, students can view the status of their application through Webadvising. The deadline for continuing students is April 15. Once the completed aid application has been reviewed by the Financial Aid Office, the student will be notified via email to view their award online. They will also have the opportunity to accept/decline any loans that were offered as part of their aid award through Webadvising. Please note that all students are eligible to receive a maximum of 12 terms of financial assistance.

If a student is receiving only a merit award the scholarship will automatically be renewed in subsequent years provided the student is enrolled as a full-time undergraduate at Union College. Students who are enrolled in the Leadership in Medicine Program and/or the 3+3 Accelerated Law Program are not eligible to receive merit and/or need-based aid from Union College once they have officially enrolled at Albany Medical College or Albany Law School.

Refunds

In some cases the total amount of financial aid will exceed the amount of the bill. This most often occurs for students living off-campus. If a credit balance exists on a student account, he or she may elect to leave the surplus to be used for a future term or request a refund from the Finance office. Please note that refunds can be issued only on amounts that have been credited to the account.

Satisfactory Academic Progress

There are no minimum grade point average requirements for the renewal of Union College scholarship awards. However, if a student is receiving federal and/or New York State awards, he or she must meet satisfactory progress guidelines described in the sections that follow.

Academic Eligibility for Federal Title IV Programs

Federal regulations require that schools monitor the academic progress of each applicant for financial assistance to ensure they are meeting academic progress standards. At Union College, the standards of Satisfactory Academic Progress (SAP) are evaluated annually at the end of each academic year. In order to maintain SAP, all three of the following guidelines must be met.

- At the end of the first academic year, students are expected to have a GPA of at least 1.65. Students must complete each subsequent academic year with a minimum GPA of 2.0.
- Students must complete their program at a pace of 67%. To illustrate: Typically, students register for/attempt a total of 9 credit-bearing courses per academic year. In order to meet Union's pace standard, 6 of those courses must be successfully completed (67%).
- Students are expected to complete graduation requirements within the normal time specified in the program description for the program in which they are enrolled. Under certain circumstances, however, the student may require more than the normal completion time to fulfill graduation requirements. The maximum time frame in which a student must complete the program is 150% of the published length of program measured in credit-bearing classes attempted.

When evaluating pace, please note the following:

- Credits transferred in from another institution as well as Advanced Placement classes that are accepted towards the student's educational program are counted when measuring SAP as classes attempted and classes earned.
- Grades of "W" (withdrawn), "WF" (withdrawn failing) and "I" (incomplete) will be included as classes attempted, but not as earned. Note: Students who have received an "I" and, as a result, are not making SAP are responsible for informing the Financial Aid office when they have been assigned a traditional grade letter. They should request a review of their SAP status. This review is not considered an appeal and may not result in eligibility for federal student aid. For example, if a processing deadline has passed then federal aid cannot be disbursed regardless of their SAP status. *It is the responsibility of the student in this situation to contact the financial aid office for all processing deadlines.*
- For repeated courses, the original and repeated course will both be included in the total number of classes attempted. However, the student will only receive credit for taking the class once. This includes student's who have repeated a course because of a prior failure or who are repeating a course they have passed, but not met a minimum grade requirement.

For instance, if a required prerequisite must be completed with a "C-", but the student previously passed with a "D", both classes will count as attempted, but counted only once as earned.

Students who are not meeting the SAP requirements will lose eligibility for their federal aid (Direct loans, PLUS loans, PELL, SEOG and federal work study) the following academic year. In order to regain eligibility, they must be meeting SAP requirements by the end of the following year.

Federal regulations permit students to appeal their loss of federal aid and, instead, be placed on one term of Academic Probation status. This status allows for reinstatement of federal funds for one payment period only, provided all appeal conditions are met and approved. The bases on which a student may file an appeal include the death of a relative, an injury or illness of the student, or other special circumstances beyond the student's control. The student must complete the Satisfactory Academic Progress Appeal Form and include documentation to support their basis of appeal, a letter that explains what has changed in the student's situation that will allow the student to demonstrate SAP at the next evaluation and a plan of action developed with the academic advisor that will ensure they continue to meet SAP. *In certain cases, an academic advisor may develop a plan which will enable the student to meet Union's SAP standards by a specific point in time. In such situations, until the specified point in time is reached, the student's progress must be evaluated each term to determine whether or not the student is meeting the requirements of the plan. Any student who is not meeting the requirements of the plan will lose their Academic Probation status and, therefore, eligibility for federal funding.* The Appeal Form along with supporting documentation will be reviewed by a committee that will include the Director of Financial Aid as well as an Academic Dean. The student will be informed of the committee's decision by letter and/or email.

In the event that a student is placed on Academic Probation for one term, Union will review the progress at the end of each subsequent term for the entire academic year to confirm he/she is making SAP *or* meeting the requirements specified in the academic plan.

New York State: Academic Eligibility Requirements

Payment:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Course Credits:	0	1.5	3	4.5	7.5	10.5	13.5	16.5	19.5	22.5	25.5	28.5	31.5	34.5	36
GPA:	0	1.3	1.5	1.8	1.8	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

A student must also achieve what is referred to as "satisfactory program pursuit." This is defined as completing, with either a passing or a failing grade, a certain percentage of a full-time course load in each term for which an award is received. The percentage is 50 percent of the minimum full-time course load in each term of study during the first year in which an award is received; 75 percent of the full-time course load in each term of study in the second year for which an award is received; and 100 percent of the minimum full-time course load in each term thereafter.

Student Rights and Responsibilities

A student has the right to know and understand all aspects of the financial aid process and programs that are administered through the Union College Financial Aid Office. Questions may be directed to the staff of the Office of Financial Aid. Some commonly asked questions are listed below:

- What financial assistance is available, including information on all federal, state, and Union College aid programs?

- What are the specific deadlines for submitting applications for each of the various aid programs?
- What is Union's cost of attendance and what is our policy with regard to making refunds to students who leave the College?
- What criterion is used to determine which students are eligible to receive aid?
- How does the College determine financial need, including how costs for tuition, fees, room and board, travel, books and supplies are considered in the calculated budget?
- What resources (such as parental contribution, other aid resources, assets, etc.) are considered in the calculation of need?
- How much of financial need as determined by the College has been met?
- What does each of the types of aid included in a package mean?
- What portion of an aid award must be repaid and what portion represents gift aid? If any portion of a package includes a loan, the student has the right to know the interest rate, the total amount that must be repaid, the payback procedures, the total time to repay the loan, and when the repayment is to begin.

Along with these rights, students also have responsibilities which include:

- Review and consider all information about a school's financial aid program and specifically, the financial aid award, before enrollment.
- Complete financial aid applications accurately and within the established deadlines. Errors may delay the processing of an application. Intentional misreporting of information on application forms for federal aid is a federal violation and is subject to penalties under the U.S. Criminal Code.
- Return all additional documentation, verification, corrections, or other requests from the financial aid office or by agencies to which a student has submitted applications.
- Read and understand and accept responsibility for all of the forms. Keep copies for records.
- Notify a lender of any change in name, address, or school enrollment status.
- Perform in an acceptable manner, the work that is agreed upon when accepting employment through the Federal Work-Study Program.

Financial Aid Programs

Federal Aid

Students must file the Free Application for Federal Student Aid (FAFSA) in order to be considered for any of the federal programs (grants, loans, and work study). Based on the FAFSA, the Financial Aid Office reviews eligibility and makes awards within program guidelines and formulas (as always, subject to available funds).

Grants

Pell Grant: These grants, varying from \$598 to \$5,815, are awarded to the neediest students (based on a federal calculation).

Federal Supplementary Educational Grant Program (FSEOG): These additional grants are awarded to Pell Grant recipients.

Work Study

Federal Work-Study Program: Students work in part-time jobs on campus and can earn up to the amount indicated on the award letter. This is a federally subsidized program administered by the College and offered to students as part of their aid package. Preference for jobs is given to students based on financial need. Additional information regarding the work-study employment program is available on the financial aid office website.

Loans

Federal Perkins Loan Program: A need-based loan program administered by the college, with a fixed interest rate of 5%. Repayment begins nine months after completion of studies or leaving college and may extend up to ten years.

Federal Direct Subsidized Loan Program: A need-based student loan that carries a fixed interest rate and allows for the deferment of both principal and interest while the student is enrolled at least half-time. Loan maximum amounts are \$3,500 (first-year students), \$4,500 (sophomores), \$5,500 (juniors and seniors) with a maximum cumulative total of \$23,000.

Federal Direct Unsubsidized Loan: Students who do not qualify for all or part of the need-based subsidized Direct Loan may qualify for an unsubsidized Direct loan. The interest rate is fixed and the interest begins at time of disbursement (or the student can choose to pay the interest while still in school). For dependent undergraduate students, the annual loan limits include amounts borrowed under a Federal Direct Subsidized Loan (i.e. first-year students \$3,500; sophomores \$4,500; juniors and seniors \$5,500). Dependent undergraduates may borrow an additional \$2,000. Undergraduates who are independent according to the federal guidelines or whose parents are ineligible for a Federal Direct PLUS Loan may borrow up to an additional \$6,000 (for first-year students and sophomores) and \$7,000 (for juniors and seniors). The current interest rate for Direct Loans is 4.290% with an origination fee of 1.073%. Eligibility for these loans is determined through the Free Application for Federal Student Aid (FAFSA) at www.fafsa.ed.gov. The Financial Aid Office notifies applicants the specific amounts for which they qualify from both the subsidized and unsubsidized loan programs. Repayment begins six months after completion of studies or leaving college and may extend up to ten years.

Federal Direct Parent Loan for Undergraduate Students (PLUS): If creditworthy, parents of undergraduate students may be eligible to borrow up to the cost of attending Union (minus other financial aid accepted). The PLUS loan has a fixed interest rate of 6.84% effective July 1, 2015 and repayment begins 60 days after the funds are fully disbursed. The parent borrower does have the option to defer payments on the PLUS loan until the student's six month grace period ends. PLUS loans are subject to a 4.29% origination fee. Information on the application process is available on our web site or from the Financial Aid Office.

Veterans Administration (VA) Benefits: Many programs of educational assistance benefits are available to those who have served in the military, and their dependents. Program benefits vary with dates and length of service. Detailed information on all veterans' benefits and assistance in applying for benefits can be obtained from offices of the Veterans Administration in each state.

GI Bill Educational Benefits and the Yellow Ribbon Program

Union College is a proud participant in the Yellow Ribbon Program and its commitment to provide educational opportunities and resources for U.S. Veterans. Congress passed the Post 9-11 GI Bill to enable affordability for eligible participants at public and private colleges and universities as well as other educational programs. In some cases, the resources provided by the Veterans Administration combined with the Union College award enable the qualified applicants to enroll at Union at minimal cost.

The Post-9-11 GI Bill provides educational resources for individuals who served on active duty after September 10, 2001 with at least 90 days of aggregate service, or individuals who were discharged as a result of a service-connected disability after serving 30 continuous days following September 10, 2001. Individuals must also have received an honorable discharge for consideration of the Post 9-11 GI Bill. The level of eligibility ranges from 40% - 100% depending on the actual length of time of active duty after September 10, 2001.

Veterans who are eligible at the 100% level may receive payments from the Veterans Administration covering the following:

- Tuition and fees - up to a maximum of \$21,970.46
- A monthly housing allowance
- A stipend to cover the cost of books

Veterans who qualify for benefits at less than the 100% level will receive prorated amounts for the benefits listed above. In some instances, individuals may transfer their benefits to their spouse or dependent children. More detailed information regarding the specific levels of eligibility and transfer of benefits is available on the GI Bill Website.

Students receiving Veterans benefits may also qualify for Institutional, Federal, and State financial aid programs. Application requirements are available on the financial aid website.

As a participant in the Yellow Ribbon program, qualified applicants must self-identify as Yellow Ribbon eligible on their admission application. Union College will fund up to four Yellow Ribbon awards. These awards are granted on a first-come, first served basis. Qualified Veterans will receive \$29,725 in Union Scholarship, which when combined with the Veterans assistance, will cover the cost of tuition and fees. Please note that eligibility for Yellow Ribbon is limited to applicants who are eligible at the 100% level.

Upon submission of your application to the Veterans Administration for benefits, you will receive a Certificate of Eligibility which must be completed by the School Certifying Official in the Registrar's office. Please send this form to Gail Sack, Assistant Registrar and School Certifying Officer at sackg@union.edu for certification.

For additional information regarding admission or financial aid please email inquiries to admissions@union.edu or finaid@union.edu

State of New York Aid

New York offers a number of financial aid programs to residents. The Tuition Assistance Program (TAP) and Higher Education Opportunity Program (HEOP) are described below. In addition, the state offers other special programs for which details and application information are available at New York State Higher Education Services Corporation (HESC), 99 Washington Avenue, Albany, NY 12255 as well as www.hesc.com.

Tuition Assistance Program (TAP): Awards range from \$500 to \$5,165 annually and eligibility is based on New York State family net taxable income. Applicants must apply each year to the New York State Higher Education Services Corp., 99 Washington Ave., Albany, N.Y. 12255. In addition to meeting the income eligibility guidelines, TAP recipients must continue to meet the satisfactory academic progress and program pursuit requirements as described in the N.Y.S. Academic Eligibility section. Students who fail to meet the minimum successful completion of coursework and grade point average requirements, may lose their eligibility for TAP for the following term or until they meet the minimum requirements. Students must also be enrolled full time to qualify for New York State awards. Students withdrawing from all courses in a particular term will be ineligible for the next term. More information is available under the section "New York State Satisfactory Academic Progress".

Higher Education Opportunity Program: To qualify for this program a student must be a N.Y. State resident attending a N.Y. college or university, and be economically and educationally disadvantaged. Need is met through a combination of state, federal, and institutional funds. In addition to the financial component, the program offers support services such as counseling and tutoring. There is not a separate application required for this program.

Other State Aid

Students who are residents of certain states may be eligible to receive grant assistance from their state applicable to their costs at Union. Contact the appropriate state agency listed for further information and applications:

- Delaware Postsecondary Education Commission, 820 French St., 4th Floor, Wilmington, Delaware 19801; (302) 571-3240; www.doe.state.de.us
- Rhode Island Higher Education Assistance Authority, 274 Weybosset St., Providence, Rhode Island 02903; (401) 277-2050; www.riheaa.org
- Vermont Student Assistance Corp., Champlain Mill, P.O. Box 2000, Winooski, Vermont 05404; (802) 655-9602; www.vsac.org
- Department of Human Services Office of Postsecondary Education Research & Assistance, 1331 H. St. N.W., Suite 600, Washington, D.C. 20005; (202) 727-3688; www.ed.gov

Institutional Aid

Scholarships

Including all of the College's endowed and annual scholarships, this is by far the largest single source of assistance available to our students. Most of the scholarship money offered is based on need as determined by the FAFSA and PROFILE forms. Union does offer some merit awards ranging from \$5,000 to \$20,000 per year. It is not necessary to complete a separate application to qualify for a merit scholarship.

Loans

These college funded loans normally range from \$1000 to \$5000 and have a fixed interest rate of 8%. The interest does not accumulate while the student is enrolled and repayment begins 6 months after the student has graduated or leaves school. These loans are generally based on need and the standard application procedures apply. Repayment can be deferred for graduate school.

Student Life and Student Services

Student Life

Residential Life

The College's student residences include eight halls with traditional, suite and apartment style housing. They include College Park Hall (upperclass); Davidson (first-year) and Fox (upperclass) Houses, West College (first-year); College Park Apartments (upperclass); Garnet Commons (upperclass apartments); Richmond House (first-year); and Webster House (focused study). Focused-Study Housing, incorporating a 24-hour quiet consideration is available to all students. Upperclass students also are eligible to live in Minerva Houses, Greek Housing or Theme Houses.

College Residences

Minerva Houses (2004) - Seven houses make up the student-run Minerva Houses. Up to 45 students live in each of these houses: Beuth House, Golub House, Sorum House, Wold House, Messa House, Green House, and Breazzano House.

College Park (1999) - The College Park neighborhood adjacent to campus offers apartment-style housing for 140 students, including numerous theme houses. College Park Hall, which opened in the Fall of 2004, houses 260 upperclass students.

Davidson House (1968) - Named for Carter Davidson, 13th president of the College (1946- 1965). Houses first-year men and women in suites and men in double rooms on the lower level. Also the home of the Sigma Phi Society and the Alpha Epsilon Pi fraternity.

Edwards House (1948) - Named after theologian Jonathan Edwards, Jr., second president of Union College (1799-1801). Houses Theta Delta Chi fraternity.

Fero House (1896-97) - Named after Franklin L. Fero 17', who financed the renovation of the building in 1990. Home of Alpha Delta Phi fraternity.

Fox House (1968) - Named for Dixon Ryan Fox, 12th president of the College (1934-1945). Houses upperclass men and women in suites, men in double rooms on the lower level, as well as the Delta Kappa Epsilon fraternity.

Garnet Commons (2015) - Houses 80 upperclass men and women in apartment style housing, with private bedrooms and ample common gathering space.

Hickok House (1957) - Named for Laurens P. Hickok, Union's fifth president (1866-1868). Home of the Gamma Phi Beta sorority.

North College (1814) - Used for classrooms and labs until the late 1920s, when it was converted to a residence and office building. Is now the home for Messa and Wold Houses.

Potter House (1961) - Named for Dr. Eliphalet Nott Potter, grandson of Eliphalet Nott and the seventh president of the College (1871-1884). The Chi Psi fraternity is housed on the north side of Potter and the Delta Delta Delta sorority is on the south side.

Raymond House (1961) - Named for Union's ninth president, Andrew Van Vranken Raymond. The Sigma Chi fraternity is in the south side and the Sigma Delta Tau sorority is on the north side of Raymond.

Richmond House (1960) - Named for Dr. Charles A. Richmond, president of Union from 1909-1928. Richmond houses first-year coed students.

South College (1814) - Oldest residence hall still in use as a residence in New York, South College was home to Chester Arthur, William Seward, and most of Union's oldest alumni. Sorum and Green Houses are located in South College.

Smith House (1894) - Named for Rev. John Blair Smith, first president of Union (1795-1799). Houses upperclass coed students in a theme house focused on supporting multicultural issues on campus.

Webster House (1920) - Named for Harrison E. Webster, Class of 1868 and president of Union from 1888 to 1894. Webster House used to serve as the Schenectady library and is now a focused-study, substance-free residence for first-year and upperclass students.

Wells House (1908) - Named for Professor William Wells, whose family lived in the house until 1930. Renovated in 1994 as a theme house that emphasizes community service.

West College (1951) - Named for the original West College, the College's first home in the Stockade area of Schenectady, West was built to house the post-World War II expansion of student enrollment. Houses first-year students as well as one of the College dining halls.

Theme Houses: Union gives students autonomy in creating the community atmosphere in which they live. The College recognizes 13 student-initiated theme houses. *ARTS House* is a home to students who seek to express themselves through the visual and performing arts. *Bronner House* is dedicated to furthering multicultural understanding among all students. *Culinary House* promotes expertise in culinary arts and healthy dining options. *Dickens House* celebrates the literary mind and holds events focused on literature. *Iris House* focuses on creating a supportive environment and educational events for issues in the gay, lesbian, bisexual, and transgender communities. *Maker House* encourages innovation, values creativity,

and promotes collaborative problem solving. *Ozone House* is an environmentally-focused community designed to reduce waste and promote a more sustainable way of living. *Religious Diversity House* connects those from various religious backgrounds with one another and seeks to enrich the campus community with religious diversity and equality. *Rights House* promotes educational awareness and activism with regards to human rights, actively addressing issues of social justice. *Symposium House* seeks to heighten intellectual discourse outside the classroom. *Tech House* creates a space for the discussion and appreciation of technology and innovation in a social and cultural context. *Thurston House* promotes enhanced social and intellectual life with a focus on Asian cultures. *Wells House* seeks to strengthen the relationship between Union and the local community through volunteer service.

Minerva Houses: Union's Minerva Houses are designed to give all students an opportunity to make rewarding connections and to blend the campus social, academic and cultural life. Every student is assigned to a house, which can be a focus for social activities, dinners and discussion, making new friends, or simply a welcoming place. Up to 45 students live in each house; all houses are equipped with a kitchen, a great room, an office, and a seminar room for meetings and classes. Non-resident members may take advantage of house gathering space and activities even though they live elsewhere. Each house has an activities budget to be used at the discretion of the membership. All faculty and some staff are affiliated with one of the houses and join in many of the house events, giving students an enriched out-of-class experience.

Fraternities and Sororities: Twelve national fraternities, five national sororities, and one local sorority have chapters in good standing at Union. The Alpha chapters of six national fraternities were founded at Union, starting with the famed Union Triad - Kappa Alpha (1825), Sigma Phi (1827), and Delta Phi (1827)*. The others formed at the College are Psi Upsilon (1833)*, Chi Psi (1841), and Theta Delta Chi (1847). The national fraternities also include Alpha Phi Alpha, Alpha Delta Phi, Alpha Epsilon Pi, Alpha Phi Alpha, Delta Kappa Epsilon, Phi Delta Theta*, Phi Iota Alpha, Phi Gamma Delta, Sigma Chi, and Zeta Beta Tau. The national sororities are Delta Delta Delta, Gamma Phi Beta, Lambda Pi Chi, Sigma Delta Tau, Omega Phi Beta, and Sigma Gamma Rho*. The local sorority is Alpha Delta Lambda.

*No longer on campus.

Student Activities

Union believes that a student's life outside the classroom is an important part of his or her total education. These unique leadership opportunities challenge students outside of the class room on a daily basis. The student government (Student Forum) funds, organizes, and supervises a variety of activities and organizations; students are responsible for the planning and implementation of these student-funded activities with the assistance of the Office of Student Activities. The College requires students to have individual health insurance in effect as partial protection from the consequences of engaging in various activities and advises discretion while participating in these activities.

There are about 100 clubs and organizations that fall in the following categories; Academic Clubs, Student Governance, Club Sports, Cultural Clubs, Religious Clubs and Organizations, Art Clubs, Service Clubs and Organizations and Media Clubs. Clubs are groups recognized by the Student Forum and funded by Student Activity fees. Student clubs must be open to all students paying the activity fee. Organizations are groups recognized by the Student Forum but not funded from Student Activity fees. Organizations may be selective as they are not funded by the Student Activity fee.

Union offers a rich general cultural program of concerts, lectures, and films

The Office of Religious and Spiritual Life

An important and fundamental dimension of all individuals is their spiritual and ethical nature. The Office of Religious and Spiritual Life at Union is served by the Director of Religious and Spiritual Life and eight other volunteer professionals; the Campus Protestant Minister, a Catholic Chaplain, a Hillel Director as well as advisers to InterVarsity Christian Fellowship, Chabad, AUM and the Muslim Student Association. There are over a dozen religious organizations in addition to those served by volunteers including the Buddhist Student Association, the American Yoga Association, the Better Together Campaign, the Multi-faith Forum, The Heavenly Voices Gospel Choir, The Heavenly Liturgical Dancers, and the Sikh Student Association.

It is the mission of this office to:

- Increase religious understanding across traditions.
- Engage and empower students' exploration of faith.
- Provide for worship and observance of religious holidays.
- Provide opportunities for community service that integrates religious understanding with action.
- Offer pastoral counseling and spiritual direction.
- Develop and nurture student leadership skills.

- Offer a religious perspective to the academic community.
- Support the mission of the College.

Athletics

The College believes that every student should be encouraged to take part in sports activities at a level commensurate with his or her abilities and interest. Each student should have the opportunity to improve skills and to learn new sports that will carry over later in their lives. Thus, Union offers an extensive program of intercollegiate, intramural, club, and recreational sports, along with a wellness program that provides students and employees the opportunity to learn the skills of lifetime sports while promoting healthy lifestyles. The College ensures that athletics be kept in harmony with the essential educational purpose of Union. Union College athletes, like those engaged in all extracurricular activities, are an integral part of the campus community and are students first.

Intercollegiate competition is offered in 26 sports; for men, in baseball, basketball, crew, cross-country, football, ice hockey, lacrosse, soccer, swimming, tennis, and indoor and outdoor track; and for women, in basketball, crew, cross-country, field hockey, golf, ice hockey, lacrosse, soccer, softball, swimming, tennis, indoor and outdoor track, and volleyball. Union is a member of the National Collegiate Athletic Association (NCAA), the Eastern College Athletic Conference Hockey League (ECAC Hockey), and the Liberty League. Men's and women's ice hockey compete at the NCAA Division I level; all other sports compete at the NCAA Division III level.

All club sports are administered through the Student Activities office. The most active and popular club sports are golf, ice hockey, karate, rugby, and skiing. An extensive intramural program is offered in a wide range of sports along with noncredit physical education classes as part of the wellness program.

Facilities include Messa Rink at Achilles Center (hockey, recreational skating, and intramurals as well as locker rooms and athletic training facilities); Viniar Athletic Center, (basketball and volleyball); Frank Bailey Field, a multipurpose, all-weather, lighted field with a 400-meter track, stadium seating for 1,500 and press box (intramurals, outdoor track, football, lacrosse, soccer, and field hockey); Breazzano Fitness Center at Alumni Gymnasium (fitness center, swimming, racquetball, squash, and coaches' offices); Garis Field (soccer and club sports); College Park Field, a multipurpose, all-weather, lighted field (soccer, intramurals and club sports); College Boathouse (crew); Memorial Field House (intramurals, recreation, indoor track, indoor facility for tennis and spring sports, locker rooms); Alexander Field (softball); Travis J. Clark Strength and Conditioning Center (varsity strength training) and eight outdoor tennis courts and an outdoor basketball/street hockey court, all used for intercollegiate competition, intramurals, clubs and open recreation. Women's Golf competes at the Mohawk Golf Club in Niskayuna and Baseball competes at Central Park in Schenectady, both just a few miles from campus.

Student Services

Campus Safety: Union College is committed to assisting all members of the Union College community in providing for their own safety and security. The Campus Safety Office is located in College Park Hall. Parking, vehicle registration, and ID card services are in the front lobby. Administrative offices and dispatcher are in the rear of the building.

Important Phone Numbers:

Emergency: 911

Non-Emergency: (518) 388-6911

Escort Service: (518) 388-6386

Union College's Campus Safety Department provides 24-hour, year-round security and safety programs. Members of the department are employees of the College who report to the Director of Campus Safety. Officers work eight-hour shifts to perform their duties, which include:

- Preventive patrol of grounds and buildings
- Emergency medical assistance
- Incident investigation and reporting
- Hazard control
- Crime prevention
- Parking and traffic management
- Emergency Management and Training

Special services, including lockout assistance, noise and nuisance control, security escorts, lost and found, and other needs associated with quality of life, safety, and security.

Members of the department have portable radios and are centrally dispatched by control operators in the Campus Safety Building who monitor telephone and emergency lines as well as fire and security alarms. Every College building is linked to the Control Center for fire alarm monitoring, and a number of buildings have security alarm systems and access control.

The Campus Safety Department is a private security force empowered by the College and the State of New York to enforce its rules, regulations, policies and the laws of the State of New York. Enforcement procedures include issuing parking tickets, issuing summary fines, filing conduct charges, and making arrests.

The Campus Safety Department works closely with federal, state, county, and local authorities in the investigation and prosecution of crimes and in fire, safety, and health-related issues.

Information regarding campus security and personal safety including topics such as, crime prevention, Campus Safety law enforcement authority, crime reporting policies, crime statistics for the most recent three year period, and disciplinary procedures is available from the Director of Campus. Access to crime data reported to the U.S. Department of Education may be found through the following Web site:

<http://www.union.edu/offices/safety/reports/clery/>.

Counseling: The Counseling Center provides services for students who elect to address personal/psychological concerns with a professional counselor. Typical concerns of students range from interpersonal issues, family concerns, academic problems, etc., to problems such as anxiety, depression, and addictions. Most students are seen in individual counseling sessions. Group and family sessions are arranged when appropriate. All communications with the Counseling Center are confidential. All Counseling Center services are free of charge for enrolled undergraduate students. The Counseling Center also provides a clinician for psychotropic medication.

International Advising Office: The International Advising Office is involved in international student services and wants to serve students in the best way possible. We consider each international student a valuable member of the community with specific and unique needs. The Director assists individual international students by advising them concerning federal immigration, tax and labor regulations, and by providing counseling on personal, academic and cultural matters. In addition, the office promotes cross-cultural awareness in the community through educational programming, such as orientation, support groups, and the yearly international festival.

Please contact Shelly Shinebarger, Director of International Advising Office, at (518) 388-8785 should you have any questions.

Accommodative Services Office: The Accommodative Services Office is committed to providing students with disabilities equal opportunities to benefit from all services, programs, and activities offered. We are in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. The Director determines eligibility for services, authorizes appropriate academic accommodations, provides academic advising and counseling, assists faculty with regard to disability, issues and questions, and helps assist students with self-advocacy in locating additional resources on or off campus.

Please contact Shelly Shinebarger, Director of Accommodative Services Office, at (518) 388-8785 should you have any questions.

Health Services: We are staffed with 4 Nurse Practitioners, 4 Registered Nurses, an administrative assistant and a collaborating physician. Our hours are Monday from 8:30AM to 8PM, Tuesday- Friday from 8:30am to 5 pm. We are closed on weekends. Local hospitals and urgent care facilities are available nearby for emergencies after hours. Visits are by appointment only. Walk-in patients with urgent concerns are assessed and triaged by the nursing staff. There is no charge to be seen by any of our staff. Charges for medications, x-rays, laboratory procedures, hospital visits, or specialists are the direct responsibility of each student. We are unable to honor insurance prescription cards for medications dispensed at Health Services. Students may request a written prescription and have it filled at a local pharmacy. Lange's Pharmacy delivers to Health Services daily, Monday-Friday. If you would like to have your prescription card registered with Lange's, please call (518) 374-3324. If you have a concern about the school health insurance plan, please contact Joann Cocca at (518) 388-6106.

Students should present insurance cards (medical and prescription) to Health Services to verify if needed. Please refer to our immunization policy in the student handbook. Students requesting religious or medical exemptions should submit a letter according to the Dept. of Health regulation 10NYCRR, Section 66.13 (d). This consists of either: 1. a certificate from a physician, licensed to practice medicine in this State, that one or more of the required immunizations may be detrimental to the child's health. This certificate must specify which immunizations may be detrimental, or 2. A written and signed statement from the parent, parents or guardian of such child, stating that the parent, parents or guardian objects to their child's immunization due to sincere and genuine religious beliefs which prohibit the immunization of their child, in which case the principal or person in charge of the school may require supporting documents. All health forms are available on our website at: <http://www.union.edu/offices/health-counseling/>

Stanley R. Becker Career Center: The Becker Career Center is committed to teaching students how to develop and achieve their career goals so that they are able to secure opportunities that invoke their passion and manage their career for a lifetime in a dynamic, diverse, and global environment. The Career Center empowers students to take personal responsibility for shaping their future. This is accomplished by encouraging

self-assessment, exploration and reflection, providing opportunities to apply learning and begin careers, educating students about the world of work, and providing resources to advance students through all phases of their career development.

Students are encouraged to take advantage of the Career Center during all four college years. A recommended first step is to learn about oneself by engaging in all aspects of college life including academics, student organizations, activities, and events. As students reflect upon these and other life experiences, their interests, values, and skills will become increasingly apparent and begin to serve as a foundation for developing their career plans.

Career Center staff helps students develop five core career competencies: Career Decision Making (including self-assessment, exploration, and reflection), Resume Writing, Cover Letter Writing, Interviewing, and Networking. By mastering these competencies, students equip themselves with the lifetime ability of finding and securing positions for which they are well suited. Becker Career Center programs are designed to facilitate student growth in these areas and prepare students to find and connect with opportunities consistent with their interests. In addition, the Career Center houses a number of online career research tools that allow students to research potential career fields, locate employers by industry and/or geographic area, and connect with Union College alumni working in their targeted career fields. HireU, the Career Center's web based database, provides students with access to internship and job opportunities from employers specifically looking to hire Union College students.

For more information visit <http://www.union.edu/offices/career/>, or call 518-388-6176.

Academic Program and Policies

The Academic Program

Union College offers studies in the humanities, the social sciences, the sciences, and engineering. The curriculum, which has a wide range and balance across areas of study, offers breadth and depth as students explore particular disciplines and interdisciplinary subjects. Union's curriculum and student life are designed to educate students to live and work in a global, diverse, and technologically-complex society.

Union has a tradition of curricular innovation dating back to its founding in 1795. In the 19th century, Union pioneered the introduction of science, modern languages and engineering into the undergraduate curriculum. More recently, the College has made important advances in general education, interdisciplinary study, international programs, and undergraduate research. Our tradition of curricular innovation continues as Union pioneers ways to conceive of engineering as an integral component of the liberal arts and as we introduce students to computational methods, community-based learning, entrepreneurship, and ethical understanding in courses across the curriculum. At Union, we bring together faculty from diverse academic backgrounds so that students can gain mastery of a wide range of disciplines as well as understanding how different disciplines approach particular questions. Students thus prepared are ready to communicate, work, and think within and beyond their area of specialty. Many students study abroad as part of their Union education, often in programs led by Union faculty as well as programs of their own design.

A major may be centered in one of the College's academic departments or a student may choose an interdepartmental major involving work in two or more departments, a formal interdisciplinary major, or a personally-designed "organizing theme major" that defines a central, unifying topic cutting across disciplinary lines. Students may also elect to take up to two minors.

The College is committed to ensuring that all students become good writers. The College's program of Writing Across the Curriculum constitutes a systematic way of ensuring that students pay close attention to writing in courses scattered throughout the curriculum. The First-Year Preceptorial is the foundation of Union's writing requirements. The Sophomore Research Seminar provides a foundation of research skills for upper-class work.

Degree Requirements

Union offers the following undergraduate degrees: Bachelor of Arts, Bachelor of Science, and Bachelor of Science degrees in Bioengineering, Computer Engineering, Electrical Engineering and Mechanical Engineering.

A Union education is a four-year integrated living and learning experience. Our curriculum is designed to enable a student to achieve the breadth and depth that mark the graduate of a liberal arts college. There is a structure in the movement of our curriculum from first to senior year, a structure that ensures the intellectual sophistication and maturity that we want our graduates to have. To qualify for a degree, a student must:

1. Satisfactorily complete 12 terms of study at Union, including 36 term courses plus any additional courses taken as electives or to satisfy program requirements. The engineering program requires 40 courses over 12 terms. Please see exceptions to the requirement of 12 terms of study in the section, "Academic Calendar and Enrollment Requirements." For two-degree programs refer to the section, "Combined Degree Programs."

2. Satisfactorily complete requirements in the Common Curriculum;
3. Satisfactorily complete requirements in the major field, degree program, or interdepartmental major, including senior capstone requirements such as a senior thesis, as applicable;
4. Attain minimum cumulative indices of 1.80 overall and 2.00 in the major (and 2.0 in the minor if a minor has been declared).

To graduate, a student also must have paid all sums due the Finance Office, must have made satisfactory provision for payment of any other financial obligations assumed while in college, and must have returned all books and materials borrowed from the library. The individual student is solely responsible for assuring that the program presented for graduation fulfills all requirements, both in general and in specialized study. The Office of the Registrar should be consulted when questions arise about the satisfaction of graduation requirements. Notice of intent to graduate must be provided to the Registrar as per the deadline specified by the Registrar's Office.

Academic Calendar and Enrollment Requirements

Union divides the academic year into three terms of 10 weeks plus a week of exams. A full course unit may be equated to five quarter-credit hours, or three and one-third semester credit hours. The normal course load for a full-time student is three courses in each of the three terms, or nine courses a year. Taking laboratory and other extra class hours into account, the average time per week spent in class is approximately 4.5 hours and the expected average time spent outside of class on course work is approximately 10.5 hours per week. To complete the entire curriculum in four years, engineering students should expect, on occasion, to take more than three courses per term, once per academic year. For additional information on course registration policies, refer to "Academic Program and Policies."

It is expected that students will be enrolled full-time for 12 terms (at least 36 courses) through the spring term prior to graduation, with the two exceptions noted below. Additional courses, taken at Union or elsewhere, may be used to fulfill departmental or Common Curriculum requirements or to compensate for deficiencies in credits, but may not be used to graduate early or to take a term away from Union, with the following two exceptions:

- Any student entering the College with three or more pre-matriculation credits may graduate one term early or be unenrolled from Union for a term during the junior or senior year, provided that these credits have not been used to compensate for deficiencies incurred during their time at the College. Students who have completed a full International Baccalaureate diploma may receive up to a full year of credit and may graduate up to a year early. See "Transfer Credit Policy" for details.
- Students in the Scholars, Union and Seward Fellows programs may use any additional course credits they earn at Union to accelerate their graduation or to be unenrolled for a term.

Any student seeking early graduation must obtain approval from the Office of the Dean of Studies by the end of the junior year. Students seeking to be unenrolled for a term must contact the Office of the Dean of Students. For guidelines regarding transfer credits, refer to Transfer Credit Policy.

The Common Curriculum (General Education)

As a liberal arts college, Union is devoted to educating students to flourish in this rapidly changing world, a world with fluid geographic, intellectual and cultural boundaries. The Common Curriculum seeks to nurture in students a commitment to learning as central to one's development over the course of a lifetime. Union starts with the assumption that college represents a beginning and not an end of one's education. Union's approach, ensuring that students learn much of what the College deems important and at the same time develop and satisfy a taste for exploration, combines elements of choice within a structure of requirements.

Union's Common Curriculum ensures that students analyze and integrate knowledge from a wide variety of areas, communicate the results of their learning and, most important, continue to learn, an essential skill in today's world. To accomplish this, we start with a First-year Preceptorial that emphasizes critical reading and writing using the perspectives of multiple disciplines, and a Sophomore Research Seminar that focuses on learning research skills necessary to assess through informed reflection the enormous varieties of information to which we have access today. Union's Common Curriculum provides the foundational breadth that defines a liberal arts education through requirements in humanities, social sciences, linguistic and cultural competency, quantitative reasoning, and science and technology. The Common Curriculum is designed to enable students to become life-long learners by learning to analyze, synthesize, integrate, and communicate effectively, and obtain an appreciation of different disciplines and areas of knowledge, as well as interdisciplinary study.

A detailed description of the Common Curriculum is under "Common Curriculum".

The Major

The major should be viewed as a coherent series of courses providing a solid background in the area of study as well as an introduction to advanced study. Depth of knowledge and understanding in a particular field of study is provided by the major. Courses in this area of special study may also count toward meeting some Common Curriculum requirements, but the prescribed program of study for a major is primarily intended to develop competence in the scholarship represented by an academic department or a group of departments. In addition to majors offered through academic departments, Union offers majors in interdisciplinary programs and individually designed "organizing theme" majors.

Students can pursue an interdepartmental major by combining coursework in two different departments or in one department and one interdisciplinary program. Interdepartmental majors between two interdisciplinary programs is currently not allowed. Departments and interdisciplinary programs specify the terms and conditions for interdepartmental majors. Students should consult each department or program section in Course Listing for descriptions of available options and requirements. Bioengineering, Computer Engineering, Electrical Engineering, and Mechanical Engineering may not be used as a component of interdepartmental majors. Senior Writing Experience requirements vary among areas of study. Where appropriate, students can do one two-term thesis to satisfy both departments' writing requirements.

Students may pursue a "double major" by satisfying all requirements of two majors, neither of which can be an interdepartmental major. Except as indicated under "Combined Degree Programs," a student satisfactorily completing two majors earns one rather than two degrees. A student in such a program will be eligible for his or her degree whenever the requirements for both majors, along with those in the Common Curriculum program, are satisfied and a minimum of thirty-six course credits has been earned. Normally an overlap of at most three courses is allowed for the two majors.

The student who enters college with a fairly firm notion about a proposed field of concentration will find it advantageous to test his or her interest in the proposed major field during the first year. In many programs, a student need not begin a major during the first year in order to complete that major by the end of the fourth year. In engineering and science, however, it can be extremely difficult to complete a major in four years unless course sequences are begun in the first year. Students in pre-medicine also need to consider taking the requisite courses in their first year. At the end of the first year, the major may be declared or changed without penalty in the form of lost time and credit. Soon thereafter, and certainly by the end of the second year, the student should make a serious commitment to a focus of study. Every student is required to file with the Registrar a declaration of major no later than the end of the sophomore year ("Liberal Arts" and unspecified "Engineering" are not considered majors). This decision may be altered subsequently, although late change of major may require extra courses or terms. Requirements for majors appear at the head of each departmental listing. Some areas require additional courses from related disciplines.

Students may change their major program upon application to the Registrar. The change must have the consent of the Department Chair or Program Director. A request for a change of major submitted after the first week of the final term of study at the College may not be possible to accommodate without delaying the student's graduation.

The Minor

Students who wish to pursue a secondary field of concentration may select and declare up to two academic minors. A minor normally consists of six courses. Requirements for the minor may be found in the course listings by department and program. Students are normally expected to declare a minor in the sophomore or junior year. They must obtain the approval of the department chairperson or program director.

For students who wish to declare one minor, those courses used to satisfy the major field requirement plus those used to satisfy the minor field requirement may in no case total fewer than 18. For students who wish to declare two minors, the minimum is 23. A minimum cumulative index of 2.00 must be attained in courses used to satisfy the minor requirement. All students are responsible for verifying the accuracy of their declared minor at the time of their senior year audit review. Minors cannot be added once the degree has been conferred.

Combined Degree Programs

Union College offers programs in which a student may earn two baccalaureate degrees in the following combinations: engineering and bachelor of science or bachelor of arts, or two engineering degrees.

Nine courses beyond the requirements for the professional degree are required, and normally five years are required to complete them. Certain combinations of curricula within five-year programs may involve carrying an occasional course overload. If a student cannot fulfill all requirements for the two degrees, modification of the program is permitted only with the concurrence of the department.

Also offered are two-degree programs in cooperation with other area colleges, many of which are affiliated with Union University, leading to a bachelor of arts or bachelor of science degree from Union and a law degree from Albany Law School; or to a bachelor of science degree from Union, an M.S. or M.B.A. degree from Clarkson University - Capital Region Center, and an M.D. from Albany Medical College; to a bachelor of arts or bachelor of science and a master of business administration; or to a bachelor of arts or bachelor of science and a master of teaching; or to a bachelor

of science in a science or engineering field and a master of science in electrical or mechanical engineering, or energy studies. For more information on the two-degree programs with Union University, refer to the following sections under Course Listing:

3+3 Accelerated Lap Program (6-year program)

Leadership in Medicine/Healthcare Program (8-year program)

Master of Business Administration (5-year program)

Master of Business Administration in Healthcare Management Programs (5-year program)

Master of Science in Electrical Engineering, Master of Science in Mechanical Engineering and Master of Science in Energy Studies

International Programs

The College considers its commitment to international programs to be a central part of its identity. In addition to broadening perspective and deepening knowledge, study abroad often energizes and challenges students so that they are motivated to a higher level of commitment to the enterprise of learning. Students studying away from Union do so through Union College terms abroad programs and exchanges. Students may apply for "non-Union" programs through Union's International Programs office to study abroad on programs run by other colleges and universities. Independent Study Abroad programs allow students the opportunity to design their own study abroad experience. Mini-term programs are offered over winter and summer breaks as well. Refer to "**International Programs**" under Course Listing for more information, including eligibility criteria, application procedures and withdrawal policies.

Academic Policies

Registration for Courses

Registration Confirmation: Each term the Registrar conducts online prescheduling for continuing students who, with the help of their advisors, select three courses for the coming term. Prescheduling must be completed during the announced periods. Students who do not intend to preschedule should notify the Dean of Students of their intended withdrawal from the College. After prescheduling, a request for a change of course ordinarily must be filed with the Registrar no later than the fifth academic day of the term; such changes should be recommended by the advisor. Students who fail to finalize their course schedule after the end of the first week of the term will be assessed a late charge on their bill. With written permission from the instructor, a student may enter a course as late as the second week of the term. Students not enrolled in courses by the end of the second week of classes will be withdrawn from the College for the term and will have to reapply for admission to the Dean of Students.

All full-time matriculated students are expected to be enrolled in no fewer than three courses at the start of each term, unless an exception is approved by the Dean of Studies. For withdrawals after the start of the term, please refer to the section "Withdrawal from Courses." All regular undergraduate students are charged each term's full tuition, which covers enrollment in three courses during that term. The tuition is not prorated for single courses unless the student has been in attendance for 12 full terms (or, for five-year programs, 15 terms).

Students must attend those sections of courses to which they have been scheduled by the Registrar. A change of section may be made at the Registrar's Office provided that seats are available or permission is obtained from the professor.

Fourth Courses: Students are allowed to enroll in one fourth course in each academic year at no charge, provided they have a cumulative grade point average (GPA) of at least 3.3 and are making satisfactory progress in their program of study. These courses can be used to fulfill program requirements; however, they will be considered additional credits beyond the 36 required for graduation and can only be used towards graduation should the student fall behind in credits at a later date or if the student is making up a deficiency in credits because of withdrawal or failure. If such credit is used towards graduation, a fourth course fee will be charged. Students who have below a 2.5 GPA or wish to register for their second or third overload course of the academic year, require approval from the Dean of Studies to enroll in a fourth course. Engineering students are required to take 40 classes for their degree and are therefore allowed to register for four (4) additional fourth courses at no charge. This policy also applies to fourth courses taken on an international program. Such courses can only be used toward graduation should the student fall behind in credits, in which case a fourth course fee will be charged. Refer to "Costs, Additional Courses/Fourth Courses" for the relevant fee. Refer to "Academic Support and Services" for information regarding extra courses for Union Scholars and Seward Fellows.

With the exception of students in the Scholars and Leadership in Medicine programs, all students, including engineers, are required to complete and submit the "Petition to Enroll in a Fourth Course" form at the time of registration.

A student in good standing may audit a course if the instructor gives permission. An audit is not recorded on the student's permanent record.

Pass-Fail Option

In order to encourage students to explore the curriculum, students may take up to four electives to be recorded as "pass" or "fail."

1. No course registered as "pass/fail" may be used in fulfilling a requirement for the major, for a minor, for the Common Curriculum (General Education) or Writing Across the Curriculum, or for a term abroad.
2. The "pass/fail" option is not open to students in their first two terms.
3. A student may take no more than one "pass/fail" course per academic year (defined as the fall, winter, and spring) in the first three years.
4. A student may take up to two "pass/fail" courses in the senior year (defined as the fall, winter, and spring), but may register for no more than one "pass/fail" course per academic term.
5. A student may register for no more than one of the four "pass/fail" courses in any academic department and no more than two of the four "pass/fail" courses in any academic division (Refer to "Divisions" under Common Curriculum (General Education).
6. Independent study courses may not be taken Pass/Fail A grade of "pass" will be equivalent to the lowest passing grade or better.

A grade of "pass" will not be calculated in the term or cumulative index; a grade of "fail," however, will count as any other failing grade. A course is registered as "pass/fail" by means of a form provided by the Registrar and the option must be exercised (or revoked) no later than the end of the third week of the term. The instructors (who will be informed of this choice by a particular student only by request) will submit regular letter grades, which will be appropriately converted to "pass" or "fail." Later reconversion to the letter grade will be done only if required by a student's official change of major or minor and only upon the specific request of the student.

Students who plan to pursue studies in Graduate or Professional schools should discuss with their advisors the effect of "pass/fail" grades on admission to such programs. Some graduate schools regard a grade of "pass" as a weak grade.

Attendance and Completion of Courses

Classroom Absences: The College expects students to attend classes and laboratories regularly, but it leaves to each instructor his or her statement of policy with respect to absence. It is the student's responsibility to be aware of the policy and to inform instructors in advance of unavoidable absences. An instructor may lower a grade or assign a failing grade for excessive absence.

Withdrawal from Courses: With proper notice to the Office of the Registrar, a student may drop a course during the first eight weeks of a term after consulting with his or her advisor and getting that advisor's approval. Withdrawal from FPR-100, FPR-100H, or SCH-150 requires the approval of the Dean of Studies. Withdrawal from SRS-200 requires the approval of the Director of General Education. During the first two weeks of the term, a student must add a class to replace the dropped class; exceptions to this policy must be approved by the Dean of Studies. After the end of the second week of classes and until the end of the eighth week, a grade of "W" will be assigned for dropped classes. Dropping a course after the end of the eighth week will result in a grade of "F" unless there are extraordinary circumstances beyond the student's control that prevented him or her from completing the course. The Dean of Studies must approve the withdrawal. In such a case the grade shall be "WP" or "WF," depending on whether the student was passing or failing at the time the course was dropped. A "Failure" ("F") shall be posted to a student's record if proper notice of withdrawal from a course is not given to the Registrar. For information on how this would affect tuition, please see "Withdrawal Deadlines, Refunds and Obligations" in the "Costs" section. Students receiving financial aid who elect or are permitted to drop a course may be ineligible for such aid in subsequent terms. See the chapter on "Costs and Financial Aid" for details.

Three Final Exam Advisory: Students with three final exams scheduled for the same day should speak with their professors to make arrangements to reschedule one of the exams. If arrangements cannot be made with individual faculty members, the student should consult with the Dean of Studies.

Absence from Final Examinations: Students are required to appear for scheduled final examinations. Absence from a final examination produces an automatic grade of "Failure" on the exam. In cases of a student's absence caused by verified personal misfortune, the Dean of Studies may allow a grade of "Incomplete," and the student must arrange with the instructor to take a makeup examination not later than two weeks after the last day of the examination period of the term in which the "Incomplete" was given.

Incomplete Course Work: Students must submit all course work no later than the closing hour of the last scheduled final examination period of each term, unless the instructor has set an earlier deadline. Graduating seniors cannot be issued a grade of "Incomplete." A grade of "Incomplete" may be assigned only for extraordinary circumstances beyond the student's control. The instructor must complete the incomplete form provided by the Registrar's Office and obtain the student's signature. An incomplete grade form must be submitted to the Registrar's Office after submitting the final grades online. When an "Incomplete" is granted, the course work must be completed no later than two weeks after the last day of the examination period of the term in which the "Incomplete" was given. Course work not completed within the allotted period of time will be assigned a failing grade unless the Dean of Studies, in consultation with the instructor, grants an extension of the incomplete.

Repeating Courses: Students who repeat a course that they previously failed will have both grades listed on their transcripts. All credits attempted and total quality points earned will be used in calculating the cumulative grade point average. Students who repeat a course that they have previously passed (grade of "D" or better) will have both grades listed on their transcripts, but neither the quality points nor the credit associated with the second grade will be factored into their cumulative grade point average. The one exception to this policy is when the course is a required prerequisite that the department has stipulated must be completed with a minimum grade of either a "C" or "C-." If a student retakes a prerequisite course that they have previously passed with a grade of "D," both grades will be equally factored into their GPA but they will only receive credit for taking the course once.

Making up Credits: There are many options for students to get caught up if they are behind in credits. Students behind in credits can take a fourth course at Union (subject to the fourth course fee), take a summer course at Union, take a pre-approved summer course at another College (a maximum of three course credits can be earned at schools other than Union after matriculation), take an internship for a full course credit (with tuition), go on a mini-term, or earn a music, dance, ceramics or theater practicum credit by taking three terms of the same practicum with a passing grade (there is a fee associated with each term).

Withdrawal from College: Withdrawal from the College at any time is considered official only upon written notice to the Dean of Students. The withdrawal date is considered the date on which written notification is received. Notification to another office or person, failure to preschedule or confirm registration, nonpayment of the term bill, or a request for a transcript are not considered notice of withdrawal. A student who wishes to withdraw permanently or take a voluntary leave of absence should notify the Dean of Students as far in advance as possible to avoid or reduce financial penalties.

Suspension: Students cannot transfer credits to Union for courses taken at other institutions while under suspension from Union College. This applies to both academic and social suspension.

Readmission: All applications for readmission or return from absence must be made in writing to the Dean of Students, normally at least one month before registration for the term. Readmission becomes official only if or when the admission and security deposit is on hand or has again been paid.

Academic Standing

Academic Ratings: Instructors submit grades at the end of each term. A report of a student's term grades is available to the student at <https://webadvising.union.edu>. A grade report will be mailed to the parent or guardian if the student requests one in writing. No other grade notices will be mailed to the student's home address. The grades of scholarship and their associated quality points are A (4.0), A- (3.7), B+ (3.3), B (3.0), B- (2.7), C+ (2.3), C (2.0), C- (1.7), D (1.0), P (pass), and F (failure). A course in which a student receives the grade of "F" does not count toward graduation. If the course is required to complete a sequence in the major or otherwise required for graduation, a student must repeat this course and obtain a satisfactory mark. Some courses do not carry graduation credit and a few earn double credit.

Academic Good Standing: Union College regards a student as "in good standing" academically if he or she is permitted to enroll for a subsequent term. To graduate, a student must present a cumulative grade point index of at least 1.80 and an index of at least 2.00 in the major.

The Subcouncil on the Academic Standing of Students will review the status of any student whose cumulative grade point index or immediate prior term grade point index falls below 2.00 or of any student for whom other considerations, particularly standing in the major, suggest questions of satisfactory progress toward graduation. If, after such a review, it is felt warranted, the Subcouncil may adopt one of the following actions:

Academic Warning: The student may remain in college, but unless the record improves, he or she will be subject to subsequent action. (This action is the minimum that will occur if either the cumulative grade point index or the prior term grade point index is below 2.00).

Special Academic Warning: Normally, the student must achieve a 2.00 or better index in the next term to remain in college. To be removed from Special Academic Warning, the student must achieve two consecutive term indexes of 2.00 or higher while carrying a full course load, with at least two graded courses in both terms. If the student's cumulative index is still below 2.00, he or she remains on special academic warning.

Suspension: An exceptionally weak record in a single term or a failure to improve after warning may result in suspension when, in the judgment of the Subcouncil on the Academic Standing of Students, a student's record makes it inadvisable to continue in college. The Subcouncil may recommend a one- or two- term suspension.

Dismissal: In certain cases, the Subcouncil may dismiss a student permanently.

Requests for reconsideration of the Subcouncil's decisions must be submitted in writing to the Subcouncil through the Office of the Dean of Students. Reconsideration will occur only when information not previously available to the Subcouncil is submitted and, in the judgment of the Subcouncil, could have affected its decision. Such reconsideration in no way implies that the Subcouncil will subsequently reverse its original decision. Appeals

(as opposed to requests for reconsideration) should be directed to the Dean of the Faculty. Such appeals will be considered only with respect to procedural issues.

Academic Honesty

The College does not tolerate dishonest academic behavior. Any academic work that students represent as their own must be their own. Students must take responsibility to seek advice from faculty members and academic deans if they have questions about what constitutes academic honesty. Students must not resort to plagiarism, theft and mutilation of library books and periodicals, or any other form of academic dishonesty. Any student found guilty of academic dishonesty will be subject to disciplinary action. Procedures regarding charges of academic dishonesty are described in the Faculty Manual and the Student Handbook. Additional information is found in the booklet *Plagiarism: A Cautionary Word to Students*, furnished to all entering students and available from the Office of the Dean of Studies.

Transfer Credit Policy

Matriculated Students (Transfer students see "Transfer Students Only" section below)

Credits received prior to matriculation at Union College, including Advanced Placement and International Baccalaureate courses

A matriculating first-year student can transfer in a maximum of four course credits to use towards graduation credit requirements through any combination of Advanced Placement (AP) examinations, the International Baccalaureate Program (IB), or college courses taken at other post-secondary institutions. For students completing the Full Diploma in the IB program, credit may be granted to the equivalent of a full year of Union College course work. Students must elect a more advanced course if they study in a department in which credit has been granted. Repetition of work for which credit has been granted will not be permitted. Please refer to department and program pages for specific guidelines. Please note: Online courses are not eligible for transfer credit.

Students with AP examination scores of three or higher in calculus and four or five in other subject areas may be eligible to receive college course credit. Credit for IB courses may be awarded for higher-level examination scores of six or better. Aside from AP and IB courses, Union College will consider granting credit for a course taken while the student is enrolled in high school only if the course is taken on the campus of the college or university offering the course, the course is available for enrollment by the students of that college or university, and the final grade is a C or better.

Any number of AP, IB or college courses may be used to determine course placement with the approval of the appropriate department chair in each instance. Only one AP, IB or college course may be used to fulfill a HUM, SOCS, QMR, SCLB, or SET requirement in the Common Curriculum (General Education).

Students who enter Union College with a combination of three or more AP, IB, or college credits may petition the Dean of Studies to graduate one term early. Students with a Full Diploma in the IB program may petition the Dean of Studies to graduate up to one year early. Students seeking early graduation must obtain approval from the Office of the Dean of Studies by the end of spring term the year preceding their expected graduation. Otherwise students are expected to be in full-time residence for 12 terms through the spring term prior to graduation. This rule does not apply to students enrolled in the Scholars, NSF-STEM Scholars, or Seward Fellows programs.

Credits received at other institutions after matriculation at Union College

Normally, permission is granted for courses taken at other colleges to count towards the total number of courses required for graduation only when a student has failed or withdrawn from courses started at Union and as a result is "behind" in credits. A student may transfer in a maximum of three such course credits for courses taken at other institutions. Students behind in credits who wish to receive credit for courses taken at other colleges must have those courses approved by the appropriate department chair(s) and by the Dean of Studies. A form for this purpose is available at the Office of the Registrar and should be returned to that office in advance of taking the relevant courses.

Students who are not behind in credits may wish to enhance their education by taking courses at other colleges, particularly during the summer. Although credit towards the courses required for graduation will not be granted in such circumstances, up to three such courses may be used with the permission of the appropriate department chair(s) and the Dean of Studies to fulfill particular course requirements and to satisfy course prerequisites. Such permission must be obtained in writing and filed with the Registrar's office in advance of taking such courses.

Normally, course work at other colleges will be recognized only if a minimum grade of "C" is achieved. The credit value of a course must be at least three semester-hour credits or five quarter-hour credits to earn one full course credit at Union. Students with 18 or more credits towards graduation may receive degree credit for courses taken at a two-year college only if approved by the Dean of Studies. The grades for course work accepted from

other colleges will not be recorded on a student's Union College transcript nor will these grades be factored into a student's cumulative academic average.

Selected graduate courses at Clarkson University - Capital Region Center are open to advanced undergraduates with the approval of the student's advisor. Students matriculated in a five year combined degree program may take up to three graduate level courses as an undergraduate. All other students will be limited to two graduate courses. The first two graduate courses (or three for matriculated combined degree students) that a student takes automatically count towards this limit. No substitutions may be made at a later date. For a list of eligible courses, please refer to the Clarkson University - Capital Region Center's Supplemental Listing, which is available on their website and in the Registrar's Office during prescheduling. If the graduate course is cross-listed with an undergraduate course, Union students must enroll in the undergraduate course. For course descriptions, please consult the course catalog of Clarkson University - Capital Region Center.

For cross-registration at participating colleges of the Hudson-Mohawk consortium, please refer to the relevant heading in this catalog under the "Academic Support and Services" section for rules and restrictions. Students with 18 or more credits toward graduation may not cross-register for courses at a two-year college unless specifically approved by the Dean of Studies.

Transfer Students Only

Transfer students may bring in up to two full years of college course credit and must complete two years of study at Union to qualify for a Union degree. At most, four of these transfer course credits can come from any combination of Advanced Placement (AP) examinations or the International Baccalaureate Program (IB). Students who are awarded 15 credits or fewer may, after matriculating at Union, transfer in three additional course credits for courses taken at other institutions to make up for deficiencies: courses for which the student received a grade lower than "C" before matriculation, course withdrawals or failed courses at Union, or pre-matriculation courses that did not transfer because they were not equivalent to a Union course. Students who are awarded 16 credits may transfer in up to two additional credits to make up for deficiencies; those with 17 credits may transfer in one additional credit from another institution to make up for a deficiency. Prior approval for all transfer credits must be obtained from the appropriate department chair and the Dean of Studies. Permission is normally granted only if the student is to make up for a deficiency (as described above or to fulfill Common Curriculum (General Education) or departmental requirements. If the student is not making up for a deficiency transfer credits cannot count toward the total number of credits required for graduation or towards accelerated graduation. Please note: Online courses are not eligible for transfer credit.

Proficiency Examinations

With the approval of the relevant department and notification to the Registrar, proficiency examinations covering the substance of courses listed in this Academic Catalog, except independent study, may be taken by matriculated undergraduate students in good standing at a cost of \$250 for each examination. Credit may be obtained from proficiency examinations to allow for placement out of certain courses, but cannot be used toward accelerated graduation.

Any proficiency examination may be taken only once. It will be graded "pass" or "fail," but failures will not be recorded. In the Department of Modern Languages, credit may normally be earned by proficiency examination only for courses in literature and civilization numbered 300 and above. Students may not take proficiency examinations in subjects in which they have already taken courses at a higher level for credit.

Participation in Graduation

Students who have completed all degree requirements except for one course by the end of spring term may participate fully in the Commencement ceremony, except that they will not receive their diplomas. They will process with the graduating class in alphabetical order and will cross the stage.

Students who are short more than one course but who are within six courses of completing degree requirements by the end of spring term have the option of marching in with their class if they meet all of the following criteria:

1. They have started their fourth year of College,
2. They have earned 27 course credits by the end of winter term,
3. They are signed up for a full course load spring term, and
4. They will be within six courses of completing their degree by the end of spring term.

This last group of students will march in following their classmates and be seated behind the last group of graduating seniors. Their names will be read by the Dean of the Faculty after the graduating class has finished crossing the stage. Please note that their names will not appear in the commencement program; however they will be allowed to cross the stage.

All students who do not graduate in June but who complete their studies by the following December 15th, will receive their diplomas by mail provided there are no financial holds on their record.

Academic Honors and Recognition

Dean's List: A student achieves Dean's List standing for an academic year, which is defined as the fall, winter, and spring term, by meeting the following requirements:

1. An academic index of at least 3.50 for the year.
2. Students with first year, sophomore or junior status at the end of the academic year must have a total of nine completed courses, at least eight of which are graded. Students with senior status at the end of the academic year must have completed eight courses, at least seven of which are graded. For seniors graduating early this rule will be applied to their last three terms at Union College.
3. No grades of "D" or "WF" or "F."

A student who spends part of an academic year at the College may be admitted to the Dean's List by the Dean of Studies if extraordinary circumstances prevent full-time attendance and the academic index for the courses taken is at least 3.50 with no grades of D or F.

Graduation with Distinction: Union College recognizes academic distinction by awarding some degrees summa cum laude, magna cum laude, and cum laude, these Latin honors signify various levels of the graduates' cumulative grade point averages. The faculty has the responsibility and authority for setting the levels necessary to attain the various honors. Standards are summa cum laude (3.80 or better), magna cum laude (3.65 or better), and cum laude (3.50 or better). To be eligible, students must have taken at least eighteen courses toward their undergraduate degree while enrolled at Union.

Departmental Honors: In general, students become eligible for departmental honors provided that they (1) have achieved a cumulative index of 3.3 or better; (2) have an index of 3.3 or better in courses taken in the major with grades of A- or better in at least three such courses, exclusive of the senior thesis; (3) completed their Senior Writing Experience on which a grade not lower than A- has been earned (4) satisfy any other requirements set by the major department, and (5) have taken the final six terms of their program at Union or elsewhere in a study program approved by Union. Students should consult their departments for complete information. In the case of interdepartmental majors, students must satisfy the above for each department, except that for (2), they need to have at least two (not three) grades of A- or better in each department. Interdepartmental majors also must complete independent work of substance and distinction, in the form of a thesis or some other written or documented work on which a grade not lower than A- has been earned, and they must be nominated by both of the major departments. Leadership in Medicine students and double majors may earn departmental honors by fulfilling the requirements listed above in at least one of their majors.

Academic Honor Societies

Alpha Kappa Delta: Omega chapter of New York of Alpha Kappa Delta, the national honor society of sociology, was established at Union in 1979. Juniors and seniors who have done outstanding work in sociology are eligible.

Eta Kappa Nu: Phi chapter of the national honor society of Eta Kappa Nu for electrical engineers was established at Union in 1926. Students of outstanding academic achievement who show admirable qualities of character are invited to become members during their junior and senior years

Eta Sigma Phi: Eta Phi chapter of Eta Sigma Phi, the national honor society for Classics, was established at Union in 2005. Students who demonstrate high achievement in the study of Greek or Latin are eligible for election to full membership.

Nu Rho Psi: Alpha chapter in New York, the national honor society for Neuroscience, was founded in 2006 under the auspice of the Faculty for Undergraduate Neuroscience and through the joint efforts of faculty and students at Baldwin-Wallace College, Baylor University and Johns Hopkins University.

Omicron Delta Epsilon: Alpha Beta chapter of New York of Omicron Delta Epsilon, the international honor society in economics, was established at Union in 1973. Juniors and seniors who have shown outstanding achievement in the study of economics are invited to become members.

Phi Alpha Theta: Alpha Iota Chi chapter of Phi Alpha Theta, the national honor society for history, was established at Union in 2001. Students who have compiled outstanding academic records in history are eligible.

Phi Beta Kappa: Juniors and seniors of academic distinction who are candidates for the B.A. or general B.S. degree are eligible for membership in Phi Beta Kappa. Election is based on scholarship and character, with particular attention given to intellectual maturity and breadth. Union's Phi Beta Kappa chapter, Alpha of New York, was established in 1817 and is the fifth oldest in the country. Election to membership is one of the highest distinctions to be gained by academic achievement.

Pi Mu Epsilon: Alpha Tau chapter in New York, a national undergraduate honors society in mathematics, was established at Union in 2013. Students who have compiled outstanding records in mathematics and who work to promote mathematics are eligible to apply for membership.

Pi Sigma Alpha: The Union chapter of Pi Sigma Alpha, the national honor society in political science, was established in 1974. Students who have compiled outstanding academic records in political science are eligible.

Pi Tau Sigma: Established in 1915, Pi Tau Sigma is the national honorary mechanical engineering fraternity. Juniors and seniors with high academic achievement and character are eligible.

Psi Chi: Psi Chi is the national honor society founded to encourage, stimulate, and maintain scholarship in and advance the science of psychology.

Sigma Delta Pi: Established at Union in 1993, the Tau Mu chapter of Sigma Delta Pi honors juniors and seniors for outstanding achievement in the study of Spanish language and literature.

Sigma Pi Sigma: Founded in 1975, the Union chapter of the national honor society Sigma Pi Sigma recognizes outstanding scholarship in physics.

Sigma Tau Delta: Established at Union in 2009, Sigma Tau Delta is the international English honor society.

Sigma Xi: The Society of Sigma Xi is an honorary organization dedicated to the encouragement of scientific research pure and applied. The Union chapter, the third in the nation, was begun in 1887. Annually, the society elects to associate membership selected students in science or engineering who have demonstrated, usually by a written report, marked aptitude for scientific research. In addition, students and faculty who have demonstrated noteworthy research achievement may be elected.

Tau Beta Pi: Established at Union in 1964, Tau Beta Pi annually elects as members a rigorously-selected group of juniors and seniors who have achieved outstanding records in engineering studies and have demonstrated excellence of character.

College Policy Resources

The Student Handbook and the Faculty Manual are resources, available on the College's web site, that outline College policies, including those regarding academic dishonesty, intellectual property, grades, and use of computing resources.

Students' Rights and Confidentiality of Student Records (FERPA)

One of the goals of a Union College education is to enable students to gain the maturity, independence, and confidence to function as responsible adults. According to New York State law, students who have reached the age of 18 are considered to be adults and are accorded the full rights that such status entails. Because of this, it is the policy of Union College to communicate directly with students on all academic matters, such as grades, academic standing and issues of credit.

The 1974 Family Educational Rights and Privacy Act (FERPA) stipulates that in the case of students who are dependents of their parents in the eyes of the Internal Revenue Service, the College is allowed to disclose information from the student's educational records without obtaining the student's consent. It is the policy of the College to notify both students and parents in writing of formal academic warnings, probationary status and dismissal. Additionally, the College will notify the parents of a student in connection with a health or safety emergency as expressly permitted under FERPA.

In other communications with parents, the College will normally respect the privacy of the student. Information from the student's educational records will not be disclosed without the student's formal written consent. Grades are considered to be part of the student's educational record and will not be disclosed to parents without the student's formal written consent. Upon obtaining such written consent, the College will provide information to parents (or guardians).

All students will be required to declare their tax status at the commencement of each academic year. Any student who claims not to be a legal dependent must provide appropriate evidence to the College in writing within the first month of each academic year.

Student Right-to-Know Act

In compliance with the federal Student Right-to-Know Act requiring institutions of higher education to make available graduation rates, Union has calculated a six-year graduation rate of 88% based on the first-time, first-year student cohort entering in September 2009. This calculation does not

include students who have transferred into the College from other institutions. The complete graduation rate report is available on line at http://www.union.edu/offices/institutional/_documents/grad-rate-report.pdf or by contacting the Office of Institutional Research, (518)388-6607.

Academic Support and Services

Academic Affairs

Vice President for Academic Affairs and Dean of the Faculty: Strom Thacker, Feigenbaum Hall, (518) 388-6102

Dean of Academic Departments and Programs: Wendy Sternberg, Science & Engineering S-100, (518) 388-6233

Dean of Studies: Mark Wunderlich, Science & Engineering S-100, (518) 388-6234

Dean of Academic Planning and Resources: Nic Zarrelli, Feigenbaum Hall, (518) 388-6033

Academic Affairs is responsible for the formulation of educational policy, matters involving the faculty, and all academic related processes. The Academic Affairs Office includes the Vice President for Academic Affairs & Dean of the Faculty, the Dean of Academic Departments and Programs, the Dean of Studies and the Dean of Academic Programming and Resources.

The Vice President for Academic Affairs & Dean of the Faculty has responsibility for all academic matters related to faculty and students, the curriculum, and academic budgeting. Supervisory responsibilities include, Information Technology Services, Intercollegiate Athletics, International Programs, Registrar's Office, Schaffer Library, the Union College Academy for Lifelong Learning (UCALL), the Director of Engineering, the Director of General Education, and the Director of Assessment.

The Dean of Academic Departments and Programs oversees all academic departments and interdisciplinary programs, playing a key role in faculty recruiting, curriculum development, and advising the Vice President for Academic Affairs & Dean of the Faculty on matters associated with the review and promotion of faculty. Supervisory duties include the Director of Interdisciplinary Programs, the Director of Faculty Development, and all academic department chairs and program directors.

The Dean of Studies has responsibility for the implementation of academic policies and has supervisory responsibilities that include Academic Mentoring Programs, the Academic Opportunity Program, Advising, the Health Professions Program, the Law and Public Policy Program, National Fellowships & Scholarships, the Scholars Program, Undergraduate Research, and the Writing Center.

The Dean of Academic Planning and Resources manages academic finances and facilities, supervises the Engineering Machine Lab and supports the Vice President of Academic Affairs, other Academic Affairs' Deans, faculty, administrators and staff within Academic Affairs on various resource matters.

Academic Achievement Office

Director: Gale Keraga, Becker Hall 104, (518) 388-6493

The office provides academic support for all students at Union to help them reach their full academic potential. A variety of programs are available to assist students in becoming stronger, more independent learners. Individual consultations are available with the Director of Academic Achievement to help students develop a plan for success and provide support as they work towards their goals. In addition, academic coaching and study skills development through peer mentoring is available through the Minerva Mentors program. Supplemental Instruction (SI) provides academic support for some of our traditionally challenging courses by offering optional, collaborative, peer-led study sessions. The SI program is jointly sponsored by the Union Scholars Program. The office also supports the academic progress of sophomores and returning students on academic warning.

Academic Opportunity Program/Higher Education Opportunity Program

Director: Philip Poczik, Bailey Hall 101, (518) 388-6115
aop@union.edu

The Academic Opportunity Program (AOP) and the Arthur O. Eve Higher Education Opportunity Program (HEOP) have a long and proud tradition of academic excellence, serving students for over forty-five years. These talent search programs offer support services to ensure academic success for a select group of students. Services include: an intensive five-week pre-first year student summer program; individualized and group tutoring; and academic, career, and financial counseling.

Advising

Director: Professor Mark Walker (History), Lippman Hall 216, (518) 388-6994

Academic advising is central to the mission of a liberal arts college such as Union and is a key faculty responsibility. Union students enjoy a close working relationship with the faculty advisors who encourage and assist their advisees to make informed choices that maximize the benefits of a liberal arts education. First-year students are assigned advisors by the Dean of Studies while upper-class advisors are chosen by the student. Students may request a change of advisor at any time through the Dean of Studies office. Additional information on advising can be obtained on the advising website.

The College also has a peer mentoring program, Minerva Mentors. For more details, contact Gale Keraga (Director of the Academic Achievement Office), (518) 388-6493.

Disabilities

Students interested in support services for learning disabilities should refer to "Disabilities" in the Student Services section for additional information. Students are also encouraged to consult with the Director of Student Support Services, in the Dean of Students office.

Health Professions Program

Director: Professor Carol Weisse (Psychology), Bailey Hall 101, (518) 388-6300

The Health Professions Program at Union College is designed to advise students who are planning a career in medicine (including osteopathy, dentistry, podiatry, veterinary medicine, and other allied health professions). In addition to providing academic advising, the program works closely with students to help them identify the kinds of experiences on campus and in the community that will foster personal growth and the development of interpersonal skills necessary for a successful career in healthcare delivery.

Professional schools give no preference to any particular major when seeking candidates; therefore, Union College does not offer a "premedical" major. Although many major in the natural sciences, students are encouraged to choose a major in any field in which they are interested. Today more than ever, professional schools are searching for students who have not only mastered the sciences but who also have backgrounds that are well-rounded and diverse. Most professional schools require students to complete and do well in the following courses:

- Two English courses (satisfied by First-Year Preceptorial and at least one English elective);
- Calculus course (through MTH 102 or MTH 112 or MTH 113);
- Three biology courses (BIO 110 , BIO 112 , and BIO 225);
- Four chemistry courses (CHM 101 and CHM 102 or CHM 110; CHM 231 and CHM 232);
- Biochemistry course (BIO 335 or CHM 380 or CHM 382);
- Two physics courses (PHY 110, PHY 111).

Note: Introductory Psychology or Sociology and statistics are also recommended. Some health professions programs (e.g., physical therapy, occupational therapy, nursing) also require additional courses such as Microbiology and Developmental Psychology as well as Human Anatomy and Physiology, the latter of which is not offered at Union but can be taken through the Hudson Mohawk Consortium at neighboring schools.

Information Technology Services

Chief Information Officer: Ellen Yu Borkowski, Peschel Computing Center, (518) 388-6293
its.union.edu

Housed in the Stanley G. Peschel Center for Computer Science and Information Systems and the first floor of Steinmetz, Union's Office of Information Technology Services (ITS) manages the College's distributed network and the many computing and technology resources on the network along with voice transmissions from any College-owned location. There are more than 2,100 College-owned computers and workstations on campus, with over 700 available for student use. A high-performance computing cluster, which consists of 88 different servers and more than 1,000 individual processors, was installed in the summer of 2011 and supports research at the college. The network is the backbone for much of the computing on campus, including academic, research, and administrative work; linking classrooms, offices, laboratories, and all College-owned residence hall rooms.

More than 60 smart electronic classrooms are used to enhance the academic program. Other facilities on campus include several departmental computer labs running a variety of Windows, Macintosh, and Linux computer systems. Information Technology Services maintains a 24/7 computer lab along with computers that are fully equipped for the development of multimedia projects located in the Learning Commons (first floor of Schaffer Library). In addition, several departments and programs have installed computer facilities for specialized use by faculty and students.

Union College and Information Technology Services make computing resources available to all students. All students are entitled to an account on the academic computers, including full access to the Internet. Each student is also provided with space for a personal website and for file storage. Wireless network access is available in most buildings on campus. Additionally, all classrooms have wireless access. Outside wireless access is available in Library Plaza and the College's outdoor classroom. Union College has partnered with Apogee to provide high-speed internet access through the residential network with 24/7 customer support. There are also many other resources dedicated to assist students. Assistance with hardware and software problems is provided by USTAR, the student-run technical support program providing assistance to students by students. Full-time Help Desk personnel are also available to provide assistance. Additional information including network access, assistance, training, computing policies & forms can be obtained from the ITS website.

Language Center

Director: Audrey Sartiaux; Schaffer Library, (518) 388-8363

The Language Center is open to all students with a valid Union ID. The Center is divided into a main lab, a collaborative workspace, and a reception/social space. The main lab contains a Smartboard, 6 iMac computers and 10 PC's with Windows 7, all with integrated webcams. The collaborative workspace area contains 5 iMacs with dual boot (OSX/Windows 7) and integrated webcams, 2 multi-zone DVD players. Headsets with microphones are available upon request. Language methods for self-study are available for the languages taught at the college (to be used in the center only). All computers have East Asian, Slavic, and Arabic languages enabled as well as Romance Languages. Language Assistants (skilled in Chinese, French, German, Japanese, Russian, and Spanish) also hold their office hours in the collaborative workspace. The Center is open during Union College academic terms. Consult the Language Center website for more information.

Prelaw Advising

Advisor: Associate Professor Bradley Hays (Political Science), (518) 388-6102

Union College provides prelaw advising to students interested in graduate legal education. As a general rule, law schools do not require a specific major but instead look for academic success in a student's chosen academic discipline. Given the many available academic paths to law school, prelaw advising is inclusive of general curricular and extracurricular guidance, insight into the Law School Admission Test and the application process, and aid in targeting appropriate law schools for admissions.

National Fellowships and Scholarships

Director: Lynn Evans, Schaffer Library 203, (518) 388-6643

The Office of National Fellowships and Scholarships provides support to students and alumni applying for prestigious, external undergraduate and postgraduate awards. Students are recruited to apply for fellowships and scholarships months before their national deadline. During the recruitment period, the director works closely with students to understand their goals and to match opportunities to their strengths and needs. The office then oversees the application process for the appropriate awards. Union regularly supports students for awards such as the Rhodes Scholarship, the Marshall Scholarship, the Fulbright programs, the Watson Fellowship and many more.

Registrar's Office

Registrar: Penelope Adey, Silliman Hall, (518) 388-6109
www.union.edu/offices/registrar

The Office of the Registrar is responsible for overseeing the functions of online registration, maintenance of student schedules, creation of each term's course and final exam schedules, creation of the academic calendar, assignment of classrooms, grade entry, Webadvising, rank in class, Dean's List, academic records, certification for graduation, transcript processing, certification of eligibility for veterans' benefits, and the maintenance of the online Academic Catalog. The Registrar's Office also coordinates the reporting of student enrollment status and degree verification to the National Student Clearinghouse, which in turn, reports to the National Student Loan Data System. For additional information, please visit our website.

Schaffer Library

College Librarian: Frances Maloy, (518) 388-6739
www.union.edu/Library

Schaffer Library provides print and electronic information resources in a comfortable environment for reading, writing and conducting research. The library is open extended hours during the term and 24 hours/day, 7 days/week during exams. A friendly and knowledgeable staff assists the campus community with determining information needs, providing the necessary skills to effectively and efficiently find information, and evaluating those resources in an appropriate and ethical manner. The library has quiet study spaces, collaborative learning spaces (the "Learning Commons") and production spaces furnished with both Apple and Windows workstations with a variety of software tools, scanners, printers, and other hardware. The Adirondack Research Library, located 4 miles from campus in the Kelly Adirondack Center, houses an extensive collection on the 20th century wilderness movement in New York State's Adirondack Park. The Special Collections and Archives Department houses rare and unique materials that document the College's history along with rare books and prints that are available for research upon request. The Mandeville Gallery, the College's art collection and exhibitions program, is also under the Schaffer Library structure. Refer to the Schaffer Library website for additional information.

Undergraduate Research

Director: Associate Professor Rebecca Cortez, Steinmetz Hall 237, (518) 388-8784

Students are encouraged to explore the many different ways that student-faculty collaborative scholarly activity is promoted at Union. All students complete a Sophomore or Scholars Research Seminar as part of the Common Curriculum. There are generous funds available to students for research opportunities including the Summer Undergraduate Research Fund, which provides funds to students who work on independent projects with a sponsoring faculty member. The Student Research Grant program provides financial support for students for sophomore research project, practicum and senior thesis/project expenses. In addition, Union annually sends students to professional society meetings and to local and national undergraduate research conferences to present their research results. More than 500 students take part in the annual Steinmetz Symposium, a celebration of student scholarly work, held in early May. Students communicate the results of their scholarly efforts through oral presentations, exhibits, posters, and performances.

Writing Center

Director: Joseph Johnson, Schaffer Library 221, (518) 388-6680

Located in Schaffer Library Rooms 226 & 227, The Writing Center helps Union students with all forms of writing: essays, reports, research papers, theses, personal statements, etc. Trained Union undergraduates are available to help students plan, organize, revise, or edit their writing to improve its structure, style, clarity, or overall effectiveness. Supporting the College's mission to improve students' writing and critical thinking skills, the Writing Center provides assistance to students of all ability levels and within all disciplines. Open Sunday through Thursday, 3-11pm. Closed Friday and Saturday. Make an appointment online at www.union.edu/writing.

Special Curricular Opportunities

Scholars Program

Director: Maggie Graham, 109 Sorum House, (518) 388-8311
<http://muse.union.edu/scholars/>

The Union Scholars Program offers selected students an enriched educational experience. The Admissions Office, in conjunction with the Director of the Scholars Program, selects the candidates for the Scholars program. Specific features of the Scholars Program are a two-term sequence of honors courses beginning with a special Scholars Preceptorial (FPR 100H) followed by a Research Seminar (SCH 150), which is also taken in the first year; a two-term (one course credit) sophomore independent study project (295H-296H) with a professor of the student's choosing; and, in the senior year, an optional Scholars Colloquium (SCH 400). To graduate as a Union Scholar a minimum of 38 courses is required. AP, IB and transfer courses which are accepted by Union College (see "Transfer Credit Policy") may be used toward the total number of courses. Union Scholars may take one extra course each term at no extra cost, starting in the winter term of the first year, provided they maintain the minimum GPA for the Scholars Program (3.4 for the Class of 2018 and beyond). These courses can be used to accelerate graduation. New opportunities for scholars, such as summer research fellowships and special classes, are available in selected years. Please note that Seward Interdisciplinary Fellows and NSFSTEM Scholars are also members of the Scholars program and must adhere to these policies unless an explicit exception is made.

Seward Interdisciplinary Fellows

Director: Maggie Graham, 109 Sorum House, (518) 388-8311
<http://muse.union.edu/scholars/seward-fellows/>

The Seward Interdisciplinary Fellows Program gives students an opportunity to join the Union College Scholars program in their sophomore year and develop their own program of study exploring connections among disciplines. The program is open to students from any discipline who have demonstrated excellence in their first year at Union College. Students apply for the Seward Fellows Program during the fall term of their sophomore year. Applicants must have at least a 3.5 grade point average at the time of application. Seward Fellows are required to design and implement a Seward Organizing Theme minor. Seward Fellows adhere to all requirements and policies of the Union College Scholars Program except that they do not have to take the first year courses associated with the Scholars Program (FPR 100H and SCH 150).

Community-based learning

Community-based learning involves courses and study off campus that have a service learning or civic engagement component. Union College has developed many courses that offer students an opportunity to apply the knowledge they are learning in the classroom beyond Union's campus and in doing so both serve and learn from our community. Opportunities include experiences within the mini-term in New Orleans and the National Health Systems term abroad, along with courses in sociology, economics, modern languages, political science and engineering that have significant community service components. The Kenney Community Center offers many programs that provide students with community-based opportunities beyond the classroom.

Independent Study

With the approval of a professor, a student who has shown the requisite depth of interest and the necessary intellectual skills may register for an independent study course which will allow the student to research into a specific topic that is not offered through the Union course offering. The precise form of independent study projects varies with the student and the subject; the most common are research projects in the sciences and engineering, and substantial investigative papers of "thesis" caliber in the humanities and social sciences. Appropriate credit is granted for all independent study courses that are successfully completed. Independent study courses cannot be taken Pass/Fail.

Academic Credit for Internships

Director: Maggie Graham, 109 Sorum House, (518) 388-8311

Students are eligible to receive academic credit for internship experiences that are substantial in nature (clerical and other types of routine work are not appropriate.) Internships that take place within the context of a full-credit course can receive pay from the relevant employer. Internships

undertaken outside the context of a full-credit course must be unpaid and should involve a minimum of 100 hours of work experience. Students requesting credit for an internship must apply for credit prior to beginning their internship. Students may receive credit for up to two internship experiences, but the second internship needs to be substantially different in nature from the first in order for credit to be granted. Students looking for help finding an internship should contact the Becker Career Center. Full guidelines and the costs of course credits are available by emailing Ms. Graham at grahamm@union.edu.

Cross Registration

Hudson-Mohawk Association Consortium (HMAC)

As a member of the Hudson-Mohawk Association of Colleges and Universities, Union participates in programs of cross-registration permitting students to take courses at other consortium colleges and universities.

Consortium cross-registrations are subject to several conditions. In general, students are advised to confer with the instructor of the course proposed to be taken, but in any case they must fulfill the prerequisites set by the institution giving the course, including permission of the instructor if that is a normal condition for entering the course. Separate applications, obtainable from the registrar, must be completed for each course. When institutional calendars do not coincide, as will be the case in most instances, the individual student will be responsible for making the necessary accommodations, including food and lodging if the home institution is closed during the course. Cross-registering students will be expected to abide by all regulations, including attendance, parking, honor systems, and the like, at the host institution.

Cross-registrations will be approved only for courses not offered at the home institution; in general, they will be limited to a maximum of half the normal course load in any one term. Further, students must have their academic advisor's permission to cross-register for the course(s) in question. Cross-registration will be permitted only in courses that Union normally would consider for transfer credit.

Through the consortium, Union students may enroll in Reserve Officer Training Corps programs of the Navy and Air Force at Rensselaer Polytechnic Institute, in Troy, and in the Army ROTC program at Siena College, in Loudonville. The Reserve Officers Training Corps (ROTC) programs are elective program for students who desire commissions in the armed forces; ROTC courses do not carry credit toward Union College graduation, although the grades earned through these courses will be recorded on the Union transcript. The objective is to develop professional officers who have varied educational backgrounds in major fields of interest and have the professional knowledge and standard needed for future growth. Such ROTC students may be eligible for scholarships and other benefits available under two- and three-year programs of the several services. Interested students should contact the respective branches of ROTC. Students must work the scheduling of these courses around their course work at Union College.

Members of the consortium, in addition to Union College, are Adirondack Community College, Albany College of Pharmacy, The College of Saint Rose, Clarkson University - Capital Region Center, Empire State College, Hudson Valley Community College, Maria College, Rensselaer Polytechnic Institute, The Sage Colleges, Schenectady County Community College, Siena College, Skidmore College, Southern Vermont College, the State University of New York at Albany, and the State University of New York at Cobleskill.

Students with 18 or more credits toward graduation may not cross-register for courses at a two-year college without permission from the Dean of Studies

New York Six Liberal Arts Consortium and the Cross Registration Initiative

The New York Six Cross-Registration Initiative was designed to facilitate the availability of selected course offerings for students attending any one of the NY 6 member institutions. The New York Six Liberal Arts Consortium consists of the following colleges: Colgate University, Hamilton College, Hobart and William Smith Colleges, Skidmore College, St. Lawrence University and Union College.

For more information on the cross registration initiative, go to newyork6.org/content/new-york-six-cross-registration-initiative

Part-Time Undergraduate Study

Union College makes a limited number of its undergraduate programs of study, specifically those in computer, electrical, and mechanical engineering, available on a part-time basis to meet the needs of students who are employed full time or have other commitments beyond the campus. Most of these courses are taught by full-time Union College faculty and regularly enroll full-time undergraduate students as well. Part-time students may also register for courses from these and other departments on a non-degree basis. Registration is handled for all part-time students by the Registrar's Office in Silliman Hall.

Members of UCALL and senior citizens aged 65 and over are entitled to audit one course per academic year at no cost with the written permission of the instructor. Courses taken for credit will be charged the normal per course fee.

Students wishing to matriculate in an engineering program on a part-time basis are required to meet with the appropriate department chair. Before registering for their first course, all degree seeking part-time students must complete an application form and submit it to the Registrar's Office along with a non-refundable \$50 application fee. Application forms are available from the Registrar's Office in Silliman Hall. Non-degree students may obtain an application from the Registrar's Office. Students intending to pursue a degree are allowed to register for up to three courses before a final decision is made on their application.

Degree status is granted on the basis of transcripts from high school and/or previous college work, adequate performance in courses taken at Union College as a non-matriculated student (2.3 minimum grade point average), letters of recommendation, and a written recommendation from the departmental program advisor. Financial aid based on demonstrated need is available to matriculated part-time students. Information, assistance, and application forms for financial aid are available through the Office of Financial Aid in Grant Hall.

College credits earned at other institutions may be transferred for full or partial credit toward a Union degree if the student's advisor and the Dean of Studies certify that they are equivalent to Union's requirements. The credit value of a course must be at least three semester-hour credits or five quarter-hour credits to earn full Union course credit.

Registration for courses normally occurs during the tenth week of the term for part-time students. Course schedules are available online during the sixth week of the term. Students must register in person at the Registrar's Office and should meet with an academic advisor prior to registration. In most instances, the department chair is responsible for advising part-time students. Proof of immunization must be on file at the Health Services Office prior to registration. Continuing, part-time students may register in person, by mail, or by fax.

Relatively few courses are offered in the evening, so matriculated part-time students will need to take most of their courses during the daytime in order to complete degree requirements. Many day courses have restricted enrollments and in some cases, it may be necessary to obtain permission from the academic department offering the course. These courses, referred to as "petition courses," require the student to request a space from the department offering the course during the seventh week of the term preceding the registration period. For more information about deadlines and procedures, please refer to the current course schedule posted at www.union.edu/offices/registrar/course-exam-schedules. Refer to "[Costs, Part-time and Non-degree Course Fees](#)" for the per course cost.

Part-time students must satisfactorily complete all requirements for their degree within 12 years after matriculating at Union. They are subject to the same program requirements as full-time students. Students intending to graduate by June of the current academic year must submit a letter of intent to the Union College Registrar's Office as per the deadline specified by the office.

Additional information about baccalaureate degree requirements, course descriptions, grading policies, and financial aid may be found elsewhere in this *Academic Catalog*.

Union University

Union College, Albany Medical College, Albany Law School, Albany College of Pharmacy, and the Dudley Observatory of the City of Albany are united and recognized by the New York State Board of Regents as "Union University." The purpose of Union University, created in 1873, is to promote learning and the development of the several component institutions in the interest of higher education while retaining and continuing the respective and distinctive organizations, rights, powers, and corporate existence. The President of Union College, Stephen C. Ainlay, serves as Chancellor of Union University.

Common Curriculum

Director: Associate Professor John Cramsie (History), (518) 388-8779

The Common Curriculum embodies Union's commitment to build intellectual foundations, explore the liberal arts, and create dynamic connections across boundaries as students discover new interests and contribute to humanity. The courses in the Common Curriculum create the essential foundation of a Union Education in the liberal arts. Through them students begin to find the creative intersections of ideas that contribute to society and touch lives.

Students take at least ten courses in completing the Common Curriculum. Students may satisfy any of the requirements except FPR/FPR-H and SRS/SCH with appropriate courses taken on international programs. Additional information of this kind can be found in the Common Curriculum Advising Guide and Worksheet located in the Resources Section of the Common Curriculum website.

Courses that Build Intellectual Foundations

First-Year Preceptorial (FPR 100) engages students in the exploration of ideas and diverse perspectives through critical reading, thinking, and writing. Note that students in the Scholars Program take Scholars Preceptorial (FPR 100H).

Sophomore Research Seminar (SRS 200) ensures that students have an early hands-on experience thinking and working as an academic researcher. Note that students in the Scholars Program take the Scholars Research Seminar (SCH 150) after the Scholars Preceptorial.

Literature (HUL) expands the moral imagination needed to understand one's self and fellow human beings through literary analysis, interpretation, and reflection. Complete any one course listed in the course schedule as HUL from English (EGL), Modern Literature in Translation (MLT), or another department

Natural Science with Lab (SCLB) changes the way students think about the natural world when students understand the scientific method and put it to work. Complete any one Lab course in Astronomy (AST), Biochemistry (BCH), Biological Sciences (BIO), Chemistry (CHM), Geology (GEO), Physics (PHY), PSY 310 or PSY 313, or any courses listed in the course schedule as SCLB.

Quantitative and Mathematical Reasoning (QMR) equips students with unique insights and skills necessary to solve complex problems. Complete any one course from Mathematics (MTH) except MTH 100 or any courses listed in the course schedule as QMR.

Courses that Explore the Liberal Arts

Arts and Humanities (HUM) courses enable students to find themselves and voice in creative expression and exploration of the works of the imagination. Complete any one course in Art History (AAH), Dance (ADA), Music (AMU), Theatre (ATH), Studio Arts (AVA), Classics (CLS), English (EGL), Film Studies (FLM), Gender, Sexuality, and Women's Studies (GSW), Philosophy (PHL), Religious Studies (REL), or courses offered by the Department of Modern Languages and Literatures.

Social Sciences (SOCS) courses confront students with the complexity and challenges of our world by analyzing the societies we create. Complete any one course in Anthropology (ANT), Economics (ECO), Gender, Sexuality, and Women's Studies (GSW), History (HST), Political Science (PSC), Sociology (SOC), or PSY 100.

Science, Engineering, and Technology (SET) introduce students to Union's unique commitment to teaching Science and Engineering as Liberal Arts and examining their impact on our humanity. Complete any one science in Science (with or without lab, including a second SCLB), Engineering, or Computer Science (CSC), or any course listed in the course schedule as SET. Note that courses within the major or minor may be used to fulfill any of these distribution requirements.

Courses that Create Connections across Boundaries

Languages and Cultures (LCC) courses empower students as citizens of a global community to contribute across cultural boundaries and shape our shared future. Complete the LCC requirement in one of these ways:

- Take a sequence of two language courses at the 101 level or higher. **PLEASE NOTE:** for Latin or Greek, you must complete LAT 102 and LAT 103 or GRK 102 and GRK 103 ; LAT 101 and GRK 101 do not count for LCC language sequence credit.
- Take any two non-language courses at Union that carry the LCC code.
- Go on a term abroad that deals with a cultural tradition outside of the US. This satisfies both courses of the LCC requirement.
- Go on a mini-term that deals with a cultural tradition outside of the US. This satisfies one course of the LCC requirement. IF the mini-term is associated with a pre-departure and/or post-return coursework it satisfies both LCC courses.

Writing Across the Curriculum

The Writing Across the Curriculum (WAC) program is intended to promote improvement in students' writing and critical thinking skills. Every student will have opportunities to improve these skills by completing the following requirements:

1. the First-Year Preceptorial

2. the Sophomore Research Seminar
3. five courses from at least two different academic divisions (refer to "Divisions" below) that have been certified as WAC courses
4. a Senior Writing Experience such as a senior thesis or a senior seminar paper.

The First-Year Preceptorial and Sophomore Research Seminar, required of all students, focus on developing critical reading, analytic writing, and research skills. The WAC courses that fulfill the second requirement fall within the normal disciplinary offerings and provide students with feedback on their writing while incorporating writing as an important and clearly evaluated part of the coursework.

Courses currently certified by the College Writing Board as meeting WAC requirements are listed in the course schedule posted on-line each term. As courses and course syllabi frequently change, additional courses are certified each year by the College Writing Board and the roster of WAC courses changes over time.

The form of the senior writing experience that meets the third requirement is determined by the Writing Board and the student's major department(s). In most departments, this requirement is fulfilled by completing a thesis, another research project, or a senior seminar. Courses that satisfy this requirement are designated as WS courses.

WAC: course certified by the Writing Board

WS: fulfills senior writing requirement

WAC/S: fulfills WAC or Senior Writing

Divisions

Departments of instruction are grouped into divisions as follows. For courses in interdisciplinary programs not listed below, students should consult with their advisor or with the Director of Interdisciplinary Studies.

The Walter C. Baker Faculty of the Humanities (Division I)

- Classics
- English
- Film Studies
- Modern Languages and Literatures
- Music
- Philosophy
- Religious Studies
- Theater and Dance
- Visual Arts

Social Sciences (Division II)

- Africana Studies
- Anthropology
- Economics
- History
- Political Science
- Psychology*
- Sociology

Sciences (Division III)

- Biochemistry
- Biological Sciences
- Chemistry
- Geology
- Mathematics
- Neuroscience
- Physics and Astronomy
- Psychology*

Engineering and Computer Science (Division IV)

Bioengineering
Computer Science
Electrical and Computer Engineering
Mechanical Engineering

* Courses in the Psychology Department may be classified as social science courses (Division II) or Sciences (Division III). Please refer to course listings for clarification.

Majors, Minors, and Other Programs

Departments and interdisciplinary programs are described below in alphabetical order. Please refer to the detailed sections on each area of study for more information. Requirements to fulfill a major or minor appear within each program or area of study.

Africana Studies

Director: Associate Professor D. Hill-Butler (Sociology)

Faculty: Professor T. Meade (History); Associate Professors B. Peterson (History), K. Aslakson (History), C. Ndiaye (Modern Languages), T. Olsen (Music), Robert Hislope (Political Science), L. Cox (Visual Arts); K. Lynes (English); Senior Lecturers M. Lawson (History), J. Grigsby (Sociology)

Africana Studies offers a full major, an inter-departmental major and a minor involving the study of interdisciplinary connections of the history, culture, intellectual heritage, and social development of people of African descent. The program features a variety of approaches to intellectual, creative, and practical interests, and draws upon the arts, humanities, and social and behavioral sciences. Students align the current set of Africana Studies course offerings into three tracks: African, African-American and Latin American/Caribbean.

Each of the tracks can be utilized to pursue a 12-course full major, an 8-course ID major, or a 6-course minor.

Africana Studies Approved Courses

Africana Studies (ID), B.A.

Requirements for the Interdepartmental Major (8 courses)

- AFR 100 - Introduction to Africana Studies
- Two-term thesis which includes Africana Studies in conjunction with other departmental major [IDM 498-IDM 499]
- Two history courses chosen from the relevant track
- One literature course from the relevant track
- One course chosen from the other tracks
- Two electives from the same department, chosen from the relevant track and/or courses relevant to multiple tracks

Africana Studies Minor

Requirements for the Minor (6 courses)

- AFR 100 - Introduction to Africana Studies
- Two history courses chosen from the relevant track

- One literature course chosen from the relevant track
- Two electives from the same department, chosen from the relevant track and/or courses relevant to multiple tracks

Africana Studies, B.A.

Requirements for the Major

- AFR 100 - Introduction to Africana Studies
- AFR 498 - Africana Studies Senior Thesis 1
- AFR 499 - Africana Studies Senior Thesis 2
- Each student must choose a track to study in depth from the African, African American, or Latin American/Caribbean Tracks. From the track, students must take:
 - Two history courses
 - One literature course
 - Four electives (which must be different courses from the ones used to satisfy the history and literature requirements). Two of the 4 electives must be from the same department.
- Additionally, students will take 2 elective courses from outside of their track

Africana Studies: African American Track

African American Track: History

Choose 2 courses from this section

- HST 131 - African-American History 1
- HST 132 - African-American History 2
- HST 209 - Race, Gender, and Nationalism in American Sports
- HST 231 - The Civil Rights Movement
- HST 232 - History of New Orleans
- HST 257 - Modern France and Its Empire
- HST 315 - Race and Constitution
- HST 324 - Race in American Memory
- HST 412 - Seminar in US History: The Old South

African American Track: Literature

Choose 1 course from this section.

- ADA 140 - American Musical Theater and Dance
- ADA 142 - Dance in America
- AMU 131 - Music of Black America
- AMU 132 - The History of Jazz
- EGL 233 - (216) African American Literature: Beginnings to 1900: Vision and Re-Vision
- EGL 237 - (219) African-American Literature 1900-Present
- EGL 266 - (240) Black Women Writers
- EGL 248 - (274) Introduction to Black Poetry
- EGL 302 - Jr. Seminar: Literary Theory
- EGL 306 - Jr. Seminar (Spring): Milton

African American Track: Electives

Choose 4 courses from this track. You may not count the same courses used to satisfy the History and Literature requirements. 2 of the 4 courses must be from the same department.

- ADA 140 - American Musical Theater and Dance
- ADA 142 - Dance in America
- AMU 131 - Music of Black America
- AMU 132 - The History of Jazz
- EGL 233 - (216) African American Literature: Beginnings to 1900: Vision and Re-Vision
- EGL 237 - (219) African-American Literature 1900-Present
- EGL 248 - (274) Introduction to Black Poetry
- EGL 266 - (240) Black Women Writers
- EGL 302 - Jr. Seminar: Literary Theory
- EGL 306 - Jr. Seminar (Spring): Milton
- HST 131 - African-American History 1
- HST 132 - African-American History 2
- HST 209 - Race, Gender, and Nationalism in American Sports
- HST 231 - The Civil Rights Movement
- HST 232 - History of New Orleans
- HST 257 - Modern France and Its Empire
- HST 315 - Race and Constitution
- HST 324 - Race in American Memory
- HST 412 - Seminar in US History: The Old South
- PSC 235 - African American Political Thought
- PSC 284 - Political Sociology
- PSC 339 - Seminar: Black Radical Politics and Legacies of Malcom X
- SOC 212 - The American Family and Cross-Cultural Perspectives
- SOC 230 - Sociology of the Black Community
- SOC 233 - Race, Class, and Gender in American Society
- SOC 240 - Political Sociology
- SOC 346 - Sociology of Black Women's Culture
- SOC 387T - Community Service Miniterm

Africana Studies: African Track

African Track: History

Choose 2 courses from this section.

- HST 108 - Africa since 1800
- HST 201 - Contemporary Africa
- HST 302 - Comparing Muslim Cultures
- HST 304 - Cold War in Africa
- HST 401 - Seminar in Africa/Middle East
- HST 402 - Seminar in Africa/Middle East: French Empire

African Track: Literature

Choose 1 course from this section.

- AMU 134 - Music and Culture of Africa
- ANT 181 - Anthropology of Sub-Saharan Africa
- CLS 110 - Ancient Egypt: History and Religion
- FRN 307 - Negritude Movement: Point of Departure in Black African and Afro-Caribbean Literatures in French
- FRN 430 - West African Oral Literature
- FRN 431 - Voices of Francophonie Literature from French-Speaking Countries and Territories other than France
- MLT 213 - West African Oral Literature

African Track: Electives

Choose 4 courses from this track. You may not count the same courses used to satisfy the History and Literature requirements. 2 of the 4 courses must be from the same department.

- AMU 134 - Music and Culture of Africa
- ANT 181 - Anthropology of Sub-Saharan Africa
- CLS 110 - Ancient Egypt: History and Religion
- FRN 307 - Negritude Movement: Point of Departure in Black African and Afro-Caribbean Literatures in French
- FRN 430 - West African Oral Literature
- FRN 431 - Voices of Francophonie Literature from French-Speaking Countries and Territories other than France
- HST 108 - Africa since 1800
- HST 201 - Contemporary Africa
- HST 209 - Race, Gender, and Nationalism in American Sports
- HST 302 - Comparing Muslim Cultures
- HST 304 - Cold War in Africa
- HST 401 - Seminar in Africa/Middle East
- HST 402 - Seminar in Africa/Middle East: French Empire
- MLT 213 - West African Oral Literature
- PSC 216 - Politics in Africa
- PSC 339 - Seminar: Black Radical Politics and Legacies of Malcom X

Africana Studies: Latin American/Caribbean Track

Latin American/Caribbean Track: History

Choose 2 courses from this section.

- HST 172 - Reform and Revolution in Latin America and the Caribbean
- HST 173 - History of the Caribbean and Central America
- HST 270 - History of Latin American Popular Culture
- HST 272 - History of Brazil
- HST 274 - Social and Political Movements in Latin America
- HST 323 - Race and Revolution

Latin American/Caribbean Track: Literature

Choose 1 course from this section.

- AAH 163 - (263) Latin American & Caribbean Art of the 19th and 20th Century
- AMU 133 - Music of Latin America

- FRN 304 - Studies in the French Caribbean
- FRN 305T - Mini-term in Martinique
- MLT 284 - Popular Religion and Politics in Latin America
- SPN 332 - An Introduction to Afro-Hispanic Literatures and Cultures

Latin American/Caribbean Track: Electives

Choose 4 courses from this track. You may not count the same courses used to satisfy the History and Literature requirements. 2 of the 4 courses must be from the same department.

- AAH 163 - (263) Latin American & Caribbean Art of the 19th and 20th Century
- AMU 133 - Music of Latin America
- FRN 304 - Studies in the French Caribbean
- FRN 305T - Mini-term in Martinique
- HST 172 - Reform and Revolution in Latin America and the Caribbean
- HST 173 - History of the Caribbean and Central America
- HST 270 - History of Latin American Popular Culture
- HST 272 - History of Brazil
- HST 274 - Social and Political Movements in Latin America
- HST 323 - Race and Revolution
- MLT 284 - Popular Religion and Politics in Latin America
- SPN 332 - An Introduction to Afro-Hispanic Literatures and Cultures
- SPN 431 - Colonial Latin America 1492-1800
- SPN 432 - Islands Adrift: Race, Politics, and Diasporas in the Hispanic Caribbean
- SPN 433 - Latin American Colonial Crossroads at the Movies

American Studies

Director: Professor Z. Oxley (Political Science)

Faculty: Professors D. Klein (Environmental Science) B. Lewis, Stephen Schmidt (Economics), J. Smith (English), A. Feffer (History), W. Garcia, V. Martinez (Modern Language and Literature), C. Brown, L. Marso (Political Science), D. Cotter, M. Goldner (Sociology); Associate Professors K. Lynes, J. Murphy, B. Tuon (English), K. Aslakson, A. Foroughi, A. Morris (History), J. Matsue, T. Olsen (Music), B. Hays (Political Science), D. Butler, (Sociology), L. Cox (Visual Arts); Assistant Professors R. Samet (Anthropology), J. Troxell (English), T. Stablein (Sociology); Senior Lecturers M. Lawson (History), T. Lobe (Political Science); Lecturer D. Brennan (History)

American Studies is an interdisciplinary field of concentration in the liberal arts relating to the United States as a geographical area and a cultural and political space. Drawing on courses from fourteen departments, students learn to move among and connect history, art, politics, religion, popular culture, literature and other features of American life. Students are encouraged to explore the diverse character of the American experience, shaped by gender, race, class, sexuality, geography and ethnicity, and to situate that experience in a context of global economic, cultural and political relationships. Students are asked, however, to develop a coherent approach to the study of American culture, politics and society, past and present. To accomplish these tasks, students in the American Studies program collaborate closely with an academic advisor to work out a thematic core around which to build a unique and innovative course of study that knits together the methods and perspectives of several disciplines. Themes may be centered on a specific era (e.g., antebellum America or the United States since the Cold War) or a topic (e.g., the emergence of mass culture or ethnicity and race in American life).

The American Studies program offers an individualized program of study that allows each student to tailor his or her course work to personal interests and needs. There is no one way to complete the major or minor. A student is urged to meet with the Program Director as soon as he or she becomes interested in the program, preferably by the end of the sophomore year. Course planning forms can be found at the American Studies website.

American Studies Approved Courses

American Studies (ID), B.A.

Requirements for the Interdepartmental Major:

The purpose of the American Studies Interdepartmental major is to allow students the opportunity to cultivate a multi-dimensional picture of our culture as a complement to or in relation to another area of concentration, be it Middle Eastern history or an area of interest outside the humanities and social sciences. As with the full American Studies major, interdepartmental majors must focus their coursework around a coherent topic, either chronologically or thematically. (See possible concentrations under requirements for major.)

A student must complete a minimum of eight (8) courses, including one English and one history core course. (See list of core courses under requirements for major.)

In consultation with his or her American Studies academic advisor, a student must complete four (4) courses with either an historic or thematic concentration. One of the four must come from Division I (Arts & Humanities) and one from Division II (Social Sciences).

During the junior year, a student must take an American Studies approved seminar or an upper level American Studies approved course that is a WAC. If possible, the course should be on a topic related to the thematic concentration. If not taken in the junior year, this course must be completed by the end of the student's first senior thesis term.

One of the eight (8) courses must cover issues of race and ethnicity or gender in America. One of the eight (8) courses must focus predominantly on the pre-1900 time period. At least three (3) courses must be from Division I (Arts and Humanities), and at least three (3) from Division II (Social Sciences). The eight (8) required courses must be from at least three different departments and have American Studies course approval. (See list of courses under requirements for major.) No course can double count towards the student's minor if one is being pursued.

During the senior year, a student must complete a two-term written thesis or two-term senior project (AMS 498, AMS 499 or IDM 498 , IDM 499) related to the student's thematic concentration, or a WAC (WS) course with American Studies approval. The ID thesis should combine work on the student's American Studies theme with work in the other ID program or department. If a student is completing a senior project in a non-text medium (such as audio, video, or multi-media), he or she must have a written component in the form of a journal that results in a final paper of at least fifteen pages, to fulfill the Writing Across the Curriculum (WS) requirement. A student will work with a primary, or first, thesis advisor and a second thesis advisor from a different department whom the student must consult early during the research portion of the project to better ensure the interdisciplinary focus of the thesis. Both thesis advisors will participate in the oral defense of the thesis at the completion of the project. The other department or program may also assign the student a thesis advisor. A student must consult with the American Studies program director during the winter term of his or her junior year and submit a thesis proposal listing preferred first and second thesis advisors.

Requirements for Honors in American Studies:

To receive honors as an American Studies major or an ID major, a student must (1) have a cumulative grade point average of 3.3; (2) maintain a grade point average of 3.3 in his or her American Studies approved courses; (3) successfully complete a two term senior thesis with a grade of A or A-; (4) receive a high pass or pass with distinction for the oral thesis defense; (5) give an oral presentation at The Steinmetz Symposium in the spring of his or her senior year; and (6) place a copy of the thesis in the library archives. Further guidelines for the senior thesis and honors are available from the program director.

American Studies Minor

Requirements for the Minor

A minimum of six (6) courses, including one English and one History core course, are required. (See list of core courses under requirements for major.)

A student must take four (4) additional courses, chosen in consultation with the student's minor advisor, from the American Studies approved course list. These courses must have either a historic or thematic concentration (see possible concentrations under requirements for major). One of the four must come from Division I (Arts & Humanities) and one from Division II (Social Sciences). One course must cover issues of race and ethnicity or gender in America. No course for the minor can double count towards a student's major or second minor.

American Studies, B.A.

Requirements for the Major:

A minimum of thirteen (13) courses, including three (3) required core courses (at least one core course must be from English and one from History), which should be completed by the end of a student's junior year. The choices for core courses are any 200-level English class on American Literature (must take a 100-level class as prerequisite) and the following:

- HST 101 - History of the United States to the Civil War
- HST 102 - History of the United States Since the Civil War
- HST 113 - The Origins of American Society
- HST 124 - (224) Monuments, Museums, and Movies: Introduction to Public History
- HST 128 - The American Jewish Experience
- HST 129 - History of Sports in America
- HST 131 - African-American History 1
- HST 132 - African-American History 2
- HST 135 - Latinos(as) in US History
- HST 209 - Race, Gender, and Nationalism in American Sports
- HST 211 - American Indian History
- HST 212 - "Remember the Ladies": American Women to 1900
- HST 213 - Work, Wars, and Wombs: American Women from 1900
or
- HST 226 - A Novel View of US History

Thematic Concentration

In consultation with his or her American Studies academic advisor, a student must complete five (5) courses of intensive study around a specific theme centered on either an era (such as antebellum America or the United States since the Cold War) or a topic (such as the emergence of mass culture or ethnicity and race in American life).

One of the five theme courses must come from Division I (Arts and Humanities) and one from Division II (Social Sciences). In addition, the thematic courses must come from at least three different departments. Every student must complete an American Studies course selection list with his or her American Studies advisor to determine which courses would best fit the chosen theme and to find out how often the courses are offered. All courses counted towards the major must have American Studies course approval.

The following are possible thematic concentrations for an American Studies major, interdepartmental major or minor (these are only suggestions; there are many more possibilities): The Colonial Era; The American Revolution through the Civil War; 19th Century America; Contemporary America: c. 1960-present; Latino(as) in U.S. History & Culture; Comparative American Ethnic Studies; America in the World; American Identity: Race, Class & Gender; American Modernism; American Creativity in the 20th-21st Century; Progressive America: Civil Rights and Social Justice; American Industrialization: The Environment, Society and Labor; American Media & Popular Culture; Visual Culture and Social Justice. See program website for a list of additional possible themes and supporting courses.

A concentration on 19th Century America might include:

- AMU 130 - American Music
- EGL 232 - The American Renaissance
- HST 118 - Civil War and Reconstruction
- PHL 341 - The Contemporary Crisis of Truth

and/or

- PSC 239 - (332) American Political Thought To World War I

Or a thematic concentration on progressive America; civil rights and social justice might include:

- AAH 360 - (460) Seminar: Visual Culture, Race & Gender
- EGL 248 - (274) Introduction to Black Poetry
- HST 231 - The Civil Rights Movement
- HST 312 - "Bonds of a Woman": History of Women's Rights in the United States
- PSC 266 - Women and Politics
- PSC 371 - Civil Rights and Civil Liberties

and/or

- SOC 270 - Social Movements, the Environment, and Society

Additional Requirements

A student must take an additional two (2) American Studies approved courses, which can be at any level and may be outside the student's thematic concentration.

During the junior year, a student must take an American Studies approved seminar or an upper level American Studies approved course that is a WAC. If possible, the course should be related to the student's thematic concentration. If not taken in the junior year, this course must be completed by the end of the student's first senior thesis term.

One of the thirteen (13) courses must cover issues of race and ethnicity or gender in America. One of the thirteen (13) courses must focus predominantly on the pre-1900 time period. At least four (4) of the 13 courses must be from Division I (Arts and Humanities), and at least four (4) from Division II (Social Sciences.) No course can double towards the student's minor if one is being pursued.

During the senior year, a student must complete a two-term written thesis or two-term senior project (AMS 498 & AMS 499) related to his or her thematic concentration. If a student is completing a senior project in a non-text medium (such as audio, video, or multi-media), he or she must have a written component in the form of a journal that results in a final paper of at least fifteen pages, to fulfill the Writing Across the Curriculum (WS) requirement. A student will work with a primary, or first, thesis advisor and a second thesis advisor from a different department whom the student must consult early during the research portion of the project to better ensure the interdisciplinary focus of the thesis. Both thesis advisors will participate in the oral defense of the thesis at the completion of the project. A student must consult with the American Studies program director during the winter term of his or her junior year and submit a thesis proposal listing preferred first and second thesis advisors.

Requirements for Honors in American Studies:

To receive honors as an American Studies major or an ID major, a student must (1) have a cumulative grade point average of 3.3; (2) maintain a grade point average of 3.3 in his or her American Studies approved courses; (3) successfully complete a two term senior thesis with a grade of A or A-; (4) receive a high pass or pass with distinction for the oral thesis defense; (5) give an oral presentation at The Steinmetz Symposium in the spring of his or her senior year; and (6) place a copy of the thesis in the library archives. Further guidelines for the senior thesis and honors are available from the program director.

Anthropology

Chair: Professor K. Brison

Faculty: Professors G. Gmelch (on leave Fall and Winter), S. Gmelch (on leave 2016-17), S. Leavitt (Dean of Students); Associate Professor J. Witsoe (on leave 2016-17); Assistant Professors A. Khan, R. Samet; Visiting Assistant Professor M. Osborn

Staff: M. White (Administrative Assistant)

Anthropology (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses, including the following three foundation courses:

- ANT 110 - Introduction to Cultural Anthropology
- ANT 390 - Thinking about Culture
- ANT 363 - Qualitative Research Methods

An Interdepartmental senior thesis and four electives

- IDM 498 - Interdepartmental Senior Thesis 1
- IDM 499 - Interdepartmental Senior Thesis 2

Or an Anthropology thesis and three electives

- ANT 498 - Anthropology Senior Thesis 1
- ANT 499 - Anthropology Senior Thesis 2

Requirements for Honors in Anthropology:

For departmental honors, a major must fulfill the following requirements: (1) a minimum overall G.P.A. of 3.30; (2) a minimum G.P.A. of 3.50 in all anthropology courses; (3) completion of all requirements for the anthropology major or interdepartmental major; (4) a grade of at least A- on the senior thesis.

Course Selection Guidelines:

The department accepts appropriate AP and transfer credits as electives or in place of ANT 110. In most cases we prefer that students take other required anthropology courses at Union. Students with no previous background in anthropology may take any 100 or 200 level courses, although ANT 110 is a good first course; 200 level courses generally involve more intensive examination of a particular topic while 100 level courses offer more general surveys of particular sub-fields of anthropology. Students intending to major in anthropology should take ANT 214 and ANT 390 in their sophomore or junior year. Students undertaking an ID major in anthropology should take ANT 390 in their sophomore or junior year. ANT 363 should normally be taken in the spring of the junior year; students anticipating going on a term abroad in spring are strongly encouraged to take ANT 363 in their sophomore year. We strongly encourage students to go on a full term abroad, preferably one of the two anthropology field schools.

Field Program in Anthropology:

The anthropology field school in India (Winter 2017) gives students an intensive, firsthand experience studying another culture. Students live with local families and intern in local non-governmental organizations and schools. India participants will receive one credit for an independent study in anthropology (ANT 490T), one credit for ANT 255T (Culture and Work) and one credit for TAB 109T (Hindi Studied Abroad).

Anthropology Minor

Requirements for the Minor:

Six courses including

- ANT 110 - Introduction to Cultural Anthropology
- One of the following:
 - ANT 390 - Thinking about Culture
 - or
 - ANT 363 - Qualitative Research Methods
- and four electives

Anthropology, B.A.

Requirements for the Major:

We strongly encourage majors to go on a full term abroad, preferably one of the anthropology field terms.

Twelve courses, including the following four foundation courses:

- ANT 110 - Introduction to Cultural Anthropology
- ANT 214 - Language and Culture
- ANT 390 - Thinking about Culture
- ANT 363 - Qualitative Research Methods

A two-term senior thesis in Cultural Anthropology

- ANT 498 - Anthropology Senior Thesis 1
- ANT 499 - Anthropology Senior Thesis 2

Six Elective Anthropology Courses

Requirements for Honors in Anthropology:

For departmental honors, a major must fulfill the following requirements: (1) a minimum overall G.P.A. of 3.30; (2) a minimum G.P.A. of 3.50 in all anthropology courses; (3) completion of all requirements for the anthropology major or interdepartmental major; (4) a grade of at least A- on the senior thesis.

Course Selection Guidelines:

The department accepts appropriate AP and transfer credits as electives or in place of ANT 110. In most cases we prefer that students take other required anthropology courses at Union. Students with no previous background in anthropology may take any 100 or 200 level courses, although ANT 110 is a good first course; 200 level courses generally involve more intensive examination of a particular topic while 100 level courses offer more general surveys of particular sub-fields of anthropology. Students intending to major in anthropology should take ANT 214 and ANT 390 in their sophomore or junior year. Students undertaking an ID major in anthropology should take ANT 390 in their sophomore or junior year. ANT 363 should normally be taken in the spring of the junior year; students anticipating going on a term abroad in spring are strongly encouraged to take ANT 363 in their sophomore year. We strongly encourage students to go on a full term abroad, preferably one of the two anthropology field schools.

Field Program in Anthropology:

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Asian Studies

Director: Associate Professor B. Tuon (English)

Faculty: Professors B. Lewis (Economics), J. Madancy (History), J. Matsue (Music), E. Motahar (Economics); Associate Professors M. Dallas (Political Science), M. Ferry (Modern Languages), J. Ueno (Modern Languages), J. Witsoe (Anthropology); Z. Zhang (Modern Languages); Assistant Professors S. Lullo (Visual Arts), R. Mazumder (History); Visiting Assistant Professors D. Nowakowski (Philosophy).

The Asian Studies program provides a broad, interdisciplinary liberal arts education focusing on the language, culture, and the arts of Asia (with emphasis on China and Japan). The courses taken in this program equip students to pursue interest and careers that require exposure to global issues, particularly pertaining to Asia. The major leads to a bachelor of arts degree and our graduates have gone on to careers in business, government service, law, education, the arts, journalism, or further study in graduate school.

Asian Studies Approved Humanities Courses

Asian Studies Approved Social Sciences Courses

Asian Studies Term Abroad Programs

Asian Studies (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses including three courses in either Chinese or Japanese language and one course devoted to a senior project. Students must also take at least one of the core courses that are designated in the course list below with an asterisk. A core course is designed to give students more breadth in their study of Asia by dealing with both China and Japan over a substantial period of time. Of the three remaining AIS courses, one must deal entirely with an Asian country outside the student's language concentration. (For example, a student who takes a year of Japanese language must take one course that deals solely with China or another Asian country.) Students are strongly encouraged to apply for the terms abroad to China and Japan.

Asian Studies Approved Humanities Courses

Asian Studies Approved Social Sciences Courses

Asian Studies Term Abroad Programs

Requirements for Honors in Asian Studies:

To be eligible for honors in the program, the student must fulfill the following requirements: (1) a minimum index of 3.30 in the program; (2) a cumulative index of 3.30 or better; (3) a grade of "A minus" or higher on the senior project; and (4) superior performance in an oral exam based on the senior project.

Asian Studies Minor

Requirements for the Minor:

Six courses including three courses in either Chinese or Japanese language, one core course with a content that includes more than one Asian country (listed here with an asterisk *), and two additional AIS courses.

Asian Studies Approved Humanities Courses

Asian Studies Approved Social Sciences Courses

Asian Studies Term Abroad Programs

Asian Studies, B.A.

Requirements for the Major:

Fourteen courses including six courses in either Chinese or Japanese language (not a combination of both, unless authorized by the program faculty), and two courses devoted to a senior project. Students must select three courses from AIS offerings in *either* the Humanities or the Social Sciences, and two additional courses in the opposite division. One of those five courses must deal entirely with an Asian country outside the student's language concentration. (For example, a student who takes a year of Japanese language must take one course that deals solely with China or another Asian country.)

*Students must also take at least one of the core courses that are designated in the course list below with an asterisk. A core course is designed to give students more breadth in their study of Asia by dealing with both China and Japan over a substantial period of time. Majors must pass a comprehensive examination in the form of an oral defense of their senior project.

Students are required to participate in a term abroad to China or Japan, or in a mini-term to Asia; if necessary accommodations will be made.

Core Courses for Asian Studies

One core course is required from the following:

- AMU 320 - Encounters with East Asian Music Cultures
- HST 181 - Confucians and Conquerors: East Asian Traditions
- HST 182 - Rebels, Reds, and Regular Folks: The Turbulent History of Modern Asia
- MLT 204 - Literary Traditions in East Asia
- MLT 205 - Perspectives in Modern East Asian Literature
- PSC 253 - International Relations of East Asia

Courses with Asian Studies approval:

- Asian Studies Approved Humanities Courses
- Asian Studies Approved Social Sciences Courses
- Asian Studies Term Abroad Programs

Requirements for Honors in Asian Studies:

To be eligible for honors in the program, the student must fulfill the following requirements: (1) a minimum index of 3.30 in the program; (2) a cumulative index of 3.30 or better; (3) a grade of "A minus" or higher on the senior project; and (4) superior performance in an oral exam based on the senior project.

Astronomy

Chair: Professor R. Koopmann

Faculty: Professors S. Maleki, G. Reich (on leave Spring), M. Vineyard (on leave, Fall, Spring); Associate Professors S. Amanuel, C. Orzel;

Assistant Professors N. Mann, H. Watson; Senior Lecturer S. LaBrake, J. Marr, F. Wilkin; Visiting Assistant Professor G. Hallenbeck

Staff: J. Sheehan (Technician), L. Stec (Administrative Assistant)

The Physics and Astronomy Department offers a bachelor of arts degree in Astronomy as well as minors in Astronomy and in Astrophysics. The astronomy major is appropriate for students interested in careers such as teacher of earth science, planetarium director, science museum educator, science writing, and historian of science. Students interested in pursuing advanced degrees in astronomy are advised to major in Physics and minor in Astrophysics. Example 4-year schedules are available on the Department of Physics & Astronomy website.

Common Curriculum (CC) Courses

Courses numbered in the 050's are designed particularly for non-science majors seeking to satisfy Common Curriculum requirements, and all of these courses carry Common Curriculum credit. These courses may count toward the major in astronomy or the interdepartmental major (see requirements for the Astronomy, B.A. major and Astronomy (ID), B.A. ID major), but they may not be counted toward the major in physics or toward any other science or engineering major.

Course Selection Guidelines

Placement: Students who score a grade of 4 or 5 on the Advanced Placement C-exam (mechanics and/or electromagnetics), an A on the physics A-levels, a 5 or above on the Higher Level or a 6 or above on the standard exam of the International Baccalaureate (provided they earn the IB diploma), may be given credit for up to a maximum of two courses (PHY 120 and/or PHY 121). If a student does not earn the IB diploma, they will be given credit only if they pass the higher level exam with a grade of 6 or above. Students who score a grade of 4 or 5 on both the Physics 1 and Physics 2 AP exams will earn one SET credit in Physics.

Courses Suitable for Non-Majors: The following courses are designed to fulfill the Science and Technology Common Curriculum requirement (some of these courses have labs and some do not): AST 050, AST 051, AST 052, and AST 058. Other courses suitable for selected non-majors include AST 100, AST 105, AST 200, AST 210, AST 220, AST 230, and AST 240.

Prerequisites: There are no placement test requirements for courses in the Department of Physics and Astronomy. All courses numbered 100 or above have prerequisites. Please review the course descriptions below and listed under Physics to identify the requirements.

Astrophysics Minor

Requirements for the Minor:

The Department of Physics and Astronomy offers academic minors in physics, astronomy, and astrophysics.

Students wishing to minor in Astrophysics should take

- AST 105 - Introduction to Planetary Science
or
- GEO 303 - Geophysics

And five courses selected from

- AST 100 - Introduction to Astrophysics
- AST 200 - Stellar Structure and Evolution
- AST 210 - Galaxies
- AST 220 - Cosmology and General Relativity
- AST 230 - Observational Astronomy
- AST 240 - Radio Astronomy

Astronomy Minor

Requirements for the Minor:

The Department of Physics and Astronomy offers academic minors in physics, astronomy, and astrophysics.

Students wishing to minor in Astronomy should take

- PHY 120 - Matter in Motion
and
- PHY 121 - Principles of Electromagnetics
or
- PHY 110 - Physics for the Life Sciences 1
and
- PHY 111 - Physics for the Life Sciences 2

- AST 051 - Introduction to Astronomy
or
- AST 100 - Introduction to Astrophysics

- AST 050 - The Solar System
or
- AST 105 - Introduction to Planetary Science
or
- GEO 303 - Geophysics

And two courses from

- AST 052 - Relativity, Black Holes, and Quasars
- AST 058 - Astrobiology: Life in the Universe
- AST 200 - Stellar Structure and Evolution
- AST 210 - Galaxies
- AST 220 - Cosmology and General Relativity
- AST 230 - Observational Astronomy
- AST 240 - Radio Astronomy
- AST 290 Astronomy Practicum 1
- AST 291 Astronomy Practicum 2
- AST 292 Astronomy Practicum 3
- PHY 122 - Relativity, Quantum, and Their Applications
- PHY 123 - Heat and Light
- PHY 495 - Physics Independent Study 1

Astronomy, B.A.

Requirements for the Astronomy Major:

Eleven courses including two introductory physics courses

- PHY 120 - Matter in Motion
and
- PHY 121 - Principles of Electromagnetics
or
- PHY 110 - Physics for the Life Sciences 1
and
- PHY 111 - Physics for the Life Sciences 2

another two-course sequence in science

- PHY 122 - Relativity, Quantum, and Their Applications
and
- PHY 123 - Heat and Light
or
- BIO 110 - (102) Heredity, Evolution, and Ecology
and
- BIO 112 - (101) Physiology of Cells and Organisms
or
- CHM 101 - Introductory Chemistry 1
and
- CHM 102 - Introductory Chemistry 2
or
- GEO 110 - Physical Geology
and
- GEO 120 - The Earth and Life Through Time

and

- AST 051 - Introduction to Astronomy
or
- AST 100 - Introduction to Astrophysics
and
- AST 050 - The Solar System
or
- AST 105 - Introduction to Planetary Science
or
- GEO 303 - Geophysics
and
- AST 230 - Observational Astronomy
or
- AST 240 - Radio Astronomy

- PHY 490 - Physics Research 1 *

- PHY 491 - Physics Research 2
or

- PHY 493 - Physics 1 Term Research

*(PHY 490 is required for **all** students, whether continuing on with 491 or 493)

and three courses selected from the following:

- PHY 230 - Intermediate Classical Mechanics
- AST 052 - Relativity, Black Holes, and Quasars
- AST 058 - Astrobiology: Life in the Universe
- AST 200 - Stellar Structure and Evolution
- AST 210 - Galaxies
- AST 220 - Cosmology and General Relativity
- AST 290 Astronomy Practicum 1
- AST 291 Astronomy Practicum 2
- AST 292 Astronomy Practicum 3
and
- AST 230 - Observational Astronomy
or
- AST 240 - Radio Astronomy
(whichever is not counted as a required course)

Additional Requirements

The following course **and** one science course outside the department (if all other requirements are fulfilled only in Physics and Astronomy Department). Students wishing to pursue graduate work in astronomy are advised to major in physics and minor in astrophysics.

- MTH 113 - AP Calculus

Requirements for Honors in Physics and Astronomy:

In addition to the requirements for the major, the student must take at least one additional course in research (PHY 491), submit an honors thesis, and satisfy College requirements for departmental honors.

Astronomy (ID), B.A.

Requirements for the Interdepartmental Major:

Students taking physics or astronomy as part of an 8-6 interdepartmental major program can choose from either a conceptual or a calculus track. Suitable choices of courses numbered in the 50s, as well as independent study courses 495-498, can count toward the *conceptual track* ID major (such as Arts and Physics or Physics and Society). Suitable choices of courses numbered 100 or greater can count toward a *calculus track* ID major (such as Computational Physics, Biophysics, Geophysics, Environmental or Chemical Physics). For any of these ID majors, a written proposal must be submitted by the student, in consultation with their faculty advisor, for approval by the Department of Physics and Astronomy.

Biochemistry

Director: Professor K. Fox (Chemistry)

Faculty: Professors J. Anderson (Chemistry), B. Danowski and S. Horton (Biology); Associate Professors J. Kehlbeck (Chemistry), N. Theodosiou (Biology); Assistant Professor M. Paulick (Chemistry); Senior Lecturer B. Cohen (Biology)

Course Selection Guidelines

Descriptions of courses from the Departments of Biology and Chemistry can be found under the department listings. BCH 380 and BCH 382 comprise a two-term biochemistry sequence required for biochemistry majors. Either BCH 380 or BCH 382 can be taken first. Students who have completed BCH 335 cannot enroll in BCH 380 or BCH 382 and vice-versa. For detailed advising suggestions see the advising website at <http://www.union.edu/advising> under Department-Specific Advising Tips.

Placement: AP credit is awarded as per current Biology and Chemistry Department guidelines.

Courses for non-majors: BCH 335 is a survey course for non-biochemistry majors who have fulfilled the necessary prerequisites as listed below. It is not appropriate for non-science majors looking to fulfill Common Curriculum requirements.

Senior Writing Requirement: The senior writing requirement may be fulfilled in several ways:

By completing a senior thesis in conjunction with senior research (BCH 491, BCH 492, BCH 493);

By selecting the biology senior seminar that emphasizes cellular/molecular topics, Biology 489.

Only in the event that neither of the above options is available, a student could satisfy the WS requirement by writing a research paper requiring extensive background reading in conjunction with taking BIO 380, CHM 382 or one of the upper level, molecularly-based biochemistry electives, in addition to the regular course work. Students pursuing this option must consult the Director of Biochemistry before the beginning of the senior year to make arrangements.

Requirements for the Minor and Interdepartmental Majors:

It is not normally permitted to minor in biochemistry or to have an ID major in which biochemistry is a component.

Biochemistry, B.S.

Requirements for the Major:

Eleven courses in biology and chemistry:

- BIO 110 - (102) Heredity, Evolution, and Ecology
- BIO 112 - (101) Physiology of Cells and Organisms
- BIO 225 - Molecular Biology of the Cell
- BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates
- CHM 101 - Introductory Chemistry 1
- CHM 102 - Introductory Chemistry 2
- CHM 231 - Organic Chemistry 1
- CHM 232 - Organic Chemistry 2
- CHM 240 - Analytical Chemistry
- CHM 351 - Kinetics and Thermodynamics
- CHM 382 - Biochemistry: Structure and Catalysis

Three additional courses:

Two to be chosen from:

- BIO 354 - Developmental Biology
- BIO 355 - Immunology
- BIO 363 - Cellular Neurosciences
- BIO 368 - Advanced Molecular Biology
- BIO 378 - Cancer Cell Biology
- BIO 384 - Genetics and Molecular Biology
- PHY 200 - Molecular Biophysics

And the third to be chosen from among:

Biology courses in the subcellular or organismal areas (listed below) or one of these courses:

- BIO 243 - Bioinformatics: Information Technology in the Life Sciences
- CHM 330 - Medicinal Chemistry
- CHM 340 - Chemical Instrumentation

Biochemistry: Biological Sciences: Sub-Cellular

- BIO 352 - Microbiology
- BIO 354 - Developmental Biology
- BIO 355 - Immunology
- BIO 363 - Cellular Neurosciences
- BIO 368 - Advanced Molecular Biology
- BIO 378 - Cancer Cell Biology
- BIO 384 - Genetics and Molecular Biology

Biochemistry: Biological Sciences: Organismal

- BIO 250 - Vertebrate Natural History
- BIO 315 - Biology of Plants
- BIO 317 - Entomology
- BIO 321 - Herpetology: Biology of Amphibians and Reptiles
- BIO 330 - Comparative Animal Physiology
- BIO 332 - Comparative Vertebrate Anatomy
- BIO 362 - Experimental Neurobiology
- BIO 365 - Neural Circuits and Behavior
- BIO 370 - General Endocrinology
- BIO 375 - Exercise Physiology

Additional requirements in Math and Physics

Mathematics through:

- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory and two terms of introductory physics

- PHY 110 - Physics for the Life Sciences 1
and
- PHY 111 - Physics for the Life Sciences 2
or
- PHY 120 - Matter in Motion
and
- PHY 121 - Principles of Electromagnetics

Note:

Acceptance to graduate school may require additional courses and/or undergraduate research experience.

Requirements for Honors:

Students eligible for honors in biochemistry must fulfill the College-wide criteria and satisfactorily complete a thesis, traditionally based on the results of original research, that receives the approval of the subcommittee for biochemistry and the appropriate College committee. It is customary, but not required, that students enroll in three honors research courses, typically during the senior year.

Bioengineering

Directors: Associate Professors H. Hanson (Electrical and Computer Engineering) and J. Currey (Bioengineering)

Faculty: Professors L. Fleishman, R. Olberg, S. Rice (Biological Sciences), M. Mafi (Engineering); Associate Professors P. Catravas, S. Cotter (Electrical and Computer Engineering), S. Kirkton (Biological Sciences); Assistant Professor T. Buma (Electrical and Computer Engineering); Visiting Assistant Professor S. Khetan (Bioengineering)

Bioengineering is an interdisciplinary engineering major designed for students interested in exploring the interface between engineering and the life sciences. In bioengineering, students learn to apply engineering principles and analytical approaches to the study of biological systems and seek to understand the benefits and constraints of engineered materials, devices and control systems in life science and biomedical applications.

Students in the bioengineering major share common foundation and core courses in biology, biomechanical engineering, electrical engineering, and choose among upper-level electives in biomechanical and bioelectrical engineering. Courses in biomechanics focus on approaches to understanding the structural properties and dynamics of biological cells, tissues and systems, and of engineered devices with biological and biomedical applications. The bioelectrical engineering courses explore the interfaces among sensory physiology, neuroscience and electrical engineering and students focus on techniques to acquire, analyze and interpret neurological, biomedical and other biological signals and images. During senior year, students engage in a bioengineering capstone design and may elect to conduct research under the guidance of a faculty member.

The Bioengineering program is accredited by the Engineering Accreditation Commission of ABET <http://www.abet.org>.

Educational objectives and program outcomes are listed on the program website: <http://www.union.edu/academic/majors-minors/bioengineering>

Bioengineering Minor

Requirements for the Minor:

A minimum of six courses taken outside the major department organized around the following:

Core Course Requirements:

- BIO 112 - (101) Physiology of Cells and Organisms
- ESC 100 - Exploring Engineering
- MTH 112 - Calculus 2: Integral Calculus
or
- MTH 113 - AP Calculus
or equivalent
- PHY 110 - Physics for the Life Sciences 1
or
- PHY 120 - Matter in Motion

Upper-Level Course Requirements:

Engineering and Computer Science Majors:

Four courses from the following: 200 level or above biology courses, bioengineering courses, PHY 200 and PHY 210. Mechanical engineering students may not take BNG 201, BNG 202, or BNG 311.

Biological Sciences Majors:

Four courses from the following: 200 level or above engineering (BNG, MER, ECE) courses, CSC 243, PHY 200 or PHY 210. Third and fourth year students entering the Minor may opt to take an additional 200 level or above course instead of ESC 100.

Other Majors:

Four 200 level or above courses in biology, engineering, PHY 200 and PHY 210 with approval by the Program Directors.

Bioengineering, B.S.

Requirements for the Major:

The Bioengineering major requires 1) math, science, and general engineering courses 2) foundation and core courses for bioengineering, 3) elective courses in bioengineering, and 4) a capstone design course.

Required courses in math, science, and general engineering:

- Calculus through
- MTH 117 - Calculus 4: Integral Vector Calculus
- MTH 130 - Ordinary Differential Equations
- CSC 103 - Taming Big Data: Introduction to Computer Science
or
- CSC 104 - Robots Rule! Introduction to Computer Science
or
- CSC 105 - Game Development: Introduction to Computer Science
or
- CSC 106 - Can Computers Think? Introduction to Computer Science
or
- CSC 107 - Creative Computing: Introduction to Computer Science

or

- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science
- ESC 100 - Exploring Engineering
- PHY 120 - Matter in Motion
- PHY 121 - Principles of Electromagnetics
- CHM 101 - Introductory Chemistry 1 or
- CHM 110 - Accelerated Introductory Chemistry

Required foundation and core courses for bioengineering:

- BIO 112 - (101) Physiology of Cells and Organisms
- BIO 225 - Molecular Biology of the Cell
- BNG 101 - Graphics and Image Processing for Biomedical Systems
- BNG 201 - Biomechanics 1
- BNG 202 - Biomechanics 2
- BNG 331 - Cell-Tissue-Material Interaction
- BNG 386 - Introduction to Biomedical Instrumentation
- ECE 225 - Electric Circuits
- ECE 240 - Circuits and Systems
- ECE 241 - Discrete Systems

One additional course in biomechanics

- BNG 311 - Advanced Mechanics

or

- BNG 33X

or

- BNG 34X

Two additional >300-level biology courses, one with lab (pre-med students may substitute BIO 110 for the non-lab course requirement)

Bioengineering electives

Five courses from BNG, ECE, CSC 243 or other engineering courses subject to approval, with one having a lab and at least three at the 300 level or higher.

Capstone design:

- BNG 495 - Bioengineering Capstone Design

Requirements for Honors

The criteria for graduating with honors in Bioengineering are: (1) a cumulative index of at least 3.3; (2) a cumulative index in major courses of at least 3.3, with an A or A- in at least three of those courses; (3) an A or A- in the capstone design course or a senior research project; (4) final six terms of courses at Union. The major courses are listed above under "Foundation and core courses for bioengineering," "Bioengineering electives" and "Capstone design".

Course Selection Guidelines

Placement. Students will receive credit for AP or IB courses following the guidelines of the appropriate supporting department.

Course Sequence. Students should consult with their academic advisor and the following yearly requirements when scheduling courses. Some 300 level courses are not offered every year, and some of these courses will be taken outside of the year indicated.

Senior Projects. Students interested in working with a faculty member on a two-term Senior Project should meet with potential faculty advisors during their junior year to identify a project; students should notify one of the Program Directors when this process is complete. The first course (BNG 497) will count as a Free Elective and BNG 498 will count as a BNG Elective.

First Year:

- BIO 112 - (101) Physiology of Cells and Organisms
- CHM 101 - Introductory Chemistry 1
- CSC 10X
- ESC 100 - Exploring Engineering
- FPR 100
- MTH 113 - AP Calculus ⁱ
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory ⁱ
- PHY 120 - Matter in Motion ⁱ
- PHY 121 - Principles of Electromagnetics ⁱ
- Elective ⁱⁱ

Second Year:

- BIO 225 - Molecular Biology of the Cell
- BNG 101 - Graphics and Image Processing for Biomedical Systems
- BNG 201 - Biomechanics 1
- BNG 202 - Biomechanics 2
- ECE 225 - Electric Circuits
- ECE 240 - Circuits and Systems
- ECE 241 - Discrete Systems
- MTH 130 - Ordinary Differential Equations
- SRS 200 - Sophomore Research Seminar
- Elective ⁱⁱ

Third Year:

See Note(s): ⁱⁱⁱ below.

- BIO 3XX ^{iv}
- BNG 386 - Introduction to Biomedical Instrumentation
- BNG 331 - Cell-Tissue-Material Interaction
- MTH 117 - Calculus 4: Integral Vector Calculus
- BNG Elective ^{vi}
- BNG Elective ^{vi}
- Elective ⁱⁱ
- Elective ⁱⁱ

- Elective ⁱⁱ
- Elective ⁱⁱ

Fourth Year:

- BIO 3XX ^{iv}
- BNG 311 - Advanced Mechanics
or
- BIO 33X
or
- BIO 34X ^v
- BNG 495 - Bioengineering Capstone Design
- BNG Elective ^{vi}
- BNG Elective ^{vi}
- BNG Elective ^{vi}
- Elective ⁱⁱ
- Elective ⁱⁱ
- Elective ⁱⁱ
- Elective ⁱⁱ

Note(s):

ⁱ Alternative mathematics and physics sequences are possible depending on the preparation of the student.

ⁱⁱ The Elective courses must be satisfied as follows: five Common Curriculum courses and five Free Electives. Students planning to attend medical school should take CHM 231/CHM 232 (organic chemistry) as electives and BIO 110 as a >300 level Biology course (see note ^{iv} below).

ⁱⁱⁱ The Linguistic and Cultural Competency component of the Common Curriculum is recommended to be satisfied in the third year through a Term Abroad during Fall Term, or a mini term.

^{iv} Biological Science courses must be >300 level with one having a lab. Pre-med students may use BIO 110 to satisfy the non-lab course requirement.

^v Bioengineering courses BNG 330-349 represent courses in the Biomechanics area.

^{vi} The BNG Elective courses include any five courses from BNG, ECE, CSC 243, or other engineering courses subject to approval; one must have a lab and at least three must be >300 level.

Biological Sciences

Chair: Professor R. Lauzon

Faculty: Professors B. Danowski, L. Fleishman, S. Horton, R. Olberg, S. Rice; Associate Professors Q. Chu-LaGraff, J. Corbin, S. Kirkton, K. LoGiudice, J. Salvo, N. Theodosiou; Assistant Professor: R. Yukilevich; Senior Lecturers: J. Bishop, B. Cohen, B. Pytel, P. Willing.

Staff: A. Kelly (Life Sciences Lab Coordinator), K. Sawyer (Life Science Technican), M. Hooker (Technician), J. Klein (Administrative Assistant)

Biological Sciences (ID), B.S.

Requirements for the Interdepartmental Majors:

Students wishing to declare an interdepartmental major must submit a proposal to the department chair outlining their proposed program of study no later than the second term of their junior year. This program, which must be approved by the chair of the Biology Department, should be written in consultation with advisors from both departments to form a cohesive and integrated major; appropriate courses in mathematics and physical sciences should be included in the proposal. Students who wish to have their interdepartmental major listed as Biology/Other are required to take eight biology courses. Those wishing to have their interdepartmental major listed as Other/Biology are required to take six biology courses. Only one of these may be a research course. Interdepartmental majors are not required to take one subcellular, one organismal and one population course, although they are strongly encouraged to do so.

Requirements for Honors in Biological Sciences:

Students eligible for departmental honors must fulfill the College-wide criteria and satisfactorily complete a thesis, usually based on the results of original biological research, which receives the approval of the department and appropriate College committee. It is customary, but not required, that research students enroll in three honors research courses, typically during the senior year. Interdepartmental majors must consult with their advisors in both disciplines during their junior year to receive approval for an interdepartmental thesis. The biology component of an interdepartmental thesis will normally incorporate at least one term of biological research.

Biological Sciences Minor

Requirements for the Minor:

Six courses in biology, including:

- BIO 110 - (102) Heredity, Evolution, and Ecology
- BIO 112 - (101) Physiology of Cells and Organisms

Additional Requirements

The courses must be selected from among those designated for credit toward the biology major. Students are cautioned that many upper-level biology courses require prerequisites (in biology or other science departments) beyond BIO 110 (102) and BIO 112 (101). Therefore, any student who contemplates a biology minor must register at the Biology Department Office and be assigned a departmental advisor. Students with majors outside Division III or in psychology may count one biology CC course toward the minor if it is their first course in the minor.

Biological Sciences, B.S.

Requirements for the Major:

Ten courses in biology, including BIO 110 (102), BIO 112 (101) and BIO 225. Students who have Advanced Placement credit for biology will receive credit for BIO 050, which does not count toward the major or minor, but fulfills the CC Science with Laboratory requirement. The remaining courses must include at least one in each of the following areas:

Sub-cellular

- BIO 335 - Survey of Biochemistry

- BIO 352 - Microbiology
- BIO 354 - Developmental Biology
- BIO 355 - Immunology
- BIO 363 - Cellular Neurosciences
- BIO 368 - Advanced Molecular Biology
- BIO 378 - Cancer Cell Biology
- BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates
- BIO 384 - Genetics and Molecular Biology

Organismal

- BIO 250 - Vertebrate Natural History
- BIO 315 - Biology of Plants
- BIO 317 - Entomology
- BIO 321 - Herpetology: Biology of Amphibians and Reptiles
- BIO 330 - Comparative Animal Physiology
- BIO 332 - Comparative Vertebrate Anatomy
- BIO 362 - Experimental Neurobiology
- BIO 365 - Neural Circuits and Behavior
- BIO 370 - General Endocrinology
- BIO 375 - Exercise Physiology

Population or community

- BIO 314 - Ornithology
- BIO 320 - Ecology
- BIO 322 - Conservation Biology
- BIO 324 - Plant Ecology
- BIO 325 - Animal Behavior
- BIO 350 - Evolutionary Biology

Additional Requirements

Of the ten courses, only one may be an independent study, research, or honors course (BIO 490-BIO 496 or BIO 497-BIO 499). Students must take at least five courses numbered 240 or above and students must take three lab courses numbered 300 or higher. Normally required are at least five courses collectively in mathematics, physics, chemistry, computer science, and geology to be chosen in consultation with the advisor. Students usually should take CHM 101 and CHM 102 and MTH 110 and MTH 112 (or MTH 113) in their first year. Note that acceptance to graduate and professional schools often requires at least two mathematics, four chemistry (including organic chemistry), and two physics courses.

See relevant listings for requirements for a major in biochemistry, environmental sciences & policy, bioengineering, or neuroscience.

Requirements for Honors in Biological Sciences:

Students eligible for departmental honors must fulfill the College-wide criteria and satisfactorily complete a thesis, usually based on the results of original biological research, which receives the approval of the department and appropriate College committee. It is customary, but not required, that research students enroll in three honors research courses, typically during the senior year. Interdepartmental majors must consult with their advisors

in both disciplines during their junior year to receive approval for an interdepartmental thesis. The biology component of an interdepartmental thesis will normally incorporate at least one term of biological research.

Course Selection Guidelines

Placement: Students who received a score of 4 or 5 on the Advanced Placement exam may receive credit for BIO 050. The BIO 050 credit received from the A. P. exam does not count as one of the biology courses toward the major or minor.

Courses Suitable for Non-Majors: BIO 050, BIO 055, BIO 058, BIO 065, BIO 077, and BIO 094 are designed for the general college community and may not be counted toward the biology major nor toward interdepartmental majors that include biology. ISC 080, which requires permission from the instructor, is also suitable for selected non-majors, but it does not count for CC science credit.

Senior Writing Requirement: Biology majors can satisfy the Senior Writing requirement (WS) by conducting research under the direction of a faculty member and writing a thesis (see BIO 497) or by taking one of the Senior Seminar courses in their senior year (see BIO 487, BIO 488, or BIO 489).

Chemistry

Chair: Professor K. Fox

Faculty: Professors J. Adrian, J. Anderson, M. Carroll, M. Hagerman; Associate Professors J. Kehlbeck, L. MacManus-Spencer, L. Tyler; Assistant Professors A. Huisman, M. Paulick; Senior Lecturer K. Lou; Lecturer J. McGarrah.

Staff: K. Ryan (Stockroom Coordinator), M. Howley (Administrative Assistant)

The Chemistry Department is certified by the American Chemical Society. Bachelors' degrees with a major in chemistry may be either certified by the American Chemical Society or not, according to requirements listed below. The certified degree is not necessary for the furtherance of any professional goals. Union College strongly supports terms abroad but careful planning is required. For sample four-year schedules, please see the Chemistry Department website.

Chemistry (ID), B.S.

Requirements for Interdepartmental Majors:

Students completing an 8-6 or 8-4-4 interdepartmental program in which the eight courses are in chemistry, should take the following courses:

- CHM 101 - Introductory Chemistry 1 and
- CHM 102 - Introductory Chemistry 2 or
- CHM 110H - Honors Introductory Chemistry

- CHM 231 - Organic Chemistry 1
- CHM 232 - Organic Chemistry 2
- CHM 240 - Analytical Chemistry
- CHM 340 - Chemical Instrumentation
- CHM 351 - Kinetics and Thermodynamics

And one of the following five courses:

- CHM 260 - Inorganic Chemistry
- CHM 330 - Medicinal Chemistry
- CHM 332 - Synthetic Methods

- CHM 352 - Quantum Chemistry
- CHM 382 - Biochemistry: Structure and Catalysis

No exceptions will be permitted unless written approval is sent from the chair to the registrar.

Students completing an 8-6 or 8-4-4 interdepartmental program in which either the six courses or the four courses are in chemistry should take

- CHM 101 - Introductory Chemistry 1 and
 - CHM 102 - Introductory Chemistry 2 or
 - CHM 110H - Honors Introductory Chemistry

 - CHM 231 - Organic Chemistry 1
 - CHM 232 - Organic Chemistry 2

 - CHM 240 - Analytical Chemistry and
 - CHM 260 - Inorganic Chemistry or
 - CHM 340 - Chemical Instrumentation
- in the former case and any four chemistry major courses in the latter.

Students completing interdisciplinary majors who are seeking secondary school certification should also follow the directions noted below.

Students in the Leadership in Medicine program whose science emphasis is in chemistry should take the following six courses:

- CHM 110H - Honors Introductory Chemistry *
- CHM 231 - Organic Chemistry 1
- CHM 232 - Organic Chemistry 2
- CHM 240 - Analytical Chemistry
- CHM 382 - Biochemistry: Structure and Catalysis

- one additional 200-level chemistry course with lab, or
- any 300-level chemistry course, excluding BCH 335/CHM 335.

Note(s):

* Students without sufficient preparation for CHM 110H may substitute the two-course CHM 101/CHM 102 sequence.

Requirements for Honors in Chemistry:

Candidates for honors in chemistry must have a cumulative index of at least 3.3 and an index of at least 3.3 in the courses of their major, excluding cognates, and must have at least three A or A- grades in such courses (not including any given in connection with the writing of their Senior Thesis). They must submit evidence of independent work in chemistry of substance and distinction in the form of a thesis that shall have been awarded a grade of at least A-. Candidates must fulfill the College-wide criteria for honors and they must be formally nominated by the Chemistry Department.

Course Selection Guidelines

Placement: Any student interested in taking introductory chemistry is required to take a placement examination to determine the appropriate course. Exception: a student wishing to take chemistry who has scored 4 or 5 on the AP chemistry exam will be automatically placed into CHM 110H and cannot take CHM 101. Students who have scored 4 or 5 on the AP chemistry exam or who successfully complete CHM 110H will also receive AP credit for CHM 101. CHM 110H is offered only in the fall term. [Note: occasionally a student who places out of CHM 101 may find it more appropriate to take CHM 102 instead of CHM 110H. This decision must be made in consultation with the chair of the Chemistry Department.]

Common Curriculum Courses: CHM 050, CHM 060 and CHM 080 and CHM 090 are designed for the general college community. They do not count toward the chemistry major nor for interdepartmental majors that include chemistry. Only students with majors in Division I and II departments or psychology can count one chemistry Common Curriculum course toward the minor in chemistry, and only if it is their first course in the minor. CHM 101, CHM 102, and CHM 110H are also appropriate courses for students wishing to complete their Common Curriculum requirements.

Prerequisites: There is a strict prerequisite structure for the chemistry curriculum, so it is very important to review individual course descriptions when planning when to take the various courses. Every 200-level course has at least one 100-level chemistry course prerequisite, and some have other 200-level chemistry courses and/or cognate courses as prerequisites. Every 300-level course has at least one 200-level chemistry course prerequisite, and some have other 300-level chemistry courses and/or cognate courses as prerequisites.

Repeating Chemistry Courses: Chemistry courses may be repeated according to the college policy, if space permits, with the following exception: a student cannot repeat a chemistry course that is a prerequisite for another chemistry or biochemistry course that the student has successfully completed.

Chemistry Minor

Requirements for the Minor:

CHM 101 and CHM 102 or CHM 110H, and CHM 231 and any three other chemistry courses. Students with majors in Division I and II departments or psychology can count one chemistry Common Curriculum course toward the minor if it is their first course in the minor.

Chemistry, A.C.S., B.S.

Requirements for the A.C.S. Chemistry Major:

There are four different tracks that build on a common core of courses.

Each track includes

- CHM 110H - Honors Introductory Chemistry *
- CHM 231 - Organic Chemistry 1
- CHM 232 - Organic Chemistry 2
- CHM 240 - Analytical Chemistry
- CHM 260 - Inorganic Chemistry
- CHM 351 - Kinetics and Thermodynamics
- CHM 382 - Biochemistry: Structure and Catalysis

Note:

* Students without sufficient preparation for CHM 110H may substitute the two-course CHM 101/CHM 102 sequence.

Four in-depth courses (as outlined below) in chemistry and related areas**

Three terms of thesis research in chemistry

- CHM 491 - Chemical Research 1
- CHM 492 - Chemical Research 2
- CHM 493 - Chemical Research 3

Additional Requirements

Mathematics through:

- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory

and two terms of introductory physics

- PHY 110 - Physics for the Life Sciences 1
and
- PHY 111 - Physics for the Life Sciences 2
or
- PHY 120 - Matter in Motion
and
- PHY 121 - Principles of Electromagnetics

In-depth course requirements for each track follow:

Chemistry Track:

Three required in-depth courses

- CHM 340 - Chemical Instrumentation
- CHM 352 - Quantum Chemistry
- CHM 360 - Advanced Inorganic Chemistry: Materials & Catalysis

One elective course chosen from

- CHM 330 - Medicinal Chemistry
- CHM 332 - Synthetic Methods
- CHM 354 - Chemical Applications of Group Theory
- BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates

Also recommended

Additional courses in chemistry, physics, computer science, and/or engineering.

Chemical Biology Track:

Two required in-depth courses

- BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates
- CHM 340 - Chemical Instrumentation

Two elective courses chosen from

- CHM 330 - Medicinal Chemistry
- CHM 332 - Synthetic Methods
- CHM 352 - Quantum Chemistry
- BIO 378 - Cancer Cell Biology
- BIO 384 - Genetics and Molecular Biology

Also recommended

Additional courses in biology, chemistry, physics, computer science, and/or engineering.

Environmental Chemistry Track:

Two required courses

- CHM 245 - Environmental Chemistry
- CHM 340 - Chemical Instrumentation

Two elective in-depth courses chosen from

- BIO 320 - Ecology
- CHM 352 - Quantum Chemistry
- GEO 203 - Lakes and Environmental Change
- GEO 220 - Mineral Science
- GEO 302 - Geochemical Systems and Modeling
- GEO 304 - Carbonate Sedimentology
- GEO 305 - Biogeochemistry

Also recommended

Additional upper-level chemistry courses, additional selections from the in-depth course electives for this track, courses in environmental ethics, history, literature and/or policy.

Materials Chemistry Track:

Two required courses

- CHM 352 - Quantum Chemistry
- CHM 360 - Advanced Inorganic Chemistry: Materials & Catalysis

Two elective courses chosen from

- CHM 224 - Frontiers of Nanotechnology and Nanomaterials
- CHM 340 - Chemical Instrumentation
- ESC 324 - Advanced Topics in Nanoscience
- GEO 220 - Mineral Science
- GEO 302 - Geochemical Systems and Modeling
- MER 213 - Material Science
- MER 214 - Strength of Materials
- MER 354 - Advanced Materials
- PHY 311 - Advanced Topics in Physics 2

Also recommended

Additional courses in biology, chemistry, physics, computer science, and/or engineering.

Note:

** Some of the elective choices for these tracks are offered by other academic departments. There is no expectation that other departments will guarantee space in their courses for chemistry students. In addition, there is no expectation that those departments will waive any prerequisites for their courses.

Requirements for Honors in Chemistry:

Candidates for honors in chemistry must have a cumulative index of at least 3.3 and an index of at least 3.3 in the courses of their major, excluding cognates, and must have at least three A or A- grades in such courses (not including any given in connection with the writing of their Senior Thesis). They must submit evidence of independent work in chemistry of substance and distinction in the form of a thesis that shall have been awarded a grade of at least A-. Candidates must fulfill the College-wide criteria for honors and they must be formally nominated by the Chemistry Department.

Course Selection Guidelines

Placement: Any student interested in taking introductory chemistry is required to take a placement examination to determine the appropriate course. Exception: a student wishing to take chemistry who has scored 4 or 5 on the AP chemistry exam will be automatically placed into CHM 110H and cannot take CHM 101. Students who have scored 4 or 5 on the AP chemistry exam or who successfully complete CHM 110H will also receive AP credit for CHM 101. CHM 110H is offered only in the fall term. [Note: occasionally a student who places out of CHM 101 may find it more appropriate to take CHM 102 instead of CHM 110H. This decision must be made in consultation with the chair of the Chemistry Department.]

Common Curriculum Courses: CHM 050, CHM 060 and CHM 080 and CHM 090 are designed for the general college community. They do not count toward the chemistry major nor for interdepartmental majors that include chemistry. Only students with majors in Division I and II departments or psychology can count one chemistry Common Curriculum course toward the minor in chemistry, and only if it is their first course in the minor. CHM 101, CHM 102, and CHM 110H are also appropriate courses for students wishing to complete their Common Curriculum requirements.

Prerequisites: There is a strict prerequisite structure for the chemistry curriculum, so it is very important to review individual course descriptions when planning when to take the various courses. Every 200-level course has at least one 100-level chemistry course prerequisite, and some have other 200-level chemistry courses and/or cognate courses as prerequisites. Every 300-level course has at least one 200-level chemistry course prerequisite, and some have other 300-level chemistry courses and/or cognate courses as prerequisites.

Repeating Chemistry Courses: Chemistry courses may be repeated according to the college policy, if space permits, with the following exception: a student cannot repeat a chemistry course that is a prerequisite for another chemistry or biochemistry course that the student has successfully completed.

Chemistry, Basic, B.S.

Requirements for the Basic Chemistry Major:

Eight core courses in the department

- CHM 110H - Honors Introductory Chemistry *
- CHM 231 - Organic Chemistry 1
- CHM 232 - Organic Chemistry 2
- CHM 240 - Analytical Chemistry
- CHM 260 - Inorganic Chemistry
- CHM 340 - Chemical Instrumentation
- CHM 351 - Kinetics and Thermodynamics
- CHM 352 - Quantum Chemistry

Note:

*Students without sufficient preparation for CHM 110H may substitute the two-course CHM 101/CHM 102 sequence.

One course in biochemistry

selected from

- BCH 335 - Survey of Biochemistry
- BCH 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates
- BCH 382 - Biochemistry: Structure and Catalysis

And one chemistry-related elective

chosen from

- CHM 224 - Frontiers of Nanotechnology and Nanomaterials
- CHM 245 - Environmental Chemistry
- CHM 330 - Medicinal Chemistry
- CHM 332 - Synthetic Methods
- CHM 354 - Chemical Applications of Group Theory
- CHM 360 - Advanced Inorganic Chemistry: Materials & Catalysis
- ESC 324 - Advanced Topics in Nanoscience
- GEO 302 - Geochemical Systems and Modeling

Additional Requirements

Chemistry majors may fulfill their WS requirement through a two- or three-term senior research thesis under the supervision of a faculty member in the Chemistry Department (CHM 491, CHM 492, CHM 493), through performing thesis research in another department (if a double major or ID major), or through an additional writing component added to an upper-level chemistry course (with permission of the instructor and the chair of the Chemistry Department).

Additional requirements in Math and Physics

Mathematics through:

- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
and two terms of introductory physics
- PHY 110 - Physics for the Life Sciences 1
and
- PHY 111 - Physics for the Life Sciences 2
or
- PHY 120 - Matter in Motion
and
- PHY 121 - Principles of Electromagnetics

Requirements for Honors in Chemistry:

Candidates for honors in chemistry must have a cumulative index of at least 3.3 and an index of at least 3.3 in the courses of their major, excluding cognates, and must have at least three A or A- grades in such courses (not including any given in connection with the writing of their Senior Thesis). They must submit evidence of independent work in chemistry of substance and distinction in the form of a thesis that shall have been awarded a grade of at least A-. Candidates must fulfill the College-wide criteria for honors and they must be formally nominated by the Chemistry Department.

Course Selection Guidelines

Placement: Any student interested in taking introductory chemistry is required to take a placement examination to determine the appropriate course. Exception: a student wishing to take chemistry who has scored 4 or 5 on the AP chemistry exam will be automatically placed into CHM 110H and cannot take CHM 101. Students who have scored 4 or 5 on the AP chemistry exam or who successfully complete CHM 110H will also receive AP credit for CHM 101. CHM 110H is offered only in the fall term. [Note: occasionally a student who places out of CHM 101 may find it more appropriate to take CHM 102 instead of CHM 110H. This decision must be made in consultation with the chair of the Chemistry Department.]

Common Curriculum Courses: CHM 050, CHM 060 and CHM 080 and CHM 090 are designed for the general college community. They do not count toward the chemistry major nor for interdepartmental majors that include chemistry. Only students with majors in Division I and II departments

or psychology can count one chemistry Common Curriculum course toward the minor in chemistry, and only if it is their first course in the minor. CHM 101, CHM 102, and CHM 110H are also appropriate courses for students wishing to complete their Common Curriculum requirements.

Prerequisites: There is a strict prerequisite structure for the chemistry curriculum, so it is very important to review individual course descriptions when planning when to take the various courses. Every 200-level course has at least one 100-level chemistry course prerequisite, and some have other 200-level chemistry courses and/or cognate courses as prerequisites. Every 300-level course has at least one 200-level chemistry course prerequisite, and some have other 300-level chemistry courses and/or cognate courses as prerequisites.

Repeating Chemistry Courses: Chemistry courses may be repeated according to the college policy, if space permits, with the following exception: a student cannot repeat a chemistry course that is a prerequisite for another chemistry or biochemistry course that the student has successfully completed.

Classics

Chair: Associate Professor S. Raucci

Faculty: Professors H-F. Mueller, M. Toher; Assistant Professor T. Gazzarri; Visiting Assistant Professor A. Commito; Adjunct P. Singy

Classical Civilization Minor

Requirements for the Minor in Classical Civilization:

Six courses in classics; language courses may be counted.

Classics (ID), B.A.

Requirements for Interdepartmental Major:

At least eight courses in the department, including at least four courses in one of the ancient languages. All majors must have their program approved by the chair.

Requirements for Honors in Classics:

To be eligible for departmental honors, the student must fulfill the following requirements:

1. A minimum index of 3.35 in departmental courses; completion of one language course at the 230-level or higher with a grade of "B plus" or better.
2. The student must achieve a grade of at least "A minus" on the senior thesis and present a distinctive performance in an oral examination based on the senior thesis. In addition, the student must satisfy College requirements for departmental honors.

Course Selection Guidelines

Course Numbering: Courses in ancient history, classical literature in translation, and ancient civilization have the prefix "CLS." These courses, including all reading assignments, are conducted entirely in English, and have no pre-requisites. These courses serve as excellent options for students interested in exploring the ancient world, satisfying Common Curriculum (CC) requirements (HUL, LCC, WAC), or building clusters, minors, and majors.

Language Placement: Language courses have their own prefixes: Greek: GRK; and Latin: LAT. Because secondary programs vary, the department is happy to assist students find the proper course level. The department grants AP Latin credit if the student has scored a "4" or better. This credit may be counted toward the major or minor. We also consider IB and other transfer credits on a case-by-case basis.

Classics, B.A.

Requirements for the Major:

At least 12 courses in the department following one of these patterns:

1. Classics (Greek and Latin) Track

- Three classes in Latin beyond LAT 103
- Four courses in Greek
- Three courses in classics:
 - CLS 121 - The History of Greece to the Death of Alexander the Great
 - CLS 126 - The Rise of the Roman Republic
 - CLS 134 - Classical Art and Architecture
- CLS 129 - History of the Roman Empire may be substituted for CLS 126
- CLS 139 - City of Rome or an equivalent course in art history may be substituted for CLS 134

2. Latin Track

- Eight courses in Latin
- Two to three courses in classics, including:
 - CLS 126 - The Rise of the Roman Republic
 - CLS 134 - Classical Art and Architecture
- CLS 129 - History of the Roman Empire may be substituted for CLS 126
- CLS 139 - City of Rome or an equivalent course in art history may be substituted for CLS 134

Courses in Greek may be substituted for two of the courses in Latin as well as for courses in classics.

3. Greek Track

- Eight courses in Greek
- Two to three courses in classics, including:
 - CLS 121 - The History of Greece to the Death of Alexander the Great
 - CLS 134 - Classical Art and Architecture
- CLS 139 - City of Rome or an equivalent course in art history may be substituted for CLS 134

Courses in Latin may be substituted for two of the courses in Greek as well as for courses in classics.

4. Classical Civilization Track

- four courses in one classical language (Greek or Latin)
- six to seven courses in classics, including:
 - CLS 121 - The History of Greece to the Death of Alexander the Great
 - CLS 126 - The Rise of the Roman Republic
 - CLS 134 - Classical Art and Architecture
- CLS 129 - History of the Roman Empire may be substituted for CLS 126
- CLS 139 - City of Rome or an equivalent course in art history may be substituted for CLS 134

Courses in Greek and Latin may be substituted for some courses in classics

5. Ancient History Track

- four courses in one ancient language (Biblical Hebrew, Greek, or Latin)
- four courses in ancient history from:
 - CLS 110 - Ancient Egypt: History and Religion
 - CLS 111 - Ancient Iraq: History and Religion
 - CLS 121 - The History of Greece to the Death of Alexander the Great
 - CLS 126 - The Rise of the Roman Republic
 - CLS 129 - History of the Roman Empire
- two to three additional courses in an ancient language, classics, or (with the approval of the chair) related disciplines
- CLS 134 - Classical Art and Architecture may be substituted for one course in ancient history
- CLS 139 - City of Rome may be substituted for one course in ancient history

6. Ancient Religion Track

- four courses in one ancient language (Biblical Hebrew, Greek, or Latin)
- one to two courses in related areas of ancient history from:
 - CLS 110 - Ancient Egypt: History and Religion
 - CLS 111 - Ancient Iraq: History and Religion
 - CLS 121 - The History of Greece to the Death of Alexander the Great
 - CLS 126 - The Rise of the Roman Republic
 - CLS 129 - History of the Roman Empire
 - CLS 134 - Classical Art and Architecture
- three courses in ancient religion from:
 - CLS 132 - Religion in the Pagan World
 - CLS 143 - Classical Mythology
 - CLS 178 - Ancient World Mythology
 - CLS 230 - Judaism and the Origins of Christianity
 - CLS 320 - Early Christian Thought
 - GRK 243 - New Testament Greek
- two to three additional courses in an ancient language, classics, religious studies or (with the approval of the chair) related disciplines.
- CLS 139 - City of Rome or an equivalent course in art history may be substituted for CLS 134

Tracks

All tracks include either a senior thesis (two terms) and a public performance or an oral examination based on the thesis; or a senior project on a major author or special topic (one term) and a public performance or comprehensive field examination. Students are strongly advised to take PHL 150 Ancient Philosophy. Students may substitute the following additional courses in Art History for CLS 134 (also AAH-200) Ancient Art & Architecture: AAH-100 Introduction to Art and Visual Culture; AAH 101 Introduction to Art History I (Prehistory to Romanesque); AAH 206 Introduction to the History of Architecture: The Renaissance Tradition, 15th-18th Centuries; AAH 223 The Nude; and AAH 309 The History of Gardens and Landscape Architecture. Those students who intend to do graduate work in Classics should consult the department chair for additional requirements.

Requirements for Honors in Classics:

To be eligible for departmental honors, the student must fulfill the following requirements:

1. A minimum index of 3.35 in departmental courses; completion of one language course at the 230-level or higher with a grade of "B plus" or better.
2. The student must achieve a grade of at least "A minus" on the senior thesis and present a distinctive performance in an oral examination based on the senior thesis. In addition, the student must satisfy College requirements for departmental honors.

Course Selection Guidelines

Course Numbering: Courses in ancient history, classical literature in translation, and ancient civilization have the prefix "CLS." These courses, including all reading assignments, are conducted entirely in English, and have no pre-requisites. These courses serve as excellent options for students interested in exploring the ancient world, satisfying Common Curriculum (CC) requirements (HUL, LCC, WAC), or building clusters, minors, and majors.

Language Placement: Language courses have their own prefixes: Greek: GRK; and Latin: LAT. Because secondary programs vary, the department is happy to assist students find the proper course level. The department grants AP Latin credit if the student has scored a "4" or better. This credit may be counted toward the major or minor. We also consider IB and other transfer credits on a case-by-case basis.

Greek or Latin Minor

Requirements for the Minor in Greek or Latin:

Five courses in either Greek or Latin and an additional course in history, which should be CLS 121 (History of Greece) or the study of a Greek historian in Greek, if the minor is in Greek, or CLS 126 (Roman Republic), CLS 129 (Roman Empire), or the study of a Latin historian in Latin, if the minor is in Latin.

Computational Methods

Director: Professor V. Barr (Computer Science)

The department of Computer Science offers a minor in Computational Methods, in which students learn how to leverage computer science techniques in the service of computationally intensive tasks that are often found in engineering and in the natural and social sciences. The minor will help students understand the importance of computation within their major field and develop the ability to apply computational techniques and tools to solve discipline-specific problems.

Computational Methods Minor

Requirements for the Minor:

Six courses including an introductory course in computational methods (CSC 103 - Taming Big Data: Introduction to Computer Science); 2-3 intermediate level applications oriented courses offered in the computer science department, chosen in consultation with the major and minor advisor; 2-3 additional courses with computational focus from cognate departments, chosen in consultation with the major and minor advisor. Students pursuing the computational methods minor are also encouraged to incorporate a significant computational component into their senior project.

Computer Engineering

Chair: Associate Professor H. Hanson

Faculty: Professor P. Catravas, J. Spinelli; Associate Professor S. Cotter; Assistant Professors T. Buma, L. Dosiek; Senior Lecturer J. Hedrick

Staff: G. Davison (Engineering Assistant), L. Galeo (Administrative Assistant)

The Computer Engineering program provides students with a solid basis in computer engineering and its underlying mathematics and science within the framework of a liberal arts education. We prepare students for immediate professional employment, graduate study, and entry into related professions. We believe that the rigor and depth of a computer engineering education combined with a broad study of the liberal arts provides an excellent background for students who wish to enter professions such as medicine, law, and business administration as well as engineering itself. Through our required international component, our emphasis on undergraduate research, and the personal attention that we give to each student, we educate well-rounded members of society who are prepared to excel in an increasingly multicultural and technological world.

The Computer Engineering program is offered by the Department of Electrical and Computer Engineering with significant parts of the curriculum supported by the Department of Computer Science. The Computer Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. Educational objectives and student outcomes are listed on the website: ece.union.edu

Computer Engineering Course Listings

See the course listings in the Electrical Engineering section for ECE courses and in the Computer Science section for CSC courses.

Computer Engineering Minor

Requirements for the Minor:

Please consult with the Department Chair of Electrical Engineering directly.

Computer Engineering, B.S.

Requirements for the Major:

a total of 40 courses including the following:

Math and Science:

Select One Calculus Sequence

Sequence One

- MTH 113 - AP Calculus *
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
- PHY 120 - Matter in Motion
- PHY 121 - Principles of Electromagnetics

Sequence Two

- IMP 120 - Integrated Math/Physics
- IMP 121 - Integrated Math/Physics

Additional Requirements

Choice One

- MTH 130 - Ordinary Differential Equations
or
- MTH 234 - Differential Equations

Choice Two

- MTH 197 - Discrete Mathematics for Computer Science
or
- MTH 199 - Introduction to Logic and Set Theory

One math elective from

- STA 104 - (MTH-104) Introduction to Statistics
- MTH 117 - Calculus 4: Integral Vector Calculus *
- MTH 127 - Numerical Methods
- MTH 140 - Applied Linear Algebra
- STA 164 - (MTH 164) Strategies of Experimentation: Statistical Design and Analysis of Experiments
- MTH 221 - Mathematical Cryptology **
- MTH 235 - Number Theory **
- MTH 238 - Methods of Applied Mathematics **
- STA 264 - (MTH 264) Regression Analysis
- MTH 340 - Linear Algebra **

One science elective numbered 100 or higher

- CHM 101 - Introductory Chemistry 1
- PHY 122 - Relativity, Quantum, and Their Applications
- PHY 123 - Heat and Light
are recommended

Note(s):

* Other calculus sequences are possible depending upon a student's background.

** These math electives require MTH 199 as a prerequisite.

Engineering Science:

- ESC 100 - Exploring Engineering

Computer Engineering Core:

one from

- CSC 103 - Taming Big Data: Introduction to Computer Science
- CSC 104 - Robots Rule! Introduction to Computer Science
- CSC 105 - Game Development: Introduction to Computer Science
- CSC 106 - Can Computers Think? Introduction to Computer Science
- CSC 107 - Creative Computing: Introduction to Computer Science
- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science

and

- ECE 118 - Introduction to Computer and Logic Design
- ECE 218 - Embedded Microcontroller Projects
- ECE 225 - Electric Circuits
- ECE 240 - Circuits and Systems
- ECE 241 - Discrete Systems
- ECE 248 - Introduction to Semiconductor Devices and Circuits
- ECE 351 - Probability and Digital Communications
- CSC 120 - Programming on Purpose
- CSC 151 - Data Structures

- CSC 250 - Algorithm Design and Analysis
or
- CSC 260 - Large-Scale Software Development

- CSC 270 - Computer Organization

- CSC 333 - Introduction to Parallel Computing
or
- CSC 335 - Operating Systems

- ECE 318 - Digital Design
or

- CSC 318 - Digital Design
- ECE 336 - Computer Network Protocols
or
- CSC 236 - Computer Network Protocols
or
- ECE 337 - Data Communications and Networks
or
- CSC 237 - Data Communications and Networks

Computer Engineering Electives:

3 additional CSC or ECE courses numbered 300 or higher. Students may also enroll in EE graduate engineering courses offered through Union Graduate College. Please see the Union Graduate College catalog for course descriptions and joint degree program options.

Capstone Design:

- ECE 497 - Electrical and Computer Engineering Capstone Design Project 1
- ECE 498 - Electrical and Computer Engineering Capstone Design Project 2
- ECE 499 - Electrical and Computer Engineering Capstone Design Project 3

Electives:

11 elective courses should be chosen in consultation with the student's advisor to satisfy the Common Curriculum and to enhance individual educational objectives. These elective courses, in addition to the 5 electives in math, science and computer engineering, can be customized to complete a minor and pursue specific interests.

Sample schedule starting with Math 113:

Students with different math backgrounds will have slightly different math sequences.

First Year

- ESC 100 - Exploring Engineering
- MTH 113 - AP Calculus
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
- PHY 120 - Matter in Motion
- CSC 103 - Taming Big Data: Introduction to Computer Science **
or
- CSC 104 - Robots Rule! Introduction to Computer Science **
or
- CSC 105 - Game Development: Introduction to Computer Science **
or
- CSC 106 - Can Computers Think? Introduction to Computer Science **
or

- CSC 107 - Creative Computing: Introduction to Computer Science **
or
- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science **
- CSC 120 - Programming on Purpose
- Science elective
- PHY 121 - Principles of Electromagnetics
- Electives (2)*

Second Year

- ECE 118 - Introduction to Computer and Logic Design
- ECE 225 - Electric Circuits
- ECE 218 - Embedded Microcontroller Projects
- MTH 130 - Ordinary Differential Equations
or
- MTH 234 - Differential Equations
- MTH 197 - Discrete Mathematics for Computer Science
or
- MTH 199 - Introduction to Logic and Set Theory **
- ECE 240 - Circuits and Systems
and
- ECE 241 - Discrete Systems ***
and
- Electives (2)*
- CSC 250 - Algorithm Design and Analysis
or
- CSC 260 - Large-Scale Software Development

Third Year****

- CSC 270 - Computer Organization
- ECE 318 - Digital Design
or
- CSC 318 - Digital Design
- ECE 248 - Introduction to Semiconductor Devices and Circuits
- ECE 497 - Electrical and Computer Engineering Capstone Design Project 1 (1/2)
- Electives (6)*

Fourth Year

- Math elective
- ECE 336 - Computer Network Protocols
or
- CSC 236 - Computer Network Protocols
or
- ECE 337 - Data Communications and Networks
or
- CSC 237 - Data Communications and Networks

- ECE 351 - Probability and Digital Communications
- ECE 498 - Electrical and Computer Engineering Capstone Design Project 2 (1/2)
- ECE 499 - Electrical and Computer Engineering Capstone Design Project 3
- ECE or CSC electives (3)
- CSC 335 - Operating Systems
or
- CSC 333 - Introduction to Parallel Computing
Electives (2)*

Note(s):

* Electives should be chosen to meet Common Curriculum requirements and enhance individual educational goals. Students should work with their academic advisor to develop an appropriate plan of study.

** One course from CSC 103 - CSC 109 and either MTH 197 or MTH 199 should be taken before the winter term of the second year.

*** ECE 241 may also be taken in the fall or spring term of the junior year.

**** The fall term of the third year is the most common term for going on a full term abroad.

With appropriate planning, students may go on winter and spring terms abroad as well.

Requirements for Honors in Computer Engineering:

In addition to meeting all of the general college requirements for honors, candidates for honors in computer engineering must present their senior project at the Steinmetz Symposium.

Requirements for the Five-Year Combined BS in Computer Engineering and MS in Electrical Engineering:

Union undergraduate students may apply to this program offered in conjunction with Clarkson University Capital Region Campus (formerly Union Graduate College) where both a B.S. and an M.S. degree are earned in five years. Students are encouraged to apply during sophomore year but no later than the end of the fall term of their senior year. A 3.0 overall GPA is expected for admission. Students enrolled in the program may count up to three Electrical or Computer Engineering courses toward both degrees. A petition requesting overlapping degree credit must be approved by the undergraduate and graduate advisors and filed with Clarkson University. The Master of Science program is described in the catalog of Clarkson University at <http://graduate.clarkson.edu/engineering/>

Computer Science

Chair: Associate Professor A. Cass

Faculty: Associate Professors C. Fernandes, J. Rieffel, K. Striegnitz ; Assistant Professor N. Webb; Visiting Professor V. Barr; Visiting Assistant

Professor M. Anderson

Staff: L. Galeo (Administrative Assistant)

The department offers a B.S. in Computer Science, supports the B.S. in Computer Engineering offered by the Electrical and Computer Engineering Department, and supports a program in Digital Art with the Visual Arts department.

The department also participates in offering three minors: a traditional minor in Computer Science, a minor in Computational Methods, and a minor in Digital Media in collaboration with the Visual Arts department.

Introductory Courses

Each CS major or minor program includes one course from the following list: (CSC 103, CSC 104, CSC 105, CSC 106, CSC 107, CSC 109) Each course focuses on a distinct application area. The courses all cover the same basic computer science concepts and programming skills and only one may be counted toward a major or minor. These courses are open to non-majors and are prerequisite to certain intermediate courses that are also available to and suitable for non-majors. A grade of C- or better is required in order to take any course that requires an introductory course as a prerequisite. Once one has passed an introductory course with a C- or better, no other introductory course may be taken for credit. All of these courses satisfy SET or QMR of the Common Curriculum.

Computer Science (ID), B.S.

Requirements for the ID Major:

8 computer science courses: five core + three electives. Plus the capstone project sequence. MTH 197 is also required.

Five core CS courses & Discrete Mathematics:

An introductory course, one of:

- CSC 103 - Taming Big Data: Introduction to Computer Science
or
- CSC 104 - Robots Rule! Introduction to Computer Science
or
- CSC 105 - Game Development: Introduction to Computer Science
or
- CSC 106 - Can Computers Think? Introduction to Computer Science
or
- CSC 107 - Creative Computing: Introduction to Computer Science
or
- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science

And **all** of the following:

- CSC 120 - Programming on Purpose
- CSC 151 - Data Structures
- CSC 250 - Algorithm Design and Analysis
- CSC 260 - Large-Scale Software Development
- MTH 197 - Discrete Mathematics for Computer Science

Three electives:

One course numbered 110 or higher, chosen from the following:

- CSC 112 - The Processed Pixel
- CSC 118 - Introduction to Computer and Logic Design
- CSC 206 - Natural Language Processing
- CSC 234 - Data Visualization
- CSC 235 - Modeling & Simulation
- CSC 236 - Computer Network Protocols
- CSC 237 - Data Communications and Networks
- CSC 240 - Web Programming
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 245 - The Computer Science of Computer Games
- CSC 280 - User Interfaces

Students may also choose from the courses numbered 300 or higher listed below

Two other courses numbered 300 or higher, chosen from the following:

- CSC 318 - Digital Design
- CSC 320 - Artificial Intelligence
- CSC 321 - Data Mining and Machine Learning
- CSC 325 - Robotics
- CSC 329 - Neural Networks
- CSC 333 - Introduction to Parallel Computing
- CSC 335 - Operating Systems
- CSC 340 - Introduction to Databases
- CSC 350 - Theory of Computing
- CSC 352 - Embedded Microcontroller Systems and Robotics
- CSC 354 - VLSI System Design
- CSC 360 - Software Engineering
- CSC 370 - Programming Languages
- CSC 375 - Compiler Design
- CSC 385 - Computer Graphics
- CSC 483 - Selected Topics in Computer Science

Capstone project sequence

The project must be designed to integrate the fields composing the major.

- CSC 497 - Computer Science Capstone Seminar (normally taken in the spring of Junior year)
- IDM 498 - Interdepartmental Senior Thesis 1 (normally taken in the fall of Senior year)
- IDM 499 - Interdepartmental Senior Thesis 2 (normally taken in the winter of Senior year)

Requirements for Honors in Computer Science

Candidates for honors in computer science must have a minimum overall grade point average of 3.3, a minimum grade point average of 3.3 in the major with at least 3 grades of A- or better in full credit CSC courses numbered 100 or above, a grade of at least A- for CSC 499 or IDM 499, and must present the senior project at the Steinmetz Symposium.

Course Selection Guidelines

Placement: A score of 4 or 5 on the AP Computer Science "A" exam will count as having satisfied one of the introductory courses (CSC 103, CSC 104, CSC 105, CSC 106, CSC 107, CSC 109).

Prerequisite: For prerequisite structure of all courses in the CS major, please visit cs.union.edu/media/csmajorgraph.pdf

Computer Science Minor

Requirements for the Minor:

6 computer science courses: **three core + three additional courses** chosen with the approval of an advisor from Computer Science. MTH 197 is also required. *Computer Engineering majors are not eligible for this minor.*

Two Core CS courses and Discrete Mathematics:

An introductory course, one of the following:

- CSC 103 - Taming Big Data: Introduction to Computer Science
or
- CSC 104 - Robots Rule! Introduction to Computer Science
or
- CSC 105 - Game Development: Introduction to Computer Science
or
- CSC 106 - Can Computers Think? Introduction to Computer Science
or
- CSC 107 - Creative Computing: Introduction to Computer Science
or
- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science

And **all** of the following:

- CSC 120 - Programming on Purpose
- CSC 151 - Data Structures
- MTH 197 - Discrete Mathematics for Computer Science

Three additional CS courses:

One course numbered 250 or higher; choose from the following:

- CSC 250 - Algorithm Design and Analysis
- CSC 260 - Large-Scale Software Development
- CSC 270 - Computer Organization
- CSC 280 - User Interfaces
- CSC 318 - Digital Design
- CSC 320 - Artificial Intelligence
- CSC 321 - Data Mining and Machine Learning
- CSC 325 - Robotics
- CSC 329 - Neural Networks
- CSC 333 - Introduction to Parallel Computing
- CSC 335 - Operating Systems
- CSC 340 - Introduction to Databases
- CSC 350 - Theory of Computing

- CSC 352 - Embedded Microcontroller Systems and Robotics
- CSC 354 - VLSI System Design
- CSC 360 - Software Engineering
- CSC 370 - Programming Languages
- CSC 375 - Compiler Design
- CSC 385 - Computer Graphics
- CSC 483 - Selected Topics in Computer Science

Two other CS courses, chosen from the following:

- CSC 055 - Working with the Web
- CSC 080 - History of Computing
- CSC 112 - The Processed Pixel
- CSC 118 - Introduction to Computer and Logic Design
- CSC 206 - Natural Language Processing
- CSC 234 - Data Visualization
- CSC 235 - Modeling & Simulation
- CSC 236 - Computer Network Protocols
- CSC 237 - Data Communications and Networks
- CSC 240 - Web Programming
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 245 - The Computer Science of Computer Games

Students may also choose from courses numbered 250 or higher listed above. Only one course numbered below 100 may count towards the minor.

Computer Science, B.S.

Requirements for the Major:

11 computer science courses: six core + five electives. Plus the capstone project sequence. Additional math and science requirements detailed below.

Six core courses:

An introductory course, one of:

- CSC 103 - Taming Big Data: Introduction to Computer Science
or
- CSC 104 - Robots Rule! Introduction to Computer Science
or
- CSC 105 - Game Development: Introduction to Computer Science
or
- CSC 106 - Can Computers Think? Introduction to Computer Science
or
- CSC 107 - Creative Computing: Introduction to Computer Science
or
- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science

and **all** of the following courses:

- CSC 120 - Programming on Purpose

- CSC 151 - Data Structures
- CSC 250 - Algorithm Design and Analysis
- CSC 260 - Large-Scale Software Development
- CSC 270 - Computer Organization

Five Electives:

Majors choose **five** distinct courses from the following groups.

One course from the Theory Group

- CSC 350 - Theory of Computing
- CSC 370 - Programming Languages

One course from the Systems Group

- CSC 333 - Introduction to Parallel Computing
- CSC 335 - Operating Systems
- CSC 375 - Compiler Design

One other course numbered 110 or higher

- CSC 112 - The Processed Pixel
- CSC 118 - Introduction to Computer and Logic Design
- CSC 206 - Natural Language Processing
- CSC 234 - Data Visualization
- CSC 235 - Modeling & Simulation
- CSC 236 - Computer Network Protocols
- CSC 237 - Data Communications and Networks
- CSC 240 - Web Programming
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 245 - The Computer Science of Computer Games
- CSC 280 - User Interfaces

Students may also choose from courses numbered 300 or higher than listed below.

Two other courses numbered 300 or higher

- CSC 318 - Digital Design
- CSC 320 - Artificial Intelligence
- CSC 321 - Data Mining and Machine Learning
- CSC 325 - Robotics
- CSC 329 - Neural Networks
- CSC 340 - Introduction to Databases
- CSC 352 - Embedded Microcontroller Systems and Robotics
- CSC 354 - VLSI System Design
- CSC 360 - Software Engineering

- CSC 385 - Computer Graphics
- CSC 483 - Selected Topics in Computer Science

Students may also choose from what they haven't yet taken in the Systems and Theory groups.

Capstone project sequence

- CSC 497 - Computer Science Capstone Seminar (Normally taken in the spring of Junior year)
- CSC 498 - Computer Science Capstone Project 1 (Normally taken in the fall of Senior year)
- CSC 499 - Computer Science Capstone Project 2 (Normally taken in the winter of Senior year)

Note that CSC 499 satisfies the senior writing requirement.

Two science courses, both outside of CS

One must satisfy the Core Curriculum SET requirement, the other must satisfy SCLB. At least one of these must be a major-level (i.e. at least 100-level) course from Biology, Chemistry, Environmental Science, Geology, Physics and Astronomy, or Psychology. Courses cross-listed with CS are not acceptable.

Required Math courses:

A calculus sequence up to Calculus 2; namely:

- MTH 100 - Calculus with Precalculus 1
and
- MTH 101 - Calculus with Precalculus 2
and
- MTH 102 - Calculus with Precalculus 3
or
- MTH 110 - Calculus 1: Differential Calculus
and
- MTH 112 - Calculus 2: Integral Calculus
or
- MTH 113 - AP Calculus

Additionally

- MTH 197 - Discrete Mathematics for Computer Science

And **one** Math elective chosen in consultation with the advisor. This includes MTH courses, STA courses, ECO 243, and PSY 200; suggestions are as follows:

- STA 104 - (MTH-104) Introduction to Statistics
or
- MTH 128 - Probability
or
- MTH 140 - Applied Linear Algebra
or
- MTH 221 - Mathematical Cryptology
or
- STA 264 - (MTH 264) Regression Analysis
or
- MTH 340 - Linear Algebra

- or
- ECO 243 - Introduction to Econometrics
- or
- PSY 200 - Statistical Methods in Psychology

A typical first year major program includes

- A 100-level introductory course:
- CSC 120 - Programming on Purpose
- MTH 197 - Discrete Mathematics for Computer Science
- And first year Core Curriculum courses.

Requirements for Honors in Computer Science

Candidates for honors in computer science must have a minimum overall grade point average of 3.3, a minimum grade point average of 3.3 in the major with at least 3 grades of A- or better in full credit CSC courses numbered 100 or above, a grade of at least A- for CSC 499 or IDM 499, and must present the senior project at the Steinmetz Symposium.

Course Selection Guidelines

Placement: A score of 4 or 5 on the AP Computer Science "A" exam will count as having satisfied one of the introductory courses (CSC 103, CSC 104, CSC 105, CSC 106, CSC 107, CSC 109).

Prerequisite: For prerequisite structure of all courses in the CS major, please visit cs.union.edu/media/csmajorgraph.pdf

Digital Media (minor only)

Directors: Associate Professors A. Cass (Computer Science), D. Ogawa (Visual Arts)

Digital Media Minor

Requirements for the Minor:

The digital media minor allows students to synthesize introductory and intermediate classes from computer science and visual arts that explore the interaction between creative and computational processes. These include basic courses in digital art, traditional studio art, web programming and programming for image and sound processing. Students will explore a range of visual and electronic applications, and learn the basic tools necessary to incorporate visualization mechanisms into work within other fields of study. Requires the following six courses, three from computer science and three from visual arts:

- an introductory CS course:
- CSC 107 - Creative Computing: Introduction to Computer Science (strongly recommended)
- CSC 234 - Data Visualization
- or
- CSC 240 - Web Programming
- or
- CSC 245 - The Computer Science of Computer Games

- Additional CS course numbered above 110, chosen in consultation with the minor advisor.
- AVA 160 - Digital Art
- AVA 262 - Real and Recorded Time - 4D Art
- One non-Digital Visual Arts studio course, chosen in consultation with the minor advisor.

Exceptions:

- Courses cross-listed in both CSC and AVA do not count towards this minor.
- A Computer Science major wishing to achieve this minor may not count the introductory CS course towards it. Instead, the student must take any fourth course in Visual Arts (Visual Arts Studio or Art History course), chosen in consultation with the minor advisor.
- A Visual Arts major wishing to achieve this minor must take a fourth CS course numbered above 110, chosen in consultation with the minor advisor.
- A CS-Art interdepartmental major is not eligible for this minor

Economics

Chair: Professor T. Dvorak

Faculty: Professors L. Dadvis, H. Fried, J. Kenney, D. Klein, B. Lewis, T. McCarty (Dean of the Faculty), E. Motahar, Stephen J. Schmidt, Shelton S. Schmidt, M. Sener, Y. Song, S. Yaisawang; Assistant Professor K. Raeburn; Lecturer E. Foster; Visiting Assistant Professors J. Gao, H. Holt.

Staff: M. Bielecki (Administrative Assistant)

Prerequisites: ECO 101 is a prerequisite for all courses in the department, unless otherwise indicated.

Note on 300 and 400-level courses: 300 and 400-level courses carry one or more of the core courses ECO 241, ECO 242, or ECO 243 as prerequisites.

Economics (ID), B.A.

Requirements for the Interdepartmental Major in Economics:

Interdepartmental majors

Interdepartmental majors in economics and another field are required to take at least eight courses in economics, including

- ECO 101 - Introduction to Economics
- ECO 241 - Microeconomic Analysis
- ECO 242 - Macroeconomic Theory and Policy
- ECO 243 - Introduction to Econometrics
- at least one 300 or 400-level course

and either

- ECO 498 - Economics Senior Thesis 1
- ECO 499 - Economics Senior Thesis 2 or
- a senior thesis drawing on both economics and the other discipline.
ECO 390 may not be counted as a 300-level course to satisfy these requirements.

Additional Requirements

Majors and Interdepartmental majors should normally complete the core sequence of ECO 241, ECO 242, and ECO 243 by the beginning of the junior year. This will allow sufficient time to take upper-level courses prior to the senior thesis. Majors and Interdepartmental majors who have reached the junior year may not enroll in courses numbered below 240, except ECO 123. Students may not count toward the major more than one elective that does not list ECO 101 as a prerequisite. Also, students may not count toward the major more than one internship-related course.

Majors and Interdepartmental majors must have a minimum grade of C in each of the courses in the core sequence of ECO 241, ECO 242, and ECO 243 by the beginning of the senior year before taking ECO 498-ECO 499, or IDM 498-IDM 499 with Economics as one component. Students receiving a grade lower than C in any of the core sequence of ECO 241, ECO 242, and ECO 243 may repeat the core course only once. This requirement applies to students matriculating in Fall 2013 and beyond.

Majors and Interdepartmental majors taking ECO 498-ECO 499, or IDM 498-IDM 499 with Economics as one component, must pass an oral defense of their senior thesis proposal before enrolling in ECO 499 or IDM 499.

Students interested in economics might also consider the Quantitative Economics track or a major in Managerial Economics. Students planning graduate study in economics or business are advised to take additional courses in mathematics or consider the Quantitative Economics track as their advisors recommend.

Requirements for Honors in Economics:

To earn departmental honors in economics, participants in the program must (1) have a minimum grade average of 3.3 or higher in ECO 241, ECO 242, and ECO 243; (2) be nominated for honors by the department at the end of the first term of thesis work; (3) pass an honors oral examination on their senior thesis in the second term of thesis work; (4) earn a minimum of "A minus" on the senior thesis; (5) receive approval of the final thesis from the honors oral examination committee; and (6) participate in the department's honors seminar. In addition, the student must satisfy all College requirements for departmental honors.

Course Selection Guidelines

Course Sequence: Students intending to major in economics should take ECO 101 in the first year, and complete MTH 101 or MTH 110 in the first year if possible, early in the sophomore year if not. They should also take one or more 200-level electives in the first or second year, since these courses are not open to junior and senior majors. In the sophomore year they should take the core ECO 241-ECO 242-ECO 243 sequence; the sequence need not be taken in numerical order but ECO 243 should normally not be taken first. Majors should complete several 300-level elective courses as juniors prior to enrolling in senior thesis, including where possible courses in the area of economics in which the thesis will be written; interdepartmental majors should complete at least one such course in the junior year, and preferably more.

Placement: The economics department gives credit for ECO 101 to students receiving a score of 5, 6, or 7 on the Higher Level International Baccalaureate exam, a grade of A or B on the economics A-levels, and a score of 4 or 5 on both the AP Microeconomics and Macroeconomics exam, but does not give credit for ECO 101 to students who have taken only one of the two AP exams, regardless of the score received.

Prerequisites: ECO 101 is a prerequisite for all courses in the department, unless otherwise indicated.

Economics Minor

Requirements for the Minor:

Six economics courses including:

- ECO 101 - Introduction to Economics
- ECO 241 - Microeconomic Analysis
- ECO 242 - Macroeconomic Theory and Policy
- ECO 243 - Introduction to Econometrics

(unless waived by the department chair based on an equivalent course in the student's major) and

- at least one course at the 300 or 400-level

Economics, B.A.

Requirements for the Major in Economics:

Twelve courses in the department:

- ECO 101 - Introduction to Economics
- ECO 241 - Microeconomic Analysis
- ECO 242 - Macroeconomic Theory and Policy
- ECO 243 - Introduction to Econometrics
- ECO 498 - Economics Senior Thesis 1
- ECO 499 - Economics Senior Thesis 2 and
- six others

Majors are required to take a minimum of three 300- or 400-level courses in the department (in addition to ECO 498 and ECO 499) ECO 390 may not be counted as a 300-level course to satisfy these requirements.

Completion of

- MTH 101 - Calculus with Precalculus 2 or
 - MTH 110 - Calculus 1: Differential Calculus or
 - MTH 113 - AP Calculus
- (or equivalent advanced placement credit) is required prior to enrolling in ECO 241 or ECO 242.

Additional Requirements

Majors and Interdepartmental majors should normally complete the core sequence of ECO 241, ECO 242, and ECO 243 by the beginning of the junior year. This will allow sufficient time to take upper-level courses prior to the senior thesis. Majors and Interdepartmental majors who have reached the junior year may not enroll in courses numbered below 240, except ECO 123. Students may not count toward the major more than one elective that does not list ECO 101 as a prerequisite. Also, students may not count toward the major more than one internship-related course.

Majors and Interdepartmental majors must have a minimum grade of C in each of the courses in the core sequence of ECO 241, ECO 242, and ECO 243 by the beginning of the senior year before taking ECO 498-ECO 499, or IDM 498-IDM 499 with Economics as one component. Students receiving a grade lower than C in any of the core sequence of ECO 241, ECO 242, and ECO 243 may repeat the core course only once. This requirement applies to students matriculating in Fall 2013 and beyond.

Majors and Interdepartmental majors taking ECO 498-ECO 499, or IDM 498-IDM 499 with Economics as one component, must pass an oral defense of their senior thesis proposal before enrolling in ECO 499 or IDM 499.

Students interested in economics might also consider the Quantitative Economics track or a major in Managerial Economics. Students planning graduate study in economics or business are advised to take additional courses in mathematics or consider the Quantitative Economics track as their advisors recommend.

Requirements for Honors in Economics:

To earn departmental honors in economics, participants in the program must (1) have a minimum grade average of 3.3 or higher in ECO 241, ECO 242, and ECO 243; (2) be nominated for honors by the department at the end of the first term of thesis work; (3) pass an honors oral examination on

their senior thesis in the second term of thesis work; (4) earn a minimum of "A minus" on the senior thesis; (5) receive approval of the final thesis from the honors oral examination committee; and (6) participate in the department's honors seminar. In addition, the student must satisfy all College requirements for departmental honors.

Course Selection Guidelines

Course Sequence: Students intending to major in economics should take ECO 101 in the first year, and complete MTH 101 or MTH 110 in the first year if possible, early in the sophomore year if not. They should also take one or more 200-level electives in the first or second year, since these courses are not open to junior and senior majors. In the sophomore year they should take the core ECO 241-ECO 242-ECO 243 sequence; the sequence need not be taken in numerical order but ECO 243 should normally not be taken first. Majors should complete several 300-level elective courses as juniors prior to enrolling in senior thesis, including where possible courses in the area of economics in which the thesis will be written; interdepartmental majors should complete at least one such course in the junior year, and preferably more.

Placement: The economics department gives credit for ECO 101 to students receiving a score of 5, 6, or 7 on the Higher Level International Baccalaureate exam, a grade of A or B on the economics A-levels, and a score of 4 or 5 on both the AP Microeconomics and Macroeconomics exam, but does not give credit for ECO 101 to students who have taken only one of the two AP exams, regardless of the score received.

Prerequisites: ECO 101 is a prerequisite for all courses in the department, unless otherwise indicated.

Economics, Managerial Economics, B.A.

- See Managerial Economics, B.A.

Economics, Quantitative Economics Track, B.A.

Requirements for the Quantitative Economics Track:

Quantitative Economics permits students who have a strong interest in mathematics to enhance their understanding of economic theory by concentrating on course work where the use of mathematics is especially productive. It is designed primarily for those who expect to go to graduate school, particularly in economics. Advisors: Professors Stephen J. Schmidt, Shelton S. Schmidt, and D. Klein

Mathematics courses should be selected in consultation with your economics advisor. The senior thesis, ECO 498-ECO 499, should make use of the quantitative nature of the track.

- ECO 101 - Introduction to Economics
- ECO 241 - Microeconomic Analysis
- ECO 242 - Macroeconomic Theory and Policy
- ECO 243 - Introduction to Econometrics
- ECO 498 - Economics Senior Thesis 1
- ECO 499 - Economics Senior Thesis 2

three courses from among

- ECO 338 - Quantitative Methods in Economics
- ECO 341 - Current Topics in Microeconomics
- ECO 352 - Contemporary Problems in Macroeconomics
- ECO 353 - Seminar in Econometrics
- two additional economics courses; and
- three mathematics courses above the level of MTH 110

Requirements for Honors in Economics:

To earn departmental honors in economics, participants in the program must (1) have a minimum grade average of 3.3 or higher in ECO 241, ECO 242, and ECO 243; (2) be nominated for honors by the department at the end of the first term of thesis work; (3) pass an honors oral examination on their senior thesis in the second term of thesis work; (4) earn a minimum of "A minus" on the senior thesis; (5) receive approval of the final thesis from the honors oral examination committee; and (6) participate in the department's honors seminar. In addition, the student must satisfy all College requirements for departmental honors.

Course Selection Guidelines

Course Sequence: Students intending to major in economics should take ECO 101 in the first year, and complete MTH 101 or MTH 110 in the first year if possible, early in the sophomore year if not. They should also take one or more 200-level electives in the first or second year, since these courses are not open to junior and senior majors. In the sophomore year they should take the core ECO 241-ECO 242-ECO 243 sequence; the sequence need not be taken in numerical order but ECO 243 should normally not be taken first. Majors should complete several 300-level elective courses as juniors prior to enrolling in senior thesis, including where possible courses in the area of economics in which the thesis will be written; interdepartmental majors should complete at least one such course in the junior year, and preferably more.

Placement: The economics department gives credit for ECO 101 to students receiving a score of 5, 6, or 7 on the Higher Level International Baccalaureate exam, a grade of A or B on the economics A-levels, and a score of 4 or 5 on both the AP Microeconomics and Macroeconomics exam, but does not give credit for ECO 101 to students who have taken only one of the two AP exams, regardless of the score received.

Prerequisites: ECO 101 is a prerequisite for all courses in the department, unless otherwise indicated.

Electrical Engineering

Chair: Associate Professor H. Hanson

Faculty: Professors P. Catravas, J. Spinelli, C. Traver; Associate Professor S. Cotter; Assistant Professors T. Buma, L. Dosiek; Senior Lecturer J. Hedrick

Staff: G. Davison (Engineering Assistant), L. Galeo (Administrative Assistant)

The Electrical Engineering program is offered by the Electrical and Computer Engineering department, and provides students with a solid basis in electrical engineering and its underlying mathematics and science within the framework of a liberal arts education. We prepare students for immediate professional employment, graduate study, and entry into related professions. We believe that the rigor and depth of an electrical engineering education combined with a broad study of the liberal arts provides an excellent background for students who wish to enter professions such as medicine, law, and business administration as well as engineering itself. Through the required international component, our emphasis on undergraduate research, our flexible curriculum, and the personal attention that we give to each student, we educate well-rounded members of society who are prepared to excel in an increasingly multicultural and technological world.

The Electrical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. Educational objectives and student outcomes are listed on the department website: ece.union.edu

Electrical Engineering Minor

Requirements for the Minor:

- ECE 118 - Introduction to Computer and Logic Design
- ECE 225 - Electric Circuits
- ECE 240 - Circuits and Systems
- ECE 248 - Introduction to Semiconductor Devices and Circuits

- Two ECE electives numbered 100 or higher

Students with interests in a particular area of ECE may select an alternate sequence of six ECE courses numbered above 100, subject to approval from the ECE department chair.

Electrical Engineering, B.S.

Requirements for the Major:

A total of 40 courses including the following:

Math and Science:

Select One Sequence

Sequence One

- MTH 113 - AP Calculus
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
- MTH 117 - Calculus 4: Integral Vector Calculus
- PHY 120 - Matter in Motion
- PHY 121 - Principles of Electromagnetics
- Other calculus sequences are possible depending upon a student's background.

Sequence Two

- IMP 120 - Integrated Math/Physics
- IMP 121 - Integrated Math/Physics

One science elective numbered 100 or higher

Recommended:

- CHM 101 - Introductory Chemistry 1
or
- PHY 122 - Relativity, Quantum, and Their Applications
or
- PHY 123 - Heat and Light

Additional Requirements

- MTH 130 - Ordinary Differential Equations
or
- MTH 234 - Differential Equations

and

- One Math or Science elective numbered 100 or higher.

Engineering and Computer Science:

- ESC 100 - Exploring Engineering

one from

- CSC 103 - Taming Big Data: Introduction to Computer Science
or
- CSC 104 - Robots Rule! Introduction to Computer Science
or
- CSC 105 - Game Development: Introduction to Computer Science
or
- CSC 106 - Can Computers Think? Introduction to Computer Science
or
- CSC 107 - Creative Computing: Introduction to Computer Science
or
- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science

Electrical Engineering Core:

- ECE 101 - The Joy of Electronics
- ECE 118 - Introduction to Computer and Logic Design
- ECE 218 - Embedded Microcontroller Projects
- ECE 225 - Electric Circuits
- ECE 240 - Circuits and Systems
- ECE 241 - Discrete Systems
- ECE 248 - Introduction to Semiconductor Devices and Circuits
- ECE 343 - Introduction to Electromagnetic Engineering
- ECE 350 - Communication Systems
- ECE 351 - Probability and Digital Communications
- ECE 363 - Analysis and Design of Electronic Circuits
- ECE 366 - Control Systems

Electrical Engineering Electives:

3 additional ECE courses numbered 300 or higher. Students may also enroll in graduate engineering courses offered through Union Graduate College. Please see the Union Graduate College catalog for course descriptions and joint degree program options.

Capstone Design:

- ECE 497 - Electrical and Computer Engineering Capstone Design Project 1
- ECE 498 - Electrical and Computer Engineering Capstone Design Project 2
- ECE 499 - Electrical and Computer Engineering Capstone Design Project 3

Electives:

14 electives should be chosen in consultation with the student's advisor to meet the Common Curriculum requirements and enhance educational objectives. These elective courses, in addition to the 5 electives in math, science and electrical and computer engineering, can be customized to complete a double-major and one/or more minors.

Sample schedule starting with Math 113:

Students with different math backgrounds will have slightly different math sequences.

First Year

- ESC 100 - Exploring Engineering
- ECE 101 - The Joy of Electronics
- FPR 100 - First-Year Preceptorial
- MTH 113 - AP Calculus
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
- PHY 120 - Matter in Motion
- MTH 117 - Calculus 4: Integral Vector Calculus
- PHY 121 - Principles of Electromagnetics
- Electives (1)*

one of

- CSC 103 - Taming Big Data: Introduction to Computer Science
or
- CSC 104 - Robots Rule! Introduction to Computer Science
or
- CSC 105 - Game Development: Introduction to Computer Science
or
- CSC 106 - Can Computers Think? Introduction to Computer Science
or
- CSC 107 - Creative Computing: Introduction to Computer Science
or
- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science

Second Year

- ECE 118 - Introduction to Computer and Logic Design
- ECE 218 - Embedded Microcontroller Projects
- ECE 225 - Electric Circuits
- ECE 240 - Circuits and Systems
- SRS 200 - Sophomore Research Seminar
- MTH 130 - Ordinary Differential Equations
or
- ECE 241 - Discrete Systems **
- MTH 234 - Differential Equations
- ECE 248 - Introduction to Semiconductor Devices and Circuits
- Electives (3)*

Third Year***

- ECE 343 - Introduction to Electromagnetic Engineering
- ECE 366 - Control Systems
- ECE 350 - Communication Systems
- ECE 497 - Electrical and Computer Engineering Capstone Design Project 1
- Math/Science elective
- Science elective
- Electives (5)*

Fourth Year

- ECE 351 - Probability and Digital Communications
- ECE 363 - Analysis and Design of Electronic Circuits
- ECE 498 - Electrical and Computer Engineering Capstone Design Project 2
- ECE 499 - Electrical and Computer Engineering Capstone Design Project 3
- ECE electives (3)
- Electives (3)*

Note(s):

* Electives should be chosen to meet remaining common curriculum requirements, and to customize each student's educational goals, including double-majors and/or minors. Students should work with their academic advisor to develop an appropriate plan of study.

**ECE 241 may also be taken during the fall or spring term of the junior year.

*** The fall term of the third year is the most common term for going on a full term abroad. With appropriate planning, students may go on winter and spring terms abroad as well.

Requirements for Honors:

In addition to meeting all of the general college requirements for honors, candidates for honors in electrical engineering must present their senior project at the Steinmetz Symposium.

Requirements for the Five-Year Combined BS/MS in Electrical Engineering:

Union undergraduate students may apply to this program offered in conjunction with Clarkson University Capital Region Campus where both a B.S. and an M.S. degree in electrical engineering are earned in five years. Students are encouraged to apply during sophomore year but no later than the end of the fall term of their senior year. A 3.0 overall GPA is expected for admission. Students enrolled in the program may count up to three Electrical Engineering courses toward both degrees. A petition requesting overlapping degree credit must be approved by the undergraduate and graduate advisors and filed with the graduate office. The Master of Science program is described in the catalog of Clarkson University.

Energy Studies

Director: Professor Ann Anderson (Mechanical Engineering)

Energy Studies Minor

This program of study is available to students as a minor. Students take two core technical courses, two core policy courses and then choose two additional courses from a list of electives. This minor is designed for students in any major who are interested in energy related issues. Students completing this minor will gain both a technical and policy background which will help them to understand the technical, economic, sociological and policy issues surrounding energy and energy usage. Students are encouraged to participate in the New Zealand mini-term abroad as part of this program.

Requirements for the Minor:

The course requirements are organized around a technical core (2 courses), a policy core (2 courses) and upper level electives (2 courses). No more than two courses may count towards a major in another discipline.

Required Technical Core Course (2):

- CHM 101 - Introductory Chemistry 1 offered every term, multiple sections

one of the following:

- MER 231 - Thermodynamics 1
- or
- PHY 123 - Heat and Light

Required Policy Core Course: (2)

(alternative courses must be approved by minor advisor):

- ECO 228 - Environmental and Natural Resource Economics

one of the following:

- ANT 241 - Environmental Anthropology
- or
- HST 225 - American Environmental History
- or
- PHL 273 - Environmental Ethics
- or
- PHL 274 - Environmental History and Literature

or

- PSC 272 - The Environment, Energy, and US Politics

or

- SOC 270 - Social Movements, the Environment, and Society

or

- SOC 359 - Environmental Policy and Resource Management

Elective Courses:

pick any 2 in consultation with minor advisor, alternative courses must be approved by minor advisor:

Engineering Courses:

- ECE 341 - Energy Conversion
- ECE 360 - Power System Analysis 1
- ENS 200 - Energy
- ENS 209 - Renewable Energy Systems
- ENS 253 - Environmentally Friendly Buildings
- MER 232 - Thermodynamics 2
- MER 471 - Solar Energy Analysis and Design

Science Courses:

- GEO 108 - Earth Resources
- GEO 112 - Environmental Geology
- GEO 120 - The Earth and Life Through Time

Social Science Courses:

- ANT 241 - Environmental Anthropology
- HST 225 - American Environmental History
- PHL 273 - Environmental Ethics
- PHL 274 - Environmental History and Literature
- PSC 272 - The Environment, Energy, and US Politics
- SOC 270 - Social Movements, the Environment, and Society
- SOC 359 - Environmental Policy and Resource Management
- TAB 333T - New Zealand Mini-Term Abroad (offered every year)

Engineering

Bachelor of Science degrees are offered in bioengineering, computer engineering, electrical engineering, and mechanical engineering. All four engineering programs are accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>). Other major and minor

programs that include engineering components are energy studies, environmental science, environmental engineering, and nanotechnology. Please see the relevant sections of the Academic Register for descriptions of these areas of study.

Course Selection Guidelines

Course Sequence: The first year in engineering begins with ESC 100 (Exploring Engineering), a course that introduces students to engineering disciplines through interdisciplinary design projects, presentations by engineering professionals, and a hands-on team design project. First year engineering students also take three terms of calculus and two terms of physics (PHY 120, PHY 121). There are different calculus sequences that can be taken based on the high school math background of the student; students take a placement exam in the summer before their first year to determine their calculus sequence. An Integrated Math/Physics sequence (IMP 120, IMP 121) that roughly spans the content of MTH 115, MTH 117 and PHY 120, PHY 121 is an option for some first year students. Students are encouraged to choose an engineering major early in the first year since program curricula begin to diverge in the winter term; however, students do not need to declare their major until the spring term of the first year.

Engineering students complete the College's Common Curriculum requirements; details of these requirements can be found in the Common Curriculum section of the Academic Register. Students are strongly encouraged to satisfy the Common Curriculum linguistic and cultural competency requirement by going abroad; they may go on any of the terms abroad listed in the International Programs section of the Academic Register by notifying their academic advisor early of their interest in a particular program and working closely with their advisor on course selection.

Engineering Science Courses

Courses listed in this section are general engineering courses common to more than one program.

English

Chair: Associate Professor B. Kuhn

Faculty: Professors P. Heinegg, H. Jenkins, J. Smith; Associate Professors C. Bracken, K. Doyle, J. Lewin, K. Lynes, J. Murphy (on leave Fall 2016, Winter 2017), B. Tuon, P. Wareh (Term Abroad Fall 2016; on leave Winter-Spring 2017); Assistant Professors A. Burkett, J. Troxell (On leave 2016-17); Senior Lecturer A. Pease; Visiting Assistant Professors J. Mitchell, J. Sargent

Staff: Open (Administrative Assistant)

Course Selection Guidelines

Placement: Unless they have scored a 5 on the AP English Literature or AP English Language test (see below), incoming students should enroll in EGL 100, EGL 101, or EGL 102; alternatively, they may choose to take a non-writing-intensive EGL course numbered 0-99 (see below, "courses Suitable for Non-Majors").

Scores of "5" on AP English Exams:

The English department recognizes an AP score of 5 as sufficient preparation for study at the intermediate (200-) level; therefore, any students with this test score may choose to enroll at the 200-level in English without the 100-level prerequisite. Note: English majors and minors cannot, however, use this AP credit to reduce the number of courses taken to fulfill major or minor requirements. English majors with an AP 5 still need 12 courses (7 for minors/ 8 for IDs). With AP credit specifically offsetting a 100-level prerequisite, the number of required 100-levels is reduced to one for majors, and zero for minors and IDs; therefore, de facto, majors and minors with an AP 5 get to take an extra elective.

Currently at Union College, a grade of 4 or 5 on an AP English Literature or AP English Language test earns an unspecified course credit that may be counted toward graduation. However, all students still must fulfill the requirements of the Common Curriculum. AP credit does not fulfill or substitute for HUL or WAC requirements; students with AP 5s may choose to fulfill these requirements in English with an intermediate (200-) level EGL course instead of a 100-level course.

Courses Suitable for Non-Majors:

The English department occasionally offers Common Curriculum courses, intended for non-majors. These courses have numbers between 0 and 99, and are lecture-plus-exam courses rather than writing-intensive courses; however, they do carry HUL credit. Any student is welcome to enroll in a 100-level course after taking a course numbered 0-99, but there is no prerequisite for any 100-level course. Note: Common Curriculum courses do not count towards the English major or minor.

Non-majors and majors alike are welcome to enroll in EGL 100 , EGL 101 , or EGL 102 , which are suitable for non-majors. EGL 100 and 102 are petition courses so as to help process high demand.

Any student who has completed EGL 100, 101, or 102 may then enroll in any 200-level EGL course (see also AP 5 information above). All 200-level courses are equal in difficulty.

300 and 400 level EGL seminars are petition courses; they are intended mainly for majors, who will be given priority in enrollment. Depending upon demand within the major, some seats may be available for non-majors (at the discretion of the instructor).

Prerequisites:

- EGL 100, EGL 101, or EGL 102 is a prerequisite for any 200-level course. (See AP5 information above)
- To enroll in a 300-level EGL course, a student must have taken EGL 100, EGL 101, or EGL 102 and two 200-level EGL courses.
- To enroll in a 400-level EGL course, a student must have taken two introductory courses (selecting from EGL 100, EGL 101, and EGL 102) and four 200-level EGL courses.

Enrollment Limits: Enrollment limits for the categories of courses are as follows:

- 60 for Common Curriculum Courses (0-99)
- 20 for Introductory Courses (100 level)
- 25 for Intermediate Courses (200 level)
- 15 for Advanced Junior and Senior Seminars (300 and 400 level)

For detailed information about English department courses and activities, consult handouts available in the English department office, or see the English Department's webpage.

Click through below for specific information about major and minor requirements.

English (ID), B.A.

Requirements for the Interdepartmental (ID) Major:

Students wishing to declare an ID major should confer with both Department Chairs to explain how their intellectual interests or plan of study might integrate the two disciplines.

Eight courses including:

One introductory course:

- EGL 100 - Introduction to the Study of Literature: Poetry
- EGL 101 - Introduction to the Study of Literature: Fiction
- EGL 102 - Introduction to the Study of Literature: Drama

One or more of the following Pre-1700 courses

- EGL 202 - Amazons, Saints and Scholars: Women's Writing in the Middle Ages and Renaissance
- EGL 203 - The Age of Heroes: The Anglo-Saxon Era

- EGL 204 - Plague, Revolt, Religion, and Nation: The Fourteenth Century
- EGL 205 - The Road to Canterbury
- EGL 206 - (205) Renaissance Literature
- EGL 208 - Renaissance Drama
- EGL 209 - (206) British Literature: The 1590s
- EGL 210 - British Literature: Seventeenth-Century Literature
- EGL 211 - Milton
- EGL 212 - The Restoration
- EGL 213 - (209) American Literature in Historical Context: Beginnings to 1800

One Shakespeare course:

- EGL 200 - (223) Shakespeare to 1600
- EGL 201 - (224) Shakespeare after 1600

One Junior Seminar:

- EGL 304 - Jr. Seminar (Fall): The Russian Novel: Leo Tolstoy
- EGL 306 - Jr. Seminar (Spring): Milton

Requirements for Honors in English (ID):

Students seeking interdepartmental honors in English have a 10-course requirement, the usual eight and the two-term thesis seminar. Be advised that Honors ID majors, like full Honors majors, must take the Literary Theory course EGL 302 in their Junior year.

In this seminar (EGL 402 / EGL 403) students are expected to learn research methods, discuss their subjects and approaches to them, and share ideas and writing, as they work toward completing their individual theses under the direction of the seminar instructor. Prospective Honors thesis and Honors ID thesis writers are required to take the Literary Theory Seminar EGL 302 in Winter of their Junior year, prior to applying to write a thesis, whether proposing a creative or an analytical thesis. Students proposing creative theses are strongly encouraged to have already participated in a creative writing workshop in the proposed genre. Interested students should discuss possible thesis subjects with their advisor and other departmental members in order to develop an appropriate thesis topic. Prospective Honors thesis students are required to submit a two-to three-page thesis proposal and writing sample in Spring of their junior year, for review by the department's Honors selection committee.

ID Majors should be particularly attentive to whether the other part of the ID Major *requires* a thesis to complete the major since the English half does not.

English Minor

Requirements for the Minor:

English minors have a seven-course requirement:

The seven course breakdown for the minor is as follows:

One 100-Level course

- EGL 100 - Introduction to the Study of Literature: Poetry
- EGL 101 - Introduction to the Study of Literature: Fiction
- EGL 102 - Introduction to the Study of Literature: Drama

One Shakespeare course

- EGL 200 - (223) Shakespeare to 1600
- EGL 201 - (224) Shakespeare after 1600

*One pre-1700 course

English Majors, minors and ID students all share two requirements. The first is one Shakespeare course, one of which is offered each term. The second requirement is a pre-1700 class, listed as EGL 202 through EGL 215, which covers courses in Medieval, Renaissance, Restoration or Early American literatures.

The pre-1700 and the Shakespeare requirements must be fulfilled with two separate courses. A second course in Shakespeare may count as an elective, but the department wishes to clarify that this practice should not substitute for taking a pre-1700 course.

- EGL 202 - Amazons, Saints and Scholars: Women's Writing in the Middle Ages and Renaissance
- EGL 203 - The Age of Heroes: The Anglo-Saxon Era
- EGL 204 - Plague, Revolt, Religion, and Nation: The Fourteenth Century
- EGL 205 - The Road to Canterbury
- EGL 206 - (205) Renaissance Literature
- EGL 208 - Renaissance Drama
- EGL 209 - (206) British Literature: The 1590s
- EGL 210 - British Literature: Seventeenth-Century Literature
- EGL 211 - Milton
- EGL 212 - The Restoration
- EGL 213 - (209) American Literature in Historical Context: Beginnings to 1800

Three 200-level English courses

- EGL 200 - (223) Shakespeare to 1600
- EGL 201 - (224) Shakespeare after 1600
- EGL 202 - Amazons, Saints and Scholars: Women's Writing in the Middle Ages and Renaissance
- EGL 203 - The Age of Heroes: The Anglo-Saxon Era
- EGL 204 - Plague, Revolt, Religion, and Nation: The Fourteenth Century
- EGL 205 - The Road to Canterbury
- EGL 206 - (205) Renaissance Literature
- EGL 208 - Renaissance Drama
- EGL 209 - (206) British Literature: The 1590s
- EGL 210 - British Literature: Seventeenth-Century Literature
- EGL 211 - Milton
- EGL 212 - The Restoration
- EGL 213 - (209) American Literature in Historical Context: Beginnings to 1800
- EGL 216 - (210) Eighteenth-Century British Literature
- EGL 217 - (214) Enlightenment and Romanticism
- EGL 218 - European Novel in Translation
- EGL 219 - Rise of the Novel
- EGL 220 - (211) The Romantic Revolution

- EGL 221 - (235) Romanticism and Media Studies
- EGL 224 - 19th-Century Novel
- EGL 225 - (291) The Brontë Sisters
- EGL 226 - (266) Victorian Detective Fiction
- EGL 227 - Governess Tales
- EGL 228 - (264) Novels of Education
- EGL 230 - (253) Desire, Incest, Cross-dressing, and Homo-erotica: Identity Politics In the Early American Sentimental Novel
- EGL 231 - (215) Nineteenth-Century American Literature
- EGL 232 - The American Renaissance
- EGL 233 - (216) African American Literature: Beginnings to 1900: Vision and Re-Vision
- EGL 236 - (229) American Realism and Naturalism
- EGL 237 - (219) African-American Literature 1900-Present
- EGL 239 - (217) American Literature and Culture: 1900-1960
- EGL 240 - (218) American Literature and Culture: 1960-Present
- EGL 241 - (260) From the Greatest Generation to the Generation Gap: American Fiction, 1900-1960
- EGL 242 - (261) Time Travelers, Dark Knights, and Grrrls [sic] with Attitude: American Fiction, 1960-Present
- EGL 246 - (270) Modern Poetry
- EGL 247 - (294) Studies in Modern Poets: Bishop and Gunn
- EGL 248 - (274) Introduction to Black Poetry
- EGL 249 - American Poetry Since 1960
- EGL 250 - (234) The Beats and Contemporary Culture
- EGL 253 - (254) Narratives of Haunting in US Ethnic Literature
- EGL 254 - (255) Discourses on the Viet Nam War
- EGL 255 - (244) Asian American Literature and Film
- EGL 258 - (252) Changing Ireland
- EGL 259 - (247) Irish Literature and Film
- EGL 260 - (297) James Joyce
- EGL 264 - (237) Women Writers, 18th to 20th Century
- EGL 265 - (238) Jewish Women Writers
- EGL 266 - (240) Black Women Writers
- EGL 268 - Gender and Genre
- EGL 270 - Humanities: The Origins
- EGL 099 - (271) The Bible: An Introduction
- EGL 272 - (279) Epic
- EGL 273 - Satire
- EGL 098 - (274) Tragedy
- EGL 275 - Autobiography
- EGL 276 - (281) Literature of the Manor House
- EGL 277 - Philosophical Fiction
- EGL 278 - (287) Science Fiction
- EGL 279 - (250) Literature and Science
- EGL 280 - Nature and Environmental Writing
- EGL 287 - Gender and Sexuality in Film
- EGL 288 - (285) Film as Fictive Art: World Cinema - History and Analysis
- EGL 289 - Studies in a Major Film Director
- EGL 290 - (288) Studies in Film Genre/Style: Documentary
- EGL 293 - (200) Workshop in Poetry
- EGL 294 - (201) Workshop in Fiction
- EGL 295 - (202) Workshop in Non-Fiction Prose
- EGL 296 - (299) Power of Words

One 300-level English course

- EGL 300 - Jr. Seminar: Poetry Workshop
- EGL 301 - Jr. Seminar: Fiction Workshop
- EGL 302 - Jr. Seminar: Literary Theory
- EGL 304 - Jr. Seminar (Fall): The Russian Novel: Leo Tolstoy
- EGL 306 - Jr. Seminar (Spring): Milton

English, B.A.

Requirements for the Major:

12-courses: two introductory, seven intermediate, and three advanced.

1. Two Introductory Courses chosen from the following:

- EGL 100 - Introduction to the Study of Literature: Poetry
- EGL 101 - Introduction to the Study of Literature: Fiction
- EGL 102 - Introduction to the Study of Literature: Drama

Note: These three courses emphasize close reading of primary texts and help students acquire the vocabulary to speak and write clearly and intelligently about literature. The specific texts and approaches in each section are chosen by the instructor.

Note: Detailed descriptions of the various sections of EGL 100, EGL 101, and EGL 102 are available in the English department office the week before pre-enrollment each term and on the English Department webpage.

Note: Majors must complete the second Introductory Course no later than the winter term of the junior year.

2. Seven Intermediate Courses:

At least one Introductory Course is a prerequisite to courses at the Intermediate level (see exception for students who received a 5 on their AP exam in either English language or literature). In this group, majors must complete the following courses:

One course on Shakespeare

- EGL 200 - (223) Shakespeare to 1600
- EGL 201 - (224) Shakespeare after 1600

One course on literature from a period before 1700

- EGL 203 - The Age of Heroes: The Anglo-Saxon Era
- EGL 204 - Plague, Revolt, Religion, and Nation: The Fourteenth Century
- EGL 205 - The Road to Canterbury
- EGL 206 - (205) Renaissance Literature
- EGL 208 - Renaissance Drama
- EGL 209 - (206) British Literature: The 1590s
- EGL 210 - British Literature: Seventeenth-Century Literature
- EGL 211 - Milton

- EGL 212 - The Restoration
- EGL 213 - (209) American Literature in Historical Context: Beginnings to 1800

One course on eighteenth to nineteenth-century literature (1700-1900)

- EGL 216 - (210) Eighteenth-Century British Literature
- EGL 217 - (214) Enlightenment and Romanticism
- EGL 218 - European Novel in Translation
- EGL 219 - Rise of the Novel
- EGL 220 - (211) The Romantic Revolution
- EGL 221 - (235) Romanticism and Media Studies
- EGL 224 - 19th-Century Novel
- EGL 225 - (291) The Brontë Sisters
- EGL 226 - (266) Victorian Detective Fiction
- EGL 227 - Governess Tales
- EGL 228 - (264) Novels of Education
- EGL 230 - (253) Desire, Incest, Cross-dressing, and Homo-erotica: Identity Politics In the Early American Sentimental Novel
- EGL 231 - (215) Nineteenth-Century American Literature
- EGL 232 - The American Renaissance
- EGL 233 - (216) African American Literature: Beginnings to 1900: Vision and Re-Vision

Four intermediate electives

Selected with faculty guidance so as to reflect each student's interests, intentions, and plans after Union College

- EGL 236 - (229) American Realism and Naturalism
- EGL 237 - (219) African-American Literature 1900-Present
- EGL 239 - (217) American Literature and Culture: 1900-1960
- EGL 240 - (218) American Literature and Culture: 1960-Present
- EGL 241 - (260) From the Greatest Generation to the Generation Gap: American Fiction, 1900-1960
- EGL 242 - (261) Time Travelers, Dark Knights, and Grrrls [sic] with Attitude: American Fiction, 1960-Present
- EGL 246 - (270) Modern Poetry
- EGL 247 - (294) Studies in Modern Poets: Bishop and Gunn
- EGL 248 - (274) Introduction to Black Poetry
- EGL 249 - American Poetry Since 1960
- EGL 250 - (234) The Beats and Contemporary Culture
- EGL 253 - (254) Narratives of Haunting in US Ethnic Literature
- EGL 254 - (255) Discourses on the Viet Nam War
- EGL 255 - (244) Asian American Literature and Film
- EGL 258 - (252) Changing Ireland
- EGL 259 - (247) Irish Literature and Film
- EGL 260 - (297) James Joyce
- EGL 264 - (237) Women Writers, 18th to 20th Century
- EGL 265 - (238) Jewish Women Writers
- EGL 266 - (240) Black Women Writers
- EGL 268 - Gender and Genre
- EGL 270 - Humanities: The Origins
- EGL 272 - (279) Epic
- EGL 273 - Satire
- EGL 275 - Autobiography

- EGL 276 - (281) Literature of the Manor House
- EGL 277 - Philosophical Fiction
- EGL 278 - (287) Science Fiction
- EGL 279 - (250) Literature and Science
- EGL 280 - Nature and Environmental Writing
- EGL 287 - Gender and Sexuality in Film
- EGL 288 - (285) Film as Fictive Art: World Cinema - History and Analysis
- EGL 289 - Studies in a Major Film Director
- EGL 290 - (288) Studies in Film Genre/Style: Documentary
- EGL 293 - (200) Workshop in Poetry
- EGL 294 - (201) Workshop in Fiction
- EGL 295 - (202) Workshop in Non-Fiction Prose
- EGL 296 - (299) Power of Words
- EGL 296H - English Honors Independent Project 2
- EGL 299 - Literary Research Practicum 3

3. Three Advanced Courses:

Advanced courses, also called Junior Seminars and Senior Seminars, are writing intensive, typically research oriented, and usually organized around the work of particular authors or topics. Students must complete three advanced courses, including one Junior Seminar, one Senior Seminar, and one seminar of choice, either 300 level or 400 level. Students must take at least two Intermediate Courses before enrolling in a Junior Seminar. Students must take at least four Intermediate Courses and both Introductory Courses before enrolling in a Senior Seminar. Students are strongly advised to take at least one Junior Seminar before enrolling in a Senior Seminar.

Junior Seminars:

- EGL 300 - Jr. Seminar: Poetry Workshop
- EGL 302 - Jr. Seminar: Literary Theory
- EGL 304 - Jr. Seminar (Fall): The Russian Novel: Leo Tolstoy
- EGL 306 - Jr. Seminar (Spring): Milton

Senior Seminars:

- EGL 400 - Sr. Seminar: Poetry Workshop
to
- EGL 406 - Sr. Seminar (Spring): Langston Hughes

Requirements for Honors in English

Fourteen courses are required for honors, the usual twelve plus a two-term honors thesis seminar, EGL 402 and EGL 403.

In this seminar, students are expected to learn research methods, discuss their subjects and approaches to them, and share ideas and writing, as they work toward completing their individual theses under the direction of the seminar instructor. Prospective Honors thesis writers are required to take the Literary Theory Seminar EGL 302 in Winter of their Junior year, prior to applying to write a thesis, whether proposing a creative or an analytical thesis. Students proposing creative theses are strongly encouraged to have already participated in a creative writing workshop in the proposed genre. Interested students should discuss possible thesis subjects with their advisor and other departmental members in order to develop an appropriate

thesis topic. Prospective Honors students are required to submit a two-to three-page thesis proposal and writing sample in Spring of their junior year, for review by the department's Honors selection committee.

Entrepreneurship

Director: Professor H. Fried (Economics)

Courses in a variety of departments at Union examine ways in which entrepreneurs think and act. As students identify how people, in many times and places, have succeeded in attaining their visions for change, they will develop an ability to do the same themselves. In addition to department-based courses, several interdisciplinary courses described below provide multidisciplinary approaches to skills including critical analysis and communication that will enable students to put their own ideas and inspiration into action in their chosen fields and areas of interest.

Entrepreneurial Courses

Visual Arts

- AAH 208 - The Business of Visual Art and Contemporary Entrepreneurship

Anthropology

- ANT 232T - Fiji Culture & Entrepreneurship

Classics

- CLS 151 - The Ancient World in Film and Literature
- CLS 157 - Entrepreneurship in the Ancient World

Economics

- ECO 230 - Mind of the Entrepreneur
- ECO 332 - Economics of Technological Change
- ECO 232T - Fiji Culture and Entrepreneurship

History

- HST 143 - Entrepreneurship in Medieval and Renaissance Europe

Political Science

- PSC 351 - Global Organized Crime

Interdisciplinary Courses

Courses that take multidisciplinary approaches to entrepreneurship

- ISC 260 - (IDM-260) Social Entrepreneurship
- ISC 299 - Developing a Vision
- ISC 325 - (IDM-325) Entrepreneurship Seminar

Environmental Science, Policy and Engineering

Director: Professor J. D. Klein (Economics)

Faculty: Professors S. Rice (Biological Sciences), M. Hagerman (Chemistry), J. Kenney (Economics), J. Garver (Geology), K. Hollocher (Geology), D. Rodbell (Geology), A. Ghaly (Engineering), M. Mafi (Engineering), R. Wilk (Mechanical Engineering), I. Kaplan (Sociology); Associate Professors J. Corbin (Biological Sciences), K. LoGiudice (Biological Sciences), L. MacManus-Spencer (Chemistry), K. Lynes (English), J. Murphy (English), H. Frey (Geology), D. Gillikin (Geology), A. Morris (History), K. Bidoshi (Modern Languages), L. Cox (Visual Arts); Senior Lecturers J. Bishop (Biological Sciences), J. Grigsby (Sociology); Lecturer A. Verheyden (Geology)

The Environmental Science, Policy and Engineering (ESPE) program is focused on students with an interest in the science and policy behind the myriad environmental problems that face our world, the political policy mechanisms that may provide solutions to these issues, and the interface between the environment and the human condition. Students in the ESPE program choose either a BS degree in Environmental Science or a BA degree in Environmental Policy. The BS degree emphasizes the biological, chemical, and geological sciences, as well as physics and engineering, while the BA degree emphasizes the social sciences and humanities. A common set of core courses links the two programs. All students take a common introductory course, a core of 8-11 required courses, and 4-6 courses that define an area of concentration. During the senior year, students typically complete two terms of independent research, and participate in a common ESPE senior seminar.

Environmental Engineering Minor

Requirements for the Minor in Environmental Engineering:

This program of study is only available to students as a minor and requires a minimum of six courses, including one core course and five elective courses. This minor is for students who are interested in the engineering and technical aspects of environmental issues. Completion of this minor will introduce the students to the environmental issues involved in several aspects of human endeavor (energy, water, waste, shelter, etc.); and will prepare them to contribute to design teams working to assess and mitigate environmental impacts.

1. Students must complete the following for this minor.

- MTH 102 - Calculus with Precalculus 3
or
- MTH 112 - Calculus 2: Integral Calculus
or
- MTH 113 - AP Calculus
and
- PHY 110 - Physics for the Life Sciences 1
or
- PHY 120 - Matter in Motion

2. Additional Requirement

- ENS 100 - Introduction to Environmental Studies

3. Five courses from the following list of electives.

- ENS 200 - Energy
- ENS 204 - Geographic Information Systems
- ENS 208 - Waste Management and Recycling
- ENS 209 - Renewable Energy Systems
- ENS 247 - Sustainable Infrastructure
- ENS 252 - Environmental Geotechniques
- ENS 253 - Environmentally Friendly Buildings
- ENS 277 - The Water Paradox
- ENS 299 - Environmental Forensics
- MER 231 - Thermodynamics 1

Environmental Policy, B.A.

Requirements for the Major in Environmental Policy

Includes ENS 100, four core policy courses, one quantitative method or spatial analysis course; three required science courses; four upper level policy courses in an area of concentration; one environmental seminar; one senior seminar; and two thesis credits for a total of 17 courses. Specific requirements are listed below:

A. Introductory course

- ENS 100 - Introduction to Environmental Studies

B. Four required policy courses

- ECO 228 - Environmental and Natural Resource Economics

and three from:

- AAH 260 - Nature, Art, and The Environment
- AAH 265 - Environmentalism in Contemporary Art
- ANT 241 - Environmental Anthropology
- ANT 248 - Sustainability Culture
- CLS 153 - The Environment in the Ancient World
- EGL 266 - (240) Black Women Writers

- EGL 280 - Nature and Environmental Writing
- EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape
- ENS 201 - Food Ecology
- HST 225 - American Environmental History
- HST 229 - The Adirondacks and American Environmental History
- MLT-300 Environmental History: Siberia
- PHL 272 - Sustainability Theory & Practice
- PHL 273 - Environmental Ethics
- PSC 260 - Policy Making and American Society
- PSC 272 - The Environment, Energy, and US Politics
- REE 300T - History and Environment of Siberia
- PSC 283 - Social Movements, the Environment and Society
- SOC 260 - Demography: Population and Society
- SOC 270 - Social Movements, the Environment, and Society
- SOC 271 - Sociology of Disaster
- SOC 359 - Environmental Policy and Resource Management

C. One quantitative methods and spatial analysis course

one course from

- ECO 243 - Introduction to Econometrics
- ENS 204 - Geographic Information Systems
- PSC 220 - Social Data Analysis
- PSY 200 - Statistical Methods in Psychology
- SOC 201 - Social Data Analysis
- SOC 300 - Quantitative Methods of Social Research

D. Three required science courses

- BIO 110 - (102) Heredity, Evolution, and Ecology
and
- BIO 320 - Ecology or
- BIO 322 - Conservation Biology or
- BIO 324 - Plant Ecology or
- BIO 350T - Terrestrial Ecology

and one course from

- GEO 106 - Introduction to Oceanography
- GEO 108 - Earth Resources
- GEO 109 - Geologic Perspectives on Global Warming
- GEO 110 - Physical Geology
- GEO 112 - Environmental Geology
- GEO 117 - Natural Disasters
- GEO 120 - The Earth and Life Through Time

E. Four upper level policy courses in an area of concentration

(no double counting from A-D, above). The following are suggested areas of concentration; alterations should be approved by the ESPE Director.

Please Note: Up to two internships may be counted toward any of the tracks below, provided the subject of the internship is selected with that track in mind and approved in writing by both the relevant internship director and the ESPE Director; specific internships include:

- ANT 232T / ECO 232T - Fiji Culture and Entrepreneurship
- ANT 490T - Anthropology Independent Study Abroad
- ECO 390 - Economics Internships
- MLT 300T - Irkutsk, Russia Internship
- PSC 277 - Capital Region Political Internships
- PSC 279T - Term in Washington D.C. Project
- SOC 385 - Internship in the Delivery of Human Services

Environmental Law and Management

- CLS 153 - The Environment in the Ancient World
- ENS 208 - Waste Management and Recycling
- ENS 299 - Environmental Forensics
- GEO 109 - Geologic Perspectives on Global Warming
- GEO 209 - Paleoclimatology
- GEO 355T - Living on the Edge
- HST 138 - Big History
- HST 225 - American Environmental History
- HST 229 - The Adirondacks and American Environmental History
- PHL 272 - Sustainability Theory & Practice
- PHL 273 - Environmental Ethics
- PSC 260 - Policy Making and American Society
- PSC 264 - Congressional Politics
- PSC 272 - The Environment, Energy, and US Politics
- PSC 273 - The Supreme Court and Judicial Politics
- SOC 240 - Political Sociology
- SOC 260 - Demography: Population and Society
- SOC 270 - Social Movements, the Environment, and Society

Environmental Problems and Response

- AAH 260 - Nature, Art, and The Environment
- AAH 265 - Environmentalism in Contemporary Art
- ANT 241 - Environmental Anthropology
- ANT 248 - Sustainable Culture
- CLS 153 - The Environment in the Ancient World
- EGL 280 - Nature and Environmental Writing
- EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape
- ENS 201 - Food Ecology
- ENS 208 - Waste Management and Recycling
- ENS 222 - The New Wall of China
- ENS 247 - Sustainable Infrastructure

- ENS 253 - Environmentally Friendly Buildings
 - ENS 291 - Construction for Humanity
 - ENS 299 - Environmental Forensics
 - GEO 109 - Geologic Perspectives on Global Warming
 - GEO 209 - Paleoclimatology
 - GEO 355T - Living on the Edge
 - HST 225 - American Environmental History
 - HST 291 - Construction for Humanity
 - MLT 209 - The New Wall of China
 - PHL 272 - Sustainability Theory and Practice
 - PHL 273 - Environmental Ethics
 - REE 300T - History and Environment of Siberia
 - SOC 202 - Social Problems, Policy and Pop Culture
 - SOC 260 - Demography: Population and Society
 - SOC 270 - Social Movements, the Environment, and Society
 - SOC 271 - Sociology of Disaster
 - SOC 370 - Public Health Care Policy and Society
 - SOC 387T - Community Service Miniterm
 - TAB 321T - Buenos Aires Mini -Term*
 - TAB 333T - New Zealand Mini-Term Abroad
 - TAB 344T - Egypt Mini-Term*
 - TAB 358T - Sustainability Down Under
- *Provided term paper is written on an environmental topic

Energy and Sustainability

- BIO 322 - Conservation Biology
- ENS 200 - Energy
- ENS 201 - Food Ecology
- ENS 208 - Waste Management and Recycling
- ENS 209 - Renewable Energy Systems
- ENS 222 - The New Wall of China
- ENS 247 - Sustainable Infrastructure
- ENS 253 - Environmentally Friendly Buildings
- ENS 277 - The Water Paradox
- ENS 291 - Construction for Humanity
- ENS 299 - Environmental Forensics
- HST 291 - Construction for Humanity
- MLT 209 - The New Wall of China
- MLT 300 - Environmental History: Siberia
- PSC 272 - The Environment, Energy, and US Politics
- TAB 333T - New Zealand Mini-Term

F. Environmental Services and Policy

(Junior seminar for Environmental Policy majors)

- SOC 450 - Environmental Services and Policy

G. ESPE Senior Seminar

- ENS 460 - Environmental Science & Policy Senior Seminar

H. Two terms of thesis research

- ENS 498 - Environmental Science & Policy Research 1
- ENS 499 - Environmental Science & Policy Research 2

Requirements for Honors in Environmental Science, Policy, and Engineering:

The major requirements as specified above are required, as are the GPA requirements of Union College described elsewhere in this catalog.

Environmental Science and Policy Minor

Requirements for the Minor in Environmental Science and Policy:

1. ENS 100
2. Either two science courses and three policy courses, or three science courses and two policy courses. Courses must be selected from the following lists. No more than two courses may be taken from any one department, and no more than one course may be taken at the 100 level.

Science Courses

Biology:

- BIO 320 - Ecology
- BIO 322 - Conservation Biology
- BIO 324 - Plant Ecology

Chemistry:

- CHM 101 - Introductory Chemistry 1
- CHM 245 - Environmental Chemistry

Environmental Science, Policy, and Engineering:

- ENS 200 - Energy
- ENS 204 - Geographic Information Systems

- ENS 208 - Waste Management and Recycling
- ENS 209 - Renewable Energy Systems
- ENS 222 - The New Wall of China
- ENS 247 - Sustainable Infrastructure
- ENS 252 - Environmental Geotechniques
- ENS 253 - Environmentally Friendly Buildings
- ENS 277 - The Water Paradox
- ENS 291 - Construction for Humanity
- ENS 299 - Environmental Forensics

Geology:

- GEO 106 - Introduction to Oceanography
- GEO 109 - Geologic Perspectives on Global Warming
- GEO 112 - Environmental Geology
- GEO 117 - Natural Disasters
- GEO 203 - Lakes and Environmental Change
- GEO 206 - Volcanology
- GEO 207 - Stable Isotopes in Environmental Science
- GEO 300 - Glacial and Quaternary Geology
- GEO 302 - Geochemical Systems and Modeling
- GEO 305 - Biogeochemistry
- GEO 355T - Living on the Edge

Policy Courses

Art History:

- AAH 260 - Nature, Art, and The Environment
- AAH 265 - Environmentalism and Globalization in Contemporary Art

Anthropology:

- ANT 241 - Environmental Anthropology

Classics:

- CLS 153 - The Environment in the Ancient World

Economics:

- ECO 228 - Environmental and Natural Resource Economics

English:

- EGL 280 - Nature and Environmental Writing
- EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape

Environmental Science, Policy, and Engineering:

- ENS 222 - The New Wall of China
- ENS 291 - Construction for Humanity

Geology:

- GEO 109 - Geologic Perspectives on Global Warming
- GEO 355T - Living on the Edge

History:

- HST 138 - Big History
- HST 225 - American Environmental History
- HST 229 - The Adirondacks and American Environmental History
- HST 291 - Construction for Humanity

Modern Languages in Translation:

- MLT 300 - Environmental History: Siberia

Philosophy:

- PHL 273 - Environmental Ethics
- PHL 274 - Environmental History and Literature

Political Science:

- PSC 272 - The Environment, Energy, and US Politics

Sociology:

- SOC 260 - Demography: Population and Society
- SOC 271 - Sociology of Disaster
- SOC 359 - Environmental Policy and Resource Management
- SOC 370 - Public Health Care Policy and Society
- SOC 450 - Environmental Services and Policy

Terms Abroad:

- REE 300T - Internship (Irkutsk, Russia)*
 - SOC 387T - Community Service Miniterm
 - TAB 321T - Buenos Aires Mini-Term*
 - TAB 333T - New Zealand Mini-Term
 - TAB 344T - Egypt Mini-Term*
- * Provided research project involves an environmental topic

Environmental Science, B.S.

Requirements for the Major in Environmental Science

Includes ENS 100, 11-13 science courses; two math/statistics courses; two policy courses; senior seminar, and one or two thesis (research) or senior writing credits, for a total of 17-20 courses. Specific requirements are listed below:

A. Seven to nine required core courses

- ENS 100 - Introduction to Environmental Studies
- BIO 110 - (102) Heredity, Evolution, and Ecology
- BIO 315 - Biology of Plants
or
- BIO 320 - Ecology
or
- BIO 322 - Conservation Biology
or
- BIO 324 - Plant Ecology
or
- BIO 350T - Terrestrial Ecology of Australia
- CHM 101 - Introductory Chemistry 1
and
- CHM 102 - Introductory Chemistry 2
or

- CHM 110H - Honors Introductory Chemistry
- GEO 110 - Physical Geology
or
- GEO 112 - Environmental Geology
or
- GEO 117 - Natural Disasters
or
- GEO 120 - The Earth and Life Through Time
- ENS 204 - Geographic Information Systems
- MTH 113 - AP Calculus
or
- MTH 110 - Calculus 1: Differential Calculus
and
- MTH 112 - Calculus 2: Integral Calculus
or
- PSY 200 - Statistical Methods in Psychology

B. Two environmental policy courses

- AAH 260 - Nature, Art, and The Environment
- AAH 265 - Environmentalism in Contemporary Art
- ANT 241 - Environmental Anthropology
- ANT 248 - Sustainable Culture
- CLS 153 - The Environment in the Ancient World
- ECO 228 - Environmental and Natural Resource Economics
- EGL 280 - Nature and Environmental Writing
- EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape
- ENS 201 - Food Ecology
- ENS 222 - The New Wall of China
- ENS 291 - Construction for Humanity
- HST 138 - Big History
- HST 225 - American Environmental History
- HST 229 - The Adirondacks and American Environmental History
- MLT 209 - The New Wall of China
- MLT 300 - Environmental History: Siberia
- PHL 272 - Sustainability Theory And Practice
- PHL 273 - Environmental Ethics
- PSC 260 - Policy Making and American Society
- PSC 272 - The Environment, Energy, and US Politics
- REE 300T - History and Environment of Siberia
- SOC 260 - Demography: Population and Society
- SOC 270 - Social Movements, the Environment, and Society
- SOC 271 - Sociology of Disaster
- SOC 450 - Environmental Services and Policy

C. Six upper level science courses and area of concentration

(no more than four courses from any one department except for Environmental Engineering and Technology students; no double counting from A-B, above. The following are suggested areas of concentration; alterations should be approved by the ESPE Director):

Ecology

- BIO 250 - Vertebrate Natural History
- BIO 257T - Tropical Rainforest Ecology
- BIO 314 - Ornithology
- BIO 315 - Biology of Plants
- BIO 320 - Ecology
- BIO 321 - Herpetology: Biology of Amphibians and Reptiles
- BIO 322 - Conservation Biology
- BIO 324 - Plant Ecology
- BIO 325 - Animal Behavior
- BIO 350 - Evolutionary Biology
- BIO 350T - Terrestrial Ecology of Australia
- BIO 352T - Marine Ecology of Australia
- ENS 201 - Food Ecology
- GEO 202 - Geomorphology
- GEO 203 - Lakes and Environmental Change
- GEO 207 - Stable Isotopes in Environmental Science
- GEO 208 - Paleontology, Paleobiology, and Paleoecology
- GEO 209 - Paleoclimatology
- GEO 300 - Glacial and Quaternary Geology
- GEO 305 - Biogeochemistry
- GEO 355T - Living on the Edge

Environmental Geosciences

- BIO 235 - (305) Biogeochemistry
- BIO 314 - Ornithology
- BIO 315 - Biology of Plants
- BIO 320 - Ecology
- BIO 321 - Herpetology: Biology of Amphibians and Reptiles
- BIO 324 - Plant Ecology
- BIO 350T - Terrestrial Ecology of Australia
- BIO 352T - Marine Ecology of Australia
- CHM 231 - Organic Chemistry 1
- CHM 240 - Analytical Chemistry
- CHM 245 - Environmental Chemistry
- CHM 340 - Chemical Instrumentation
- GEO 201 - Stratigraphy and Depositional Environments of New York
- GEO 202 - Geomorphology
- GEO 203 - Lakes and Environmental Change
- GEO 205 - Tectonics
- GEO 206 - Volcanology
- GEO 207 - Stable Isotopes in Environmental Science

- GEO 208 - Paleontology, Paleobiology, and Paleoecology
- GEO 209 - Paleoclimatology
- GEO 300 - Glacial and Quaternary Geology
- GEO 302 - Geochemical Systems and Modeling
- GEO 305 - Biogeochemistry
- Any Geology mini-term.

Energy and Environmental Physics

- PHY 110 - Physics for the Life Sciences 1
and
- PHY 111 - Physics for the Life Sciences 2
or
- PHY 120 - Matter in Motion
and
- PHY 121 - Principles of Electromagnetics
or
- IMP 120-121

and four from the following:

- ENS 200 - Energy
- ENS 209 - Renewable Energy Systems
- MER 231 - Thermodynamics 1
- MER 471 - Solar Energy Analysis and Design
- PHY 122 - Relativity, Quantum, and Their Applications
- PHY 123 - Heat and Light
- PHY 220 - Relativity and Introduction to Quantum Mechanics
- PHY 300 - Methods of Modern Experimental Physics
- PHY 310 - Advanced Topics in Physics 1

Environmental Engineering and Technology

- PHY 120 - Matter in Motion

and five from the following:

- ENS 200 - Energy
- ENS 207 - Hydrology
- ENS 208 - Waste Management and Recycling
- ENS 209 - Renewable Energy Systems
- ENS 222 - The New Wall of China
- ENS 247 - Sustainable Infrastructure
- ENS 252 - Environmental Geotechniques
- ENS 253 - Environmentally Friendly Buildings

- ENS 277 - The Water Paradox
- ENS 291 - Construction for Humanity
- ENS 299 - Environmental Forensics
- ESC 370 - Engineering Economics
- HST 291 - Construction for Humanity
- MER 231 - Thermodynamics 1
- TAB 333T - New Zealand Mini-Term

D. Senior Seminar

- ENS 460 - Environmental Science & Policy Senior Seminar

E. Two terms of thesis research

- ENS 498 - Environmental Science & Policy Research 1
- ENS 499 - Environmental Science & Policy Research 2

or a one term senior research project

- ENS 497 - Environmental Science & Policy Senior Research
or
- SOC 450 - Environmental Services and Policy with senior writing assignment.

Requirements for Honors in Environmental Science, Policy, and Engineering:

The major requirements as specified above are required, as are the GPA requirements of Union College described elsewhere in this catalog.

Ethics Across the Curriculum

Director: Professor B. Baker (Philosophy)

Ethics Across the Curriculum, funded by alumnus Michael Rapaport ('59), is a college-wide initiative that provides support for faculty to incorporate teaching about everyday ethics into their course curricula. Everyday ethics is about integrity and cheating, honesty and dishonesty, justice and injustice. Courses incorporating an Ethics Across the Curriculum segment help students learn what everyday ethics is and how its principles are incorporated into many disciplines that deal with substantive issues other than ethics, such as anthropology, chemistry, engineering, and literature.

Art History

AAH 208 - The Business of Visual Art and Contemporary Entrepreneurship

Chemistry

CHM 260 - Inorganic Chemistry

Classics

CLS 146 - Sex and Gender in Classical Antiquity

CLS 178 - Ancient World Mythology (278)

Computer Science

CSC 106 - Can Computers Think? Introduction to Computer Science

(ethics component included when taught by K. Striegnitz).

Economics

ECO 101 - Introduction to Economics

ECO 225 - Economics of Sin

ECO 226 - Financial Markets

ECO 230 - Mind of the Entrepreneur

ECO 331 - E-Commerce Economics

ECO 334 - Introduction to Financial Analysis

ECO 375 - Efficient Management of Technology

Engineering

SMT 123 - Ethics, Technology & Society

English

EGL 101 - Introduction to the Study of Literature: Fiction

EGL 231 - (215) Nineteenth-Century American Literature

EGL 237 - (219) African-American Literature 1900-Present

EGL 279 - (250) Literature and Science

EGL 254 - (255) Discourses on the Viet Nam War

EGL 296 - (299) Power of Words

Environmental Science

ENS 110 - Introduction to Environmental Science

History

HST 124 - (224) Monuments, Museums, and Movies: Introduction to Public History

Psychology

PSY 300 - Research Methods in Psychology

Sociology

SOC 360 - Domestic Violence

Film Studies

Director: Profesor A. Feffer (History); Associate Professor M. Chilcoat (Modern Languages and Literatures),

Faculty: Lecturer and Filmmaker in Residence J. DeSeve

The Film Studies Minor develops a conscious awareness of film as a basic and widespread medium of cultural communication. The Film Studies Minor provides students with the critical tools necessary for analyzing and evaluating film texts, and for beginning to understand film technologies. It prepares students to pursue academic and/or creative paths for advanced study and/or professional interests in film.

Film Studies Minor

Requirements for the Minor:

A minimum of six approved courses from at least two of the following categories: I. Film History and Culture, II. Film: Disciplines, Theory, Criticism, and III. Film Technologies (see listings below; consult home department or program catalogue listings for course descriptions). In some cases, film courses entail prerequisite requirements; please consult catalogue for prerequisite information. Most Film Studies courses are taught in English, though not all. Consult catalogue for prerequisites for Film Studies courses not conducted in English. All courses for the Film Studies Minor must be approved by the Film Studies Program Directors. If you think a course should count for the Film Studies Minor but is not listed below, contact the Program Directors.

Courses

I. Film History and Cultures

- AAH 222 - History of Photography
- EGL 255 - (244) Asian American Literature and Film
- EGL 258 - (252) Changing Ireland
- EGL 259 - (247) Irish Literature and Film
- EGL 287 - Gender and Sexuality in Film
- FRN 312 - What is French Cinéma?/Qu'est-ce que le cinéma français?
- GER 402 - German Film Studies
- HST 333 - Hollywood Film
- HST 366 - (364) British Cinema
- MLT 201 - Chinese Cinema
- MLT 203 - Asian American Film and Performance
- MLT 265 - Soviet and Russian Film Revolutions: Political, Social, Cultural
- MLT 273 - Re-Viewing Spanish Cinema: From Dictators, Bullfighters and Flamenco to Nationalisms and Globalization
- MLT 281 - Screening Identities in Latin American Cinema
- MLT 286T - Gender and Identity in Contemporary Brazilian Cinema

II. Film: Disciplines, Theory, Criticism

- ANT 240 - Technology, Culture & Society

- CLS 151 - The Ancient World in Film and Literature
- EGL 288 - (285) Film as Fictive Art: World Cinema - History and Analysis
- EGL 289 - Studies in a Major Film Director
- EGL 290 - (288) Studies in Film Genre/Style: Documentary
- FRN 402 - Sex Lives and Videotape: Casting Sexuality in French and Francophone Film
- HST 331 - Representing America: United States History in Film
- MLT 287 - Filming Margins: Cinema Verité and Social Realism in Latin America
- MLT 339 - The Shoah in Film: Cinematic Treatments of Holocaust Trauma and Memory
- PHL 135 - Philosophy in Film
- PSC 364 - (275) Law and Film
- PSC 340 - Politics and Film
- PSC 434 - Feminist Film
- SPN 402 - Dressing Up the Canon: Cross-Dressing in Hispanic Literature and Film
- SPN 433 - Latin American Colonial Crossroads at the Movies

III. Film Technologies

- AVA 120 - Photography 1 - Aesthetics, Film, Chemistry & Printing
- AVA 220 - Photography 2 - Intermediate Photography
- AVA 320 - Photography 3 - Color Digital Photography
- AVA 160 - Digital Art
- AVA 262 - Real and Recorded Time - 4D Art
- CSC 385 - Computer Graphics
- ECE 347 - Image Processing
- ECE 370 - Engineering Acoustics
- EGL 304 - Jr. Seminar (Fall): The Russian Novel: Leo Tolstoy

Gender, Sexuality, & Women's Studies

Director: Associate Professor A. Foroughi (History)

Faculty: Professors M. Goldner (Sociology), T. Meade (History), L. Marso (Political Science), Z. Oxley (Political Science); Associate Professors C. Batson (Modern Languages & Literature) C. Bracken (English), D. Butler (Sociology), J. Lewin (English), J. Murphy (English), E. Nelson (Modern Languages & Literatures), D. Ogawa (Visual Arts), S. Raucci (Classics); Assistant Professors J. Mitchell (English), R. Mazumder (History), S. Mueller (Modern Languages & Literature); Lecturer E. Foster (Economics)

Gender, Sexuality, and Women's Studies (GSWS) is an interdisciplinary program that includes a wide variety of courses offered in arts and humanities and social sciences. Offering a critical perspective that places gender at the center of analysis, GSWS reexamines traditional beliefs, supports new research methods, explores feminist theory, and enables students to better understand the societal positions and global processes affecting all genders throughout the world. GSWS courses probe the way cultures construct concepts of gender, introducing students to differences of class, race, ethnicity, sexual orientation, and life cycle in a range of societies. Students are encouraged to think about gender and racial stereotypes and to become aware of unexamined assumptions about sexual and gender differences.

Gender, Sexuality, and Women's Studies (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses, including Introduction to Gender, Sexuality, and Women's Studies (GSW 100), the Capstone Course (GSW 495), five remaining courses with GSW designation from at least two divisions, and a senior thesis on a subject that examines gender, sexuality, and women, and/or feminism. One term of the senior thesis counts towards the GSW major. Completing GSW 100 before the student's senior year is required, or by permission of the program director. A one-term internship is recommended (see major requirements). Students should confer with the program director in designing and fulfilling their requirements.

Gender, Sexuality, and Women's Studies Minor

Requirements for the Minor:

Six courses, including Introduction to Gender, Sexuality, and Women's Studies (GSW 100), Capstone Course (GSW 495), and four remaining courses with GSW designation from at least two divisions, selected in consultation with the program director. Completing GSW 100 before the student's senior year is required, or by the permission of the program director.

Gender, Sexuality, and Women's Studies, B.A.

Requirements for the Major:

Twelve courses, including Introduction to Gender, Sexuality, and Women's Studies (GSW 100), the Capstone Course (GSW 495), and a two-term senior thesis. The remaining eight courses must be selected from more than 50 GSW courses offered in a variety of departments and crossing at least two of the College's four divisions. Completing GSW 100 before the student's senior year is required, or by permission of the program director. A one-term internship at a designated locale in the Capital District is highly recommended and can be counted as one of the eight required courses (see director for details). Students should confer with the program director in designing and fulfilling their requirements.

Complete course lists are available on the Gender, Sexuality, and Women's Studies program website.

[Click to view the selection of Gender, Sexuality, and Women's Studies Approved Courses](#)

Requirements for Honors:

Candidates for honors must meet College requirements, have a cumulative grade point average of 3.3 in Gender, Sexuality, and Women's Studies, at least three "A" or "A-minus" grades in Gender, Sexuality, and Women's Studies courses, and have earned an "A" or "A-minus" on the senior thesis. Departmental honors are formally awarded at the discretion of the director of Gender, Sexuality, and Women's Studies in consultation with GSWS faculty.

Geology

Chair: Professor D. Rodbell

Faculty: Professors J. Garver, K. Hollocher; Associate Professors H. Frey, D. Gillikin; Lecturers M. Manon, A. Verheyden-Gillikin

Staff: W. Neubeck (Technician), D. Klein (Administrative Assistant)

Course Selection Guidelines: None of the 100-level courses in Geology have prerequisites, but only GEO 110, GEO 112, GEO 117, and GEO 120 serve as entry points into upper level courses. Preference for GEO 110, GEO 112, GEO 117, and GEO 120 is given to first-year students and sophomores. GEO 120 should be taken as soon as possible. Students should take GEO 201, GEO 202, GEO 203, GEO 205, GEO 206, GEO 207, GEO 208, and GEO 209 after taking an introductory course, ideally in the second year. Students should have completed CHM 101 before taking

GEO 220; GEO 220 is a prerequisite for GEO 320. All Geology majors are required to take GEO 405 in the senior year. All Geology majors are required to complete a senior thesis, which may be either 1 term (GEO 498) or 2-3 terms (GEO 495 , GEO 496 , & GEO 497); GEO 496 and GEO 498 satisfy the senior writing requirement (WS).

Geology (ID), B.S.

Requirements for Interdepartmental Majors:

Interdepartmental majors will follow the guidelines as described in Academic Program and Policies section in this catalog. Students taking geology as part of an interdepartmental major should take any introductory level course at the 110 level, plus any other geology courses needed to complete the geology segment of their major (all prerequisites apply). All courses should be chosen in consultation with a geology advisor as part of a coherent plan of study.

Requirements for Honors in Geology:

The major requirements as specified above are required, as are the GPA requirements of Union College described elsewhere in this catalog. A senior research thesis is required, consisting of at least two terms of GEO 495, GEO 496, or GEO 497 (independent research with a faculty member). Theses involving GEO 497 must be completed by the end of the 6th week of the Spring term.

Geology Minor

Requirements for the Minor:

A minor in geology requires six courses including any introductory level course numbered 110 or higher, GEO 220, and any four electives numbered 200 or higher. All prerequisites apply.

Geology, B.S.

Requirements for the Major:

A minimum of eleven courses in the department including:

one of

- GEO 110 - Physical Geology
- GEO 112 - Environmental Geology

or

- GEO 117 - Natural Disasters

and

- GEO 120 - The Earth and Life Through Time

and each of

- GEO 201 - Stratigraphy and Depositional Environments of New York
- GEO 202 - Geomorphology
- GEO 220 - Mineral Science
- GEO 307 - Structural Geology
- GEO 320 - Origin of Igneous and Metamorphic Rocks
- GEO 405 - Geology Senior Seminar
and
- GEO 495 - Geology Thesis Research 1
and
- GEO 498 - Geology Research and Writing
- GEO 496 - Geology Thesis Research 2
or

Students in the Traditional Geology Track must choose two courses from the following:

- GEO 205 - Tectonics
- GEO 206 - Volcanology
- GEO 208 - Paleontology, Paleobiology, and Paleoecology
- GEO 302 - Geochemical Systems and Modeling
- GEO 303 - Geophysics
- GEO 304 - Carbonate Sedimentology

Students in the Environmental Geology Track must choose two courses from the following:

- GEO 203 - Lakes and Environmental Change
- GEO 207 - Stable Isotopes in Environmental Science
- GEO 209 - Paleoclimatology
- GEO 300 - Glacial and Quaternary Geology
- GEO 305 - Biogeochemistry
- GEO 302 - Geochemical Systems and Modeling

All students must complete two courses from the following list:

- Any elective courses from the geology curriculum or
- ENS 100 - Introduction to Environmental Studies
- ENS 204 - Geographic Information Systems
- BIO 320 - Ecology
or
- BIO 350T - Terrestrial Ecology of Australia
- CHM 231 - Organic Chemistry 1
or
- CHM 240 - Analytical Chemistry

Of these, no more than one may be at the 100-level; 100-level courses cannot count as an elective if taken after a student declares the Geology major.

Also required are two terms each of the following:

Advanced work or a minor is encouraged in chemistry, physics, biology, mathematics, economics, or engineering.

Mathematics

Any two courses numbered 100 or higher, or equivalent such as:

- MTH 113 - AP Calculus

Chemistry

The following is required, and any CHM course numbered 102 or higher.

- CHM 101 - Introductory Chemistry 1

Biology or Physics

(any two courses numbered 100 or higher).

Note: Advanced work or a minor is encouraged in chemistry, physics, biology, mathematics, economics, or engineering.

All Geology courses at the 100 level are introductory and have no prerequisites

Preference for the following will be given to first- and second-year students.

- GEO 110 - Physical Geology
- GEO 112 - Environmental Geology
- GEO 117 - Natural Disasters
- GEO 120 - The Earth and Life Through Time

Additional Requirements

Senior Geology majors may not take any introductory course for major credit. A senior thesis is required, and theses may either be 1 term (GEO 498) or 2-3 terms (GEO 495, GEO 496, GEO 497). Completion of a two-term senior thesis (GEO 495 & GEO 496) is required for honors, and only one senior level research credit may count toward the two geology electives. Students who intend on going to graduate school are strongly encouraged to do a research thesis and to take two courses in physics rather than biology, unless specifically interested in paleontology or geobiology, because most graduate programs require physics. A summer field course in the junior year is strongly recommended, particularly for those going on to graduate school or geological consulting work.

Requirements for Honors in Geology:

The major requirements as specified above are required, as are the GPA requirements of Union College described elsewhere in this catalog. A senior research thesis is required, consisting of at least two terms of GEO 495, GEO 496, or GEO 497 (independent research with a faculty member). Theses involving GEO 497 must be completed by the end of the 6th week of the Spring term.

Requirements for Secondary School Certification:

Students seeking certification in earth science should complete the normal Geology major described above, except that astronomy, planetary science, and meteorology may substitute for any Geology elective or physics/biology ancillary science course. For other requirements consult the Educational Studies Program elsewhere in this catalog.

History

Chair: Professor J. Madancy

Faculty: Professors S. Berk, A. Feffer, T. Meade, S. Sargent, M. Walker; Associate Professors K. Aslakson, J. Cramsie, A. Foroughi, A. Morris, B. Peterson; Assistant Professor R. Mazumder; Senior Lecturer M. Lawson; Lecturer D. Brennan

Staff: J. Earley (Administrative Assistant)

History (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses, including the core and distribution requirement for majors, one 300-level course, the 400-level seminar, and the senior thesis. Students must complete a 400-level seminar before beginning the thesis. 400-level seminars are normally offered in the winter and spring terms. If a student does not complete a 400-level seminar by the end of their junior year, then they may not be able to graduate by the spring of the following year. Interdepartmental majors may count one term of the senior thesis toward the field requirements.

Requirements for Honors in History:

To be eligible for departmental honors, a student must fulfill the following requirements: (1) a minimum index of 3.30 in history; (2) a grade of "A minus" or higher on the senior project; and (3) a grade of "distinction" or "high pass" in an oral examination based on the senior project. In addition, the student must satisfy College requirements for departmental honors.

Course Selection Guidelines:

Placement: We accept the following AP courses: World History, United States History, and European History. If the score is 4 or 5, then we assign credit for one of our introductory courses, HST 106 for World History, HST 102 for United States History, and HST 147 for European History, all of which will count towards the major.

Courses Suitable for Non-Majors: Although 300 and 400 level courses are designed with History majors and minors in mind, all History courses are suitable for non-majors.

Course Numbering: 300- and 400-level courses have as a prerequisite any 100- or 200-level course or permission of the instructor.

History Minor

Requirements for the History Minor:

Six history courses, including at least one 300-level course; at least three of the six must belong to one of the following core areas: Africa/Middle East, Asia, Europe, Latin America, or US.

History, B.A.

Requirements for the Major:

- Twelve courses including the core and distribution requirement
- At least one course on the period before 1700
- Two-300 level courses
- One-400 level seminar
- Two-term senior project

Students will choose a core of Africa/Middle East, Asia, Europe, Latin America, US, Public History, or a thematic concentration. Examples of thematic concentrations include "Africana," "Women and Gender," "Revolution," "Empires," etc. In close cooperation with their advisors, history majors will select the courses for a thematic concentration and submit their proposal to the Department Chair for written approval by the start of Winter Term of the Junior year. If students select a US, European, or Public History core, they must complete at least four courses in US, European, or Public history, respectively. If they select Africa/Middle East, Asia, or Latin America, they must complete either (1) four courses in the respective field, or (2) at least three history courses in the core geographical area they have chosen, along with at least two other approved courses in relevant interdisciplinary programs, such as Africana Studies, Asian Studies, and Latin American Studies. These are generally not language courses.

Public History Core

- HST 124 - (224) Monuments, Museums, and Movies: Introduction to Public History
- Public History internship (department-approved)
At least two of the following:
- HST 118 - Civil War and Reconstruction
- HST 226 - A Novel View of US History
- HST 227 - Interviews with History: An Introduction to Oral History
- HST 265 - The Museum: Theory and Practice
- HST 270 - History of Latin American Popular Culture
- HST 287 - Film and Modern India
- HST 289 - Global Indians: South Asian Identity in the United States
- HST 324 - Race in American Memory
- HST 325 - War in American Memory
- HST 331 - Representing America: United States History in Film
- HST 414 - Seminar in US History: Lincoln: Politician to Pop Icon
- HST 481 - Seminar in East Asian History: Remembering World War II in Asia
- HST 278T - South Africa Mini-Term

Additional Requirements

Students will also fulfill a distribution requirement. If students select a US, European, or Public History core, they must complete at least two courses each in two of the following areas: Africa/Middle East, Asia, and Latin America. If they select a Africa/Middle East, Asia, or Latin America core, they must complete at least two courses each in two of the following areas, excluding the area of the core: Africa/Middle East, Asia, Europe, Latin America, and US history. These requirements apply to students who entered Union in the fall of 2013 and after. Students who entered Union before the fall of 2013 should consult the Academic Register for 2012-2013 for the correct requirements.

400-level seminars are normally limited to 15 students and are designed to teach research skills. The 300-level courses are specifically designed for history majors and include bibliographical and historiographical components. 400-level seminars and 300-level courses may be used to meet the core requirements. Senior projects normally must pertain to a topic in the core, but cannot count toward courses in the core. Students must complete a 400-level seminar before beginning the thesis. 400-level seminars are normally offered in the winter and spring terms. If a student does not complete a 400-level seminar by the end of their junior year, then they may not be able to graduate by the spring of the following year. Double majors must do a separate two-term senior project in History. Students who want to do an interdepartmental senior project should declare an interdepartmental major.

Two of the following classics courses may be counted toward the history major, but not toward a core:

- CLS 110 - Ancient Egypt: History and Religion

- CLS 111 - Ancient Iraq: History and Religion
- CLS 121 - The History of Greece to the Death of Alexander the Great
- CLS 125 - History of Rome
- CLS 126 - The Rise of the Roman Republic
- CLS 129 - History of the Roman Empire

Requirements for Honors in History:

To be eligible for departmental honors, a student must fulfill the following requirements: (1) a minimum index of 3.30 in history; (2) a grade of "A minus" or higher on the senior project; and (3) a grade of "distinction" or "high pass" in an oral examination based on the senior project. In addition, the student must satisfy College requirements for departmental honors.

Course Selection Guidelines:

Placement: We accept the following AP courses: World History, United States History, and European History. If the score is 4 or 5, then we assign credit for one of our introductory courses, HST 106 for World History, HST 102 for United States History, and HST 147 for European History, all of which will count towards the major.

Courses Suitable for Non-Majors: Although 300 and 400 level courses are designed with History majors and minors in mind, all History courses are suitable for non-majors.

Course Numbering: 300- and 400-level courses have as a prerequisite any 100- or 200-level course or permission of the instructor.

Public History Minor

For information about approved public history internships, contact Melinda Lawson at 518-388-8041 or lawsonm@union.edu.

Requirements for the Public History Minor:

Seven courses, including at least one 300-level course; HST 124; a department-approved Public History internship; one of the following:

- HST 118 - Civil War and Reconstruction
- HST 226 - A Novel View of US History
- HST 227 - Interviews with History: An Introduction to Oral History
- HST 265 - The Museum: Theory and Practice
- HST 270 - History of Latin American Popular Culture
- HST 287 - Film and Modern India
- HST 289 - Global Indians: South Asian Identity in the United States
- HST 324 - Race in American Memory
- HST 325 - War in American Memory
- HST 331 - Representing America: United States History in Film
- HST 414 - Seminar in US History: Lincoln: Politician to Pop Icon
- HST 481 - Seminar in East Asian History: Remembering World War II in Asia
- HST 278T - South Africa Mini-Term

And either an additional course drawn from the previous list or one course drawn from the following:

- any Art History course

- ANT 265 - The Museum: Theory & Practice
- AVA 262 - Real and Recorded Time - 4D Art
- CSC 055 - Working with the Web
- FLM 201 - Documentary Filmmaking: Filtering Your World
- MLT 339 - The Shoah in Film: Cinematic Treatments of Holocaust Trauma and Memory
- PSC 260 - Policy Making and American Society
- PSC 340 - Politics and Film

Interdepartmental

Interdisciplinary Studies

Interdisciplinarity creates educational opportunities through combining two or more academic disciplines. Indeed, often boundaries are pushed and new discoveries made at the margins of established field and research methods. Union College recognizes the rich possibilities of interdisciplinary studies by offering many opportunities for both faculty and students to engage with multiple disciplines - and each other - in collaborative classroom settings, innovative majors and unique research initiatives.

Vibrant interdisciplinary studies (IS) can be pursued through a variety of designated degree programs at Union College. Students are able to major and/or minor in our many Interdisciplinary Studies Programs (ISP) in wide ranging topics from Film Studies to Science, Medicine and Technology in Culture.

In addition, we offer the following interdisciplinary courses, listed below.

International Programs

Director: L. Atkins

Staff: G. Casper (Assistant to the Director/Program Specialist), D. Sichak (Administrative Assistant)

Union College considers its commitment to international programs to be a central part of its identity. In addition to broadening a student's perspective and deepening their knowledge of other cultures, international programs often energize and challenge a student to a higher level of commitment to the enterprise of learning. Students wishing to study away from Union College may do so through the following international programs:

- Study Abroad
- Exchanges
- Independent Study Abroad
- Non-Union Programs
- Mini-Term Programs

Updated information on the timing, details, and course descriptions for each international program listed below, are available from the International Programs office. The application, application instructions, policies, and waiver and liability forms are available on the International Programs website. Please refer to the "Costs, Fees" section for charges related to International Programs.

Applicants to Union College international programs must:

1. Have an overall cumulative average of 2.5 (2.7 for London, England full-term abroad, 3.0 for Independent Study Abroad, Cambodia, Japan, Ireland and Turkey, and a 3.2 for the Klemm Fellow Internship) at the time of application.
2. Have less than five disciplinary points as verified by the Dean of Students.
3. Have a clear account balance, as verified by the Financial Services Office.
4. Be in good academic standing, as verified by the Dean of Studies.
5. Meet the minimum language requirement (if any), as specified in the program description.
6. Complete the application process, which includes an essay.

Maintenance of Eligibility *after* Acceptance to Program:

1. Maintain an overall cumulative GPA of at least 2.5 (2.7 for London, England full-term abroad and 3.0 for Independent Study Abroad, Cambodia, Japan, Ireland, and Turkey, a 3.2 for the Klemm Fellow Internship) up to the date of departure for the program.
2. Successfully complete at least two courses at Union College the term prior to the study abroad program.
3. Shortly prior to departure, all participant names will be reviewed again to determine that students:
 - Have a clear account balance, as verified by the Financial Services Office.
 - Have less than five disciplinary points, as verified by the Dean of Students.
 - Are in good academic standing, as verified by the Dean of Studies.
 - For the duration of the study abroad program, the student must be a full-time matriculated student at Union College.

Students seeking to study away must demonstrate that they are well-prepared to do so, academically and in terms of overall maturity. Participation in the programs is limited and competitive. Students should apply for particular opportunities that are well-integrated with the student's academic work at Union. Please consult the Common Curriculum section on how international programs relate to various requirements. Attendance at a program's informational meeting is essential. Selection criteria include the student's essay, GPA, faculty recommendations, course of study, certification by the Dean of Students, and the selection committee's assessment of the student's capability of adapting to the program's social and academic environment. Should there be additional selection criteria, they will be announced at the informational meeting. In addition, some international programs have academic prerequisites.

Academic Policy While on an International Program

Policy Regarding Early Departure, Early Exams, Pass/Fail and Incomplete Grades

Students on Union College international programs are prohibited from requesting early departure, early exams, taking courses pass/fail, withdrawal from courses, or incomplete grades. In extraordinary circumstances, a request for special arrangements such as early departure, early exams or incomplete grades must be submitted in writing to the study abroad office at the host institution, the Dean of Studies at Union College and the International Programs Office at Union College. If the host institution approves the request, the matter will be reviewed by the Director of International Programs Office and the Dean of Studies at Union College, who will advise the study abroad office at the host institution and the student of its decision. If the request is approved, the study abroad office at the host institution will advise the Student whether it will make the arrangements on behalf of the student or whether the student is expected to make the arrangements.

Any special arrangements agreed upon, including remaining work and deadlines, should be documented in writing by instructors and by the study abroad office at the host institution. Copies of these arrangements must be sent to the Dean of Studies and the Director of International Programs at Union College.

Failure to follow these procedures may result in the student receiving no credit or a failing grade. A student may appeal Union College's decision by contacting the Dean of Studies at Union College to find out about the process.

Changes to Courses for Independent Study Abroad or Non-Union Programs Made after Student's Arrival at Site Abroad

Union College students must request in writing changes to course selections and equivalencies directly through the Dean of Studies at Union College by the end of the first full week of classes. Copies of all changes will be sent by the Dean of Studies' office to the Director of the International Programs office to ensure that the course equivalencies are posted correctly upon the student's return. Failure to follow these procedures may result in the student receiving no credit or a failing grade.

Grades Earned Abroad

Grades received from any of Union College's international programs will be entered into student's academic record and calculated into his/her GPA.

Grade Appeal Policy for Courses Taken While on Study Abroad Programs

- A. Procedure for students taking courses taught by Union faculty (see online Student Handbook: <http://www.union.edu/offices/dean/handbook/academics/gradechanges/index.php>)
- B. Procedure for students on study abroad experiences (excluding mini-terms)

Union College will allow students to appeal grades awarded by non-Union faculty in accordance with the procedures listed below. The Dean of Studies' review of a student's petition may be limited or not allowed due to circumstances beyond the Dean's control in assessing the petition. Such circumstances may include, but are not limited to when the non-Union faculty member does not have a syllabus that adheres to Union College standards. The Dean's decision will be communicated to the student. There will be no further appeal.

Students wishing to appeal a grade must:

1. Initiate an appeal through the host institution no later than two weeks following the date of posting of their final grades to their Union transcript. Students must follow the host institution's procedures for grade appeals.

2. If the outcome of the initial appeal to the host institution is unsatisfactory, the student may petition the Dean of Studies at Union College for a grade appeal. This must be done within two weeks upon receipt of the final determination from the host institution. The Union College appeal is limited to the three conditions listed above in "End of Term Grade Changes".

Costs

Full Terms

Except for those programs listed below, the base cost of a full term abroad is one-third of Union's comprehensive fee. The College charges an additional fee of \$650 for each faculty-led term abroad to cover several guided study excursions to enhance the cultural and academic experience, as well as mandated health insurance. Students are responsible for coordinating and paying for their own airfare and visa fees (if a visa is necessary). With the exception of work-study, all financial aid a student receives applies to the study abroad program.

- The cost of the engineering exchange in the Czech Republic and the term abroad in Japan is one third of the annual comprehensive fee. There are no group excursions in these programs. A \$50 study abroad fee will be charged towards mandated health insurance.
- The engineering exchange to METU in Turkey is tuition-only. Students pay for their room and board in Turkey. A \$50 study abroad fee will be charged towards mandated health insurance.
- The Antwerp, Belgium and the Lille, France economics exchanges are tuition-only programs. Students pay for their room and board in Belgium and France. There are no group excursions on this program. A \$50 study abroad fee will be charged towards mandated health insurance.

Mini-Terms

The fee for all mini-terms, with the exception of the U.S. domestic mini-terms, is \$3,530. This fee covers all tuition, room, board, health insurance, and group excursions. Financial aid does not apply to mini-terms, but loans are available. Students are responsible for coordinating and paying for their own airfare.

The fee for the Community Service mini-term is estimated at approximately \$2,100. This fee covers airfare between Schenectady and New Orleans, all room and board, both in Louisiana and for days on campus before and after the trip, plus all fees and local transportation in Louisiana. The participants fly to Louisiana as a group so plans should be made accordingly. The exact mini-term fee may change due to variability in transportation costs.

The fee for the Civil Rights, Mexican-American Border, Holocaust, and New Hampshire Presidential Primary mini-terms is \$3,500. This fee covers all tuition, room, board, and group excursions.

Non-Union Study Abroad Programs

Students are billed Union College's comprehensive fee for the winter and/or spring terms (or a full year's comprehensive fee in the case of the William Cady Stone Fellowship academic year program) and Union College will pay the tuition, room, and board to the host institution. The total amount paid to the other institution, including course waivers or any fees for additional courses (if the host institution will allow a fifth course for an additional fee, Union College will pay that fee) shall not exceed the cost of the Union comprehensive fee for each term. Students are responsible for paying any amount that exceeds the Union comprehensive fee for the applicable number of terms abroad.

Independent Study Abroad

Students are billed Union College's comprehensive fee for the winter and/or spring terms and Union College will any tuition, room, and board costs. In some cases, Union College may issue checks to students going on an Independent Study Abroad program, so that they can make payments or partial payments, for tuition, room, and board when they are in-country. The total amount paid shall not exceed the cost of the Union comprehensive fee for those terms that the student is abroad. Students are responsible for paying any amount that exceeds the Union comprehensive fee for the applicable number of terms abroad.

Union College International Programs (Study Away) Withdrawal Policy

The success of study away programs from the Union campus requires student commitment well in advance of the anticipated dates of the term of study. When a student withdraws after having made a commitment to such a program, it may be too late to offer the spot to another student who was willing and able to participate. Also, Union College incurs expenses well before a program begins that cannot be recovered when students withdraw. In the case of mini-terms, withdrawals can jeopardize the viability of the program. The International Programs Withdrawal Policy is designed to prompt students to consider their commitment to the program to which they have applied in light of the financial consequences of withdrawal. This policy applies to all Union-and non-Union study away programs, including mini-terms.

Initial Deposit - A deposit of \$350 is required for all programs. Payment of the deposit signifies the Union College student's commitment to participate in the program.

The deposit will be credited on the student's billing account provided that:
 The student fully completes the program, OR
 Union College cancels the program (e.g. on account of security concerns)

The student will forfeit the deposit if the student withdraws from a program or cannot participate in the program, either partially or entirely, for any reason other than Union College canceling the program.

Item	Prior to Program Start Date	On
\$600 Study Abroad Fee, if applicable	Credited to student account	Pro
\$50 (\$30) Health Insurance Fee for full-term (mini-term)	Credited to student account	No
Allowance (meals, internal transportation, cell phone, etc.), if applicable	Credited to student account	Pro

If you withdraw from the program or do not complete it in its entirety and have received a fellowship, you may be responsible for re-paying it. Contact Financial Aid if you have taken loans from Union.

Additional Withdrawal Fee

Unless one of the exceptions listed below applies, a student who withdraws from participation in a program or is no longer allowed to participate because of Union College disciplinary sanctions will be charged a withdrawal fee in addition to the aforementioned forfeited deposit. The withdrawal fee is based on the date of official withdrawal, as indicated in the table below. Official withdrawal occurs when a student informs the International Programs office of the withdrawal in writing or the International Programs office informs the student of his or her ineligibility to participate.

When Official Withdrawal Occurs:	Withdrawal Fee:
More than 60 days before the start	\$0
59-31 days before the start*	\$2000
30 days before the start*	\$3150 (mini-term), \$3500 (all other programs)
During the program	\$3150 (mini-term), \$5000 (all other programs)

*If a student withdraws before the start of a program, Union College will make a good faith effort to replace the student with another qualified student or to obtain a refund from its overseas providers; the withdrawal fee will not apply if a replacement student is found or to the extent that the College obtains a refund.

Exceptions to Withdrawal Fee:

Students will not be charged the withdrawal fee if any of the following occurs:

- Student withdraws from Union College for medical reasons during the program in accordance with Union College's medical withdrawal policy.
- A documented medical situation occurs before the start of the program that prevents the student from participating in the program.
- Student becomes ineligible to participate because of insufficient overall GPA.
- A student becomes ineligible to participate if, in spite of following the proper procedures in a timely manner, the student was denied a visa by the host country.

Policy on Travel Restrictions for International Programs

Union College does not operate or direct study abroad programs, including independent study abroad projects, for any student in a country for which a U.S. Department of State Travel Warning or U.S. economic sanctions are in effect. Union College students may apply through the International Programs office for a "non-Union" program in a Travel Warning country that is wholly operated and directed by a college or educational agency other than Union College.

Study Abroad Programs

The most extensive of the College's formal arrangements for foreign study are the term-length study abroad programs. Most programs involve credit in Common Curriculum (General Education) and language study, as well as regular course credit for additional study performed abroad. Currently, terms abroad are offered through a variety of programs designed by Union College faculty. The College is also part of the New York Six Liberal Arts Consortium and the Partnership for Global Education. The New York Six Liberal Arts Consortium broadens off campus study opportunities to Union students through pre-approved programs offered by New York Six member schools (i.e. Colgate University, Hamilton College, Hobart and William Smith Colleges, St. Lawrence University, Skidmore College, and Union College). The Partnership for Global Education is, a consortium with Hobart & William Smith Colleges, whereby students can study abroad in Australia, Brazil, Ireland and Vietnam.

Unless otherwise noted, students take three courses while on a term abroad; normally, these are the official program courses, unless the Director of International Programs grants permission to substitute one non-program course. Please consult the Common Curriculum (General Education) section on how international programs relate to various requirements.

The following study abroad programs are offered at Union College and include three courses, unless otherwise indicated:

Argentina (Córdoba): Fall, Offered even years. Faculty Member in Residence

Australia (Brisbane): Fall, 4 courses. Offered as part of the Partnership in Global Education. Faculty Member in Residence

Brazil (Sao Paulo): Fall, Offered odd years, 4 courses. Offered as part of the Partnership in Global Education. Faculty Member in Residence

Cambodia (Siem Reap): Spring, 3 courses.

China (Shanghai): Fall.

England (York): Fall, Faculty Member in Residence

England (London): Spring.

Fiji: Fall. Offered in odd years. Faculty Member in residence.

France (Rennes): Fall, 4 courses. Faculty Member in Residence

Germany (Freiburg & Berlin): Spring. Faculty Member in Residence

Greece (Athens): Fall, 4 courses.

Ireland (Galway): Fall, 4 courses. Offered as part of the Partnership in Global Education. Faculty Member in Residence

Italy (Florence): Spring, Faculty Member in Residence

Italy (Sicily): Spring, Offered odd years. Faculty Member in Residence

National Health Systems (Canada, Denmark, & England): Spring & Summer, Faculty Member in Residence.

Russia (Irkutsk): Spring, Faculty Member in Residence

Spain (Seville): Fall, Offered odd years. Faculty Member in Residence

Vietnam: Fall, 4 courses. Offered as part of the Partnership in Global Education. Faculty Member in Residence.

Exchange Programs

The College has five formal exchange programs:

Belgium (Antwerp): Fall, 4 courses, at the University of Antwerp in Belgium, for Economics majors.

Czech Republic (Prague): Fall, 4 courses, at the Czech Technical University in Prague, for Engineering majors only.

France (Lille): Winter, 4 courses, at the Catholic University of Lille in France, for Economics majors.

Japan (Osaka): Fall, 4 courses, at the Kansai Gaidai University of Foreign Studies in Japan.

Turkey (Ankara): Fall and Winter/Spring, 4 courses at Middle East Technical University (METU).

Non-Union Study Abroad

Non-Union Study Abroad programs allow students who are primarily juniors the opportunity to participate in study abroad programs through other colleges and universities, provided that the program addresses a curricular need that cannot be met by a Union program. Normally these programs take place in countries where Union does not have an existing term abroad or exchange program.

Detailed proposals for non-Union programs must be submitted no later than the third week of spring term the year prior to the time when the study abroad would take place. Students should refer to the International Programs website for deadlines. The Liaison Committee on Study Abroad approves non-Union proposals. The student must demonstrate readiness and preparation to undertake the proposed course of study and provide details of a feasible plan of study that is well-integrated with the student's academic work at Union. There are two options for non-Union study abroad programs: winter/spring non-union study abroad and the full year William Cady Stone Fellowship.

Winter/Spring Non-Union Study Abroad

The more common non-Union study abroad option, this opportunity takes place during winter and spring terms with the student enrolling in Spring semester course offerings from other colleges and universities.

Students are billed Union College's comprehensive fee for the winter and spring terms (or a full year's comprehensive fee in the case of the William Cady Stone Fellowship academic year program) and Union College will pay the tuition, room, and board to the host institution. The total amount paid to the other institution, including course waivers or any fee's for additional courses (if host institution will allow a fifth course for an additional fee, Union College will pay that fee) shall not exceed the cost of the Union comprehensive fee for each term. Students are responsible for paying any amount that exceeds the Union comprehensive fee for the applicable number of terms abroad.

Non-Union programs are generally semester programs that give credit for four or five courses. Students who fall behind in credits as a direct result of participating in a non-Union program during Winter and Spring terms will have to complete the additional credits (to total six) through any of the following methods:

- If the host institution for the program will allow a fifth course for an additional fee, Union will pay that fee.
- If a student is ahead in credits, then he/she may count one or two of these credits toward graduation at no cost.
- The student may take one or two fourth courses without charge upon returning to Union.
- Students may take one or two summer school courses, whether at Union or another institution. Union will pay tuition for the course, but not room and board. Courses cannot be taken at a community college unless approved by the Dean of Studies.
- Students who meet the eligibility requirements may apply to a Union mini-term, and if accepted, the mini-term fee is waived.

Additional options to obtain the required number of credits may be discussed with the Dean of Studies. If progress toward a degree is not affected by participation in a non-Union program during Winter and Spring terms and the student does not fall behind in credits toward the degree, then the above options are not available.

Full Year William Cady Stone Fellowship

The William Cady Stone Fellowship allows only one student per year to participate in a full year abroad. Students applying for this fellowship should be able to explain the benefits of a full year study abroad program at an accredited institution of his or her choice over a semester/trimester program. Additional information can be obtained from the International Programs office and on its website.

Students are billed Union College's comprehensive fee for fall, winter and spring terms and Union College will pay the tuition, room, and board to the host institution.

Independent Study Abroad

The Independent Study Abroad Program allows one Union College student per academic year to study abroad at an international college, university, or institute during his/her junior or senior year. The proposed program of study must meet a curricular need that cannot be met by a Union or Non-Union term abroad; it must also take place in a location that cannot be covered by a Union or Non-Union term abroad.. A student applying for an ISA must directly enroll in an international college, university or institute. The ISA student must enroll in one or two courses at a university, college or institute in the host country (the equivalent of three courses per term). A student may also arrange with a Union College faculty member to do a course or courses (depending on total number of courses taken) as an approved independent study, research project, service-learning project or internship. The student must identify a Union College faculty member who has agreed to supervise and grade the academic work and to serve as a resource for the student while on the ISA.

An ISA must take place during the winter and/or spring term. Detailed proposals for ISAs must be submitted no later than the fifth week of winter term the year before ISA study would take place. Students should refer to the International Programs website for deadlines. The Liaison Committee on Study Abroad approves ISA proposals

Mini-Term Programs

Every year Union College offers a variety of mini-terms. A mini-term is a three week program running either over winter break or at the beginning of summer break. Mini-terms have been offered in Argentina, Bali, Brazil, China, Cuba, Egypt, England, Ethiopia, France, India, Martinique, New Zealand, Russia, Senegal, South Africa, Spain, Thailand, and domestic locations such as the Adirondacks, Alaska, New Hampshire, New Orleans, on the Mexican-American border and a Civil Rights program in the South. Mini-terms carry an additional tuition charge. They cannot be combined with two courses in another term as one term's tuition. The course credit earned can be used to get caught up if the student is behind in credits; otherwise, the course credit earned will be above and beyond those used for graduation. It cannot be combined with other credits to graduate early.

Jewish Studies

Director: Professor P. Bedford (Religious Studies)

Jewish Studies Minor

Requirements for the Minor:

The Jewish Studies Minor allows students to examine aspects of Jewish history, culture, and Hebrew language in an interdisciplinary manner, drawing on relevant classes taught in various departments and programs. Students require seven classes to complete the Minor, which must include three classes in either Biblical Hebrew (HBR 111 , HBR 112 , or HBR 113) or Modern Hebrew (HEB 100 , HEB 101 , or HEB 102) and at least two classes at the 200-level or above taken from the list below. Independent Study classes can be counted towards the Minor with the permission of the Director.

- AMU 125 - World Religions and Music
- EGL 099 - (271) The Bible: An Introduction
- EGL 265 - (238) Jewish Women Writers
- GER 403 - Shoah: Literary, Artistic and Filmic Representations of the Holocaust
- HBR 111 - Biblical Hebrew 1
- HBR 112 - Biblical Hebrew 2
- HBR 113 - Biblical Hebrew 3
- HEB 100 - Basic Hebrew 1
- HEB 101 - Basic Hebrew 2
- HEB 102 - Basic Hebrew 3
- HST 128 - The American Jewish Experience
- HST 157 - Modern Jewish History
- HST 158 - The Holocaust
- HST 194 - The Modern History of the Middle East
- HST 195 - The Early History of the Jews
- MLT 339 - The Shoah in Film: Cinematic Treatments of Holocaust Trauma and Memory
- GER 339 - The Shoah in Film: Cinematic Treatments of Holocaust Trauma and Memory
- PSC 249 - Middle East Politics
- PSC 254 - Politics of the Arab-Israeli Conflict
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 230 - Judaism and Christian Origins

Latin American and Caribbean Studies

Director: Associate Professor G. Seri (Political Science)

Faculty: Professors W. Garcia, V. Martínez (Modern Languages), T. Meade (History); Associate Professors D. Mosquera (Modern Languages), T. Olsen (Music), L. Cox (Visual Arts); Assistant Professor R. Samet (Anthropology); Senior Lecturer M. Osuna (Modern Languages). Francophone Studies faculty: Associate Professors C. Batson, C. Ndiaye

This program offers a major, an interdepartmental major, and a minor in the study of the history, culture, language, and politics of the countries of the Latin American and Caribbean region. In addition, students may focus their study on the Atlantic world, on the interaction between the Americas and Africa, and on the experiences of people of Latin American descent in the United States. Latin American and Caribbean Studies courses are a part of the Common Curriculum (CC), fulfilling literature/ civilization, diversity, and writing requirements.

Courses in Latin American and Caribbean Studies;

Latin American and Caribbean Studies (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses including three in Latin American history, politics, society and culture; four courses in Spanish, French or Portuguese, and a one-term senior project. No course can be counted twice. ID majors take one of the following courses contributing to the strengthening of the students' critical or theoretical knowledge in any of the disciplines linked to the program:

- AAH 360 - (460) Seminar: Visual Culture, Race & Gender
- ANT 110 - Introduction to Cultural Anthropology
- ANT 282
- ECO 354 - International Economics
- ECO 376 - Seminar in Global Economic Issues
- EGL 254 - (255) Discourses on the Viet Nam War
- HST 332 - Transnational America

Requirements for Honors in Latin American and Caribbean Studies:

To be eligible for honors, a student must (1) attain a minimum index of 3.50 in courses counted toward the major; (2) a cumulative index of 3.30 or better; (3) a grade of "A minus" or higher on the (two-term for double majors or one-term for ID majors) senior project; and (4) distinctive performance in an oral exam based on the senior project.

Course Selection Guidelines:

Students seeking to double major in LACS and another subject that also requires a two-term thesis must present a proposal and obtain written permission from LACS director and the other department chair.

Latin American and Caribbean Studies Minor

Requirements for the Minor:

Six courses including three in Latin American history, politics, society and culture; three in French, Portuguese* or Spanish above the introductory level. No course can be counted twice.

** The Portuguese option for the minor in LACS is only available to students participating in the full-length term abroad program in Brazil.*

Latin American and Caribbean Studies, B.A.

Requirements for the Major:

Fourteen courses, including five in Latin American history, politics, society and culture, from humanities and the social sciences, that are listed below under "Courses in Latin American and Caribbean Studies;" one of the following courses that contribute to an understanding of Latin American problems -

- AAH 360 - (460) Seminar: Visual Culture, Race & Gender
- ANT 110 - Introduction to Cultural Anthropology
- ECO 354 - International Economics
- ECO 376 - Seminar in Global Economic Issues
- EGL 253 - (254) Narratives of Haunting in US Ethnic Literature

- HST 332 - Transnational America

Additional Requirements

Six courses in Spanish, Portuguese or French language and literatures; and, a two-term senior thesis. No course from languages and humanities/social science lists can be counted twice to meet these requirements. Students must participate in a Term Abroad program where at least one course is in the French, Spanish or Portuguese language, or in Latin American history, politics, society, literature and culture, and counts toward fulfilling any of the requirements for the major. There are full-length study abroad programs, Independent Study Abroad, and shorter mini-term options as well to various countries in Latin America (some of the countries visited are Argentina, Mexico, Brazil, Martinique, among others. Consult with the LACS director for possibilities).

Requirements for Honors in Latin American and Caribbean Studies:

To be eligible for honors, a student must (1) attain a minimum index of 3.50 in courses counted toward the major; (2) a cumulative index of 3.30 or better; (3) a grade of "A minus" or higher on the (two-term for double majors or one-term for ID majors) senior project; and (4) distinctive performance in an oral exam based on the senior project.

Five-Year Cooperative Degree Program with Georgetown:

Union has entered into an agreement with Georgetown University that enables qualified undergraduate students majoring in Latin American & Caribbean Studies to receive a master's degree from Georgetown's Latin American Studies program in one academic year and a summer, rather than in the normal three or four semesters. Students interested in this option should contact the Director of LACS for more information.

Course Selection Guidelines:

Students seeking to double major in LACS and another subject that also requires a two-term thesis must present a proposal and obtain written permission from LACS director and the other department chair.

Courses in Latin American and Caribbean Studies

Art History

- AAH 163 - (263) Latin American & Caribbean Art of the 19th and 20th Century

Anthropology

- ANT 283 - Peoples and Cultures of Latin America

History

- HST 135 - Latinos(as) in US History

- HST 171 - Europe and the Americas in the Era of Columbus
- HST 172 - Reform and Revolution in Latin America and the Caribbean
- HST 173 - History of the Caribbean and Central America
- HST 270 - History of Latin American Popular Culture
- HST 271 - History of Mexico
- HST 272 - History of Brazil
- HST 274 - Social and Political Movements in Latin America
- HST 275 - United States Foreign Relations and Modern Latin America
- HST 323 - Race and Revolution
- HST 370 - Special Topics in Latin American History
- HST 372 - Sex and Race in Latin America
- HST 471 - Seminar in Latin America: Individual in Latin America

Modern Languages and Literatures:

French

- FRN 304 - Studies in the French Caribbean
- FRN 307 - Negritude Movement: Point of Departure in Black African and Afro-Caribbean Literatures in French

Spanish

- SPN 325 - Staging Conflict: Studies in One-Act Mexican Theater
- SPN 326 - Women Weaving Histories: Short Narratives by Latin American Female Writers
- SPN 327 - The Nation at Home: Family and Nationhood in Spanish American Theater
- SPN 328 - Inquiring Latin American Identities: Reading Context, Space & Cultural Artifacts
- SPN 329 - Interruptions: The Paradox of Tradition in Spanish American Poetry
- SPN 330 - Mexican Women's Contemporary Short Fiction
- SPN 332 - An Introduction to Afro-Hispanic Literatures and Cultures
- SPN 350 - Visions and Voices: Chicana Icons from Myth to Matter
- SPN 375 - Dreams, Mirages and Delusions in Peninsular and Latin American Fiction
- SPN 376 - Down to Earth: Cross-Cultural Explorations of the Hispanic World
- SPN 380 - What's Love Got to Do with It: Gender and Nation in Hispanic and US Latino Literatures
- SPN 400 - Don Quixote
- SPN 401 - Bodies and Power in Latin American Narrative
- SPN 402 - Dressing Up the Canon: Cross-Dressing in Hispanic Literature and Film
- SPN 406 - Film of the Mexican American Border
- SPN 417 - Death and Revenge in the Southern Cone
- SPN 418 - Of Cock Fights and Crowded Elevators: Readings in Contemporary Mexican Theater
- SPN 431 - Colonial Latin America 1492-1800
- SPN 432 - Islands Adrift: Race, Politics, and Diasporas in the Hispanic Caribbean
- SPN 433 - Latin American Colonial Crossroads at the Movies

Modern Languages in Translation

- MLT 281 - Screening Identities in Latin American Cinema
- MLT 282 - North/South Relations and Diasporic Politics
- MLT 283 - Beyond the Sunny Paradise: Literature and Politics in the Caribbean
- MLT 284 - Popular Religion and Politics in Latin America
- MLT 287 - Filming Margins: Cinema Verité and Social Realism in Latin America
- MLT 288 - Torture and Dictatorship in Latin American Literature
- MLT 289 - Literature of the Mexican-American Border
- MLT 293 - Made in New York: Puerto Rican and Dominican Transnational Identities in American Literature & Cinema

Music

- AMU 133 - Music of Latin America

Political Science

- PSC 236 - Police, Security and Biopower
- PSC 243 - Latin American Politics
- PSC 245 - Populisms in Latin America
- PSC 342 - Challenges to Democratization in Latin America
- PSC 358 - Wealth and Power Among Nations

Terms Abroad & Mini-Terms

- MLT 286T - Gender and Identity in Contemporary Brazilian Cinema
- **TAB 321T.** - Mini-term in Buenos Aires and Patagonia, Argentina. Winter break (With approval of Director, this course can count toward the Women and Gender Studies major or the Environmental Science and Policy major, in place of LACS.)

Law and Humanities

Director: Professor L. Zaibert (Philosophy)

Law and Humanities Minor

The Law and Humanities minor is designed for students considering law school. Satisfying the requirements for the minor would ensure that students have a deep understanding of the foundations of legal systems in general. Moreover, the minor provides students with the unusual opportunity to learn about law from multi-disciplinary and cross-cultural perspectives which highlight the rich and varied ways in which the law interacts with the liberal arts and humanistic disciplines. Many of the courses that count for the minor are courses that highlight the connections between law and other disciplines, such as classics, philosophy, political science, and religious studies.

Requirements for the Minor:

Six of the following courses, at least three of which are in the Humanities.

Anthropology

- ANT 246 - Anthropology of Human Rights

Classics

- CLS 186 - Roman Law and Society

Philosophy

- PHL 105 - Introduction to Ethics
- PHL 231 - Symbolic Logic
- PHL 235 - Reasoning and the Law
- PHL 237 - Introduction to Political Philosophy
- PHL 250 - Ethical Theory
- PHL 305 - Relativism
- PHL 444 - Power, Authority, and the State
- PHL 476 - Philosophy of Law

Political Science

- PSC 113 - Introduction to Political Thought
- PSC 273 - The Supreme Court and Judicial Politics
- PSC 364 - (275) Law and Film
- PSC 370 - Constitutional Law
- PSC 371 - Civil Rights and Civil Liberties

Sociology

- SOC 240 - Political Sociology
- SOC 261 - Crime and Justice in Society
- SOC 265 - Sociology of Human Rights

3+3 Accelerated Law Program

Advisor: Associate Professor B. Hays (Political Science)

The Union College-Albany Law School combined program allows students to complete a full Union B.S. or B.A. degree in three years and subsequently progress to Albany Law School. The program provides opportunities to earn undergraduate credit through law-related internships and participate as undergraduates in Albany Law School activities designed for combined degree program students. Students in this program, who will be known as Law Scholars, will be admitted to Albany Law School early (upon admission to Union) with entry to law school contingent on their undergraduate GPA, but not their LSAT score. Students are still required to take the LSAT prior to matriculation at Albany Law School, with high scores providing access to scholarship opportunities.

3+3 Accelerated Law Program

Notes:

- Applications accepted for first-year fall term enrollment at Union College with a cap of 20 students at any one time at Union.
- SAT or ACT scores will be required as part of the application.
- Students accepted to the program will be offered a spot in the Law Scholars Program, which like the Union Scholars program, includes the ability to take a fourth course free of charge each term and to take Scholars FYP and SRS courses. Unlike the Union Scholars, the Law Scholars will graduate from Union with 36 credits rather than 38.
- Students will be encouraged to earn their Union B.A. or B.S. in 3 years, through a combination of their coursework over this time, any advanced credit from their high school experience, the use of the aforementioned fourth courses, and summer courses (up to three pre-approved courses can be taken at colleges other than Union.) Students will stay in the program by maintaining a 3.4 GPA. Students have the option of spending four years at Union, should they choose to do so.
- Students will be encouraged to contact Albany Law School to be assisted with obtaining at least one summer internship after their first, second or third year. Academic credit will be an option for the internship(s) with an additional fee.
- Students will begin their law degree coursework as soon as they have completed their Union College degree requirements.
- Students will take their LSAT during their third year at Union. Continuing to Albany Law School will not be contingent on the score, though a student's merit scholarship to Albany Law School will be contingent on academic criteria, which includes the LSAT score.

Leadership in Medicine/Health Care Management Program

Advisor: Joanne Fitzgerald

Staff: J. Clifford (Program Assistant), A. Nolte (Assistant Director, Clarkson University Center for Bioethics)

Leadership in Medicine/Healthcare Management, B.S.

The Leadership in Medicine/Health Systems Program is offered jointly by Union College, Clarkson University - Capital Region Campus, and Albany Medical College. The goal of the Leadership in Medicine/Health Systems Program is to prepare physicians who will be leaders capable of addressing the managerial, ethical, multicultural, and international challenges facing American medicine in the 21st century. Students complete an enriched curriculum of coursework to attain the B.S., M.S. or M.B.A., and M.D. degrees in eight calendar years, bypassing the requirement of the Medical College Admission Test. Admission into the program leads automatically to entrance into Albany Medical College after four calendar years of study at Union and Clarkson University - Capital Region Campus, provided that the student maintains satisfactory standards of academic achievement as

defined below and that the Union College-Clarkson University-Albany Medical College Policy and Promotions Committee determines that the student has demonstrated sufficient personal and professional development for the profession of medicine.

The curriculum at Union stresses thorough preparation in the sciences, humanities, and social sciences. When combined with coursework in health care management at Clarkson University, students are provided with a breadth of knowledge and understanding not typically found in premedical programs. Each year, about 20 highly-qualified secondary school seniors are enrolled in the program.

Program Requirements:

Over four full 3-term academic years and two summers (possibly three for students who opt for the M.B.A.), students take 31 courses that count towards a B.S. degree at Union College (roughly half in the sciences and half in the social sciences and humanities) and another 12 graduate courses at Clarkson University - Capital Region Campus to earn an M.S. degree in Healthcare Management or 16 graduate courses to earn the M.B.A. degree in Healthcare Management (Note: 12 of the courses count toward either graduate degree.)

Important curricular requirements include:

- An interdepartmental major, one part of which is in the natural sciences (Biology, Chemistry, Math, Physics) and the other part of which is in the social sciences (including Psychology) or humanities;
- An international experience
- The program in healthcare management through the School of Business at Clarkson University (either the M.S. or the M.B.A.).

All students enrolled in the program will take 16 Union College Math/Science courses. Without AP credits, students usually take the following:

- BIO 110 - (102) Heredity, Evolution, and Ecology
- BIO 112 - (101) Physiology of Cells and Organisms
- BIO 210 - Behavioral Neuroscience
- BIO 225 - Molecular Biology of the Cell
- CHM 101 - Introductory Chemistry 1
- CHM 102 - Introductory Chemistry 2
- CHM 231 - Organic Chemistry 1
- CHM 232 - Organic Chemistry 2
- MTH 110 - Calculus 1: Differential Calculus
- MTH 112 - Calculus 2: Integral Calculus
- PHY 110 - Physics for the Life Sciences 1
- PHY 111 - Physics for the Life Sciences 2

and one of the following upper level biology courses

- BIO 330 - Comparative Animal Physiology
- BIO 332 - Comparative Vertebrate Anatomy
- BIO 354 - Developmental Biology
- BIO 363 - Cellular Neurosciences
- BIO 378 - Cancer Cell Biology
- BIO 384 - Genetics and Molecular Biology

plus 3 or more additional courses designated by their science ID major:

Chemistry ID:

- CHM 240 - Analytical Chemistry
- CHM 382 - Biochemistry: Structure and Catalysis
- CHM elective ≥ 200 level with lab or any ≥ 300 level

Biology ID:

- BCH 335 - Survey of Biochemistry
or
- CHM 382 - Biochemistry: Structure and Catalysis
or
- BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates
plus
- 2 BIO electives ≥ 200 w/ lab

Math ID:

see Math ID requirements in consultation with math advisor. Must include one of the following:

- BCH 335 - Survey of Biochemistry
or
- CHM 382 - Biochemistry: Structure and Catalysis
or
- BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates

Physics ID:

see Physics ID requirements in consultation with physics advisor. Must include one of the following:

- BCH 335 - Survey of Biochemistry
or
- CHM 382 - Biochemistry: Structure and Catalysis
or
- BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates

In addition, students must take 15 Social Science and Humanities courses including:

LRS 150, Statistics*, HC 630, HC 633, three non-science electives, plus 8 additional courses to fulfill an ID major in Social Sciences or Humanities. LIM students are not required to complete the full Common Curriculum (General Education), the sophomore research seminar, or Writing Across the Curriculum (WAC) requirements unless they leave the program.

*Some social science departments have a designated statistics course that is required for majors. If your second major requires a statistics course, you should take that course. Otherwise, you may choose from the following courses: STA 501, ECO 243, SOC 300, PSC 220, PSY 200, or STA 104.

PLEASE NOTE: STA 104 counts as a social science course, not as a math course.

Students take the following courses toward the M.S. and M.B.A. degree in Healthcare Management:

M.S. in Healthcare Management:

- **HC 630** - (was LIM-500) Introduction to Health Systems
- **HC 633** - (was LIM-503) Health Care Leadership
- **HC 635** - (was LIM-553) Health Economics
- **HC 651** - (was HCM-501) Health Systems Management

- **AC 604** - (was MBA-512X) Financial and Managerial Accounting for Decision Making
- **HC 634** - (was LIM-544) Health and Human Values
- **HC 656** - (was HCM-656) Group Practice Management
- **HC 605** - (was MBA-531/HCM-505) Health Operations Management
- **HC 637** - (was LIM-571) Clinical Leadership Program

- **HC 617** - (was HCM-617) Health Care Finance
- **HC 674** - (was HCM-674) Legal Aspects of Health Care
- **HC 684** - (was HCM-684) Strategic Issues for Healthcare Organizations (Capstone)

MBA in Healthcare Management students will take the following additional 4 courses:

- **IS 647** - (was MBA-506) Statistical Models for Management
- **HC 626** - (was HCM-526) Health Systems Marketing
- **HC 648** - (was HCM-648) Health Informatics
- **HC 680** - (was HCM-680) Health Policy & Managerial Epidemiology

- Students may choose to take an MBA elective and an internship in place of HC 637

Note: For course descriptions, consult the graduate course catalog of Clarkson University - Capital Region Campus .

Advanced Placement

Students who enter the program with advanced placement credit have greater flexibility of course selection, but AP credits do not reduce the number of required courses or allow a student to take a term off. When advanced placement credit is given for a course specifically designated in the curriculum, students can take elective courses. Union will grant advanced placement and course credit in accordance with its normal procedures. Student with scores of 4 or 5 on the AP examinations in biology, chemistry or physics or on either of the AP Calculus exams are encouraged to take more advanced courses at the College. Other AP courses will be considered such as Statistics or a course in the second major.

Additional Requirements

Students must maintain minimum cumulative grade point averages of 3.50 both in overall course work (including graduate courses) and in their mathematics and science courses. Students falling below the required overall and mathematics/science grade point averages at the end of any term may be put on formal probation or asked to leave the program by the Policy and Promotions Committee, which oversees the program and reviews student records regularly. A grade of "D" or "F" in any course can lead to dismissal from the program. Required course work may not be taken on a pass/fail basis and must normally be taken at the home institution. Grades of "I" (Incomplete) or "W" (withdrawal) will not be acceptable without justification involving illness or extenuating circumstances.

As long as a student is enrolled in the Leadership in Medicine program, the Health Professions Advisory Committee at Union College will not support his or her application to other medical schools. Students may transfer into the regular four-year undergraduate program at any time during the

premedical portion of the combined degree programs. Once withdrawn from the eight-year combined degree program, students may request the support of the Health Professions Advisory Committee if they choose to apply to medical school in the traditional manner.

Requirements for Honors:

Leadership in Medicine students are not subject to the restrictions for ID majors and may receive departmental honors in one department if they satisfy the requirements of that major. The thesis does not need to integrate both majors as it must for non-program students.

Managerial Economics

Director: Professor J. Kenney (Economics)

Faculty: Professors L. Davis, T. Dvorak, H. Fried, D. Klein, B. Lewis, E. Motahar, Shelton S. Schmidt, Stephen J. Schmidt, M. Sener, Y. Song, S. Yaisawarnng; Assistant Professor K. Raeburn; Lecturer E. Foster; Visiting Assistant Professors J. Gao, H. Holt.

Managerial Economics, B.A.

The Managerial Economics major focuses on the tools and techniques of financial and quantitative analysis essential to the modern manager. In addition to the standard intermediate economic theory courses, students must complete courses in managerial economics, financial analysis, accounting, computer science, mathematics, and an internship with a local organization.

Requirements for the Major in Managerial Economics:

- ECO 101 - Introduction to Economics
- ECO 241 - Microeconomic Analysis
- ECO 242 - Macroeconomic Theory and Policy
- ECO 243 - Introduction to Econometrics
- ECO 334 - Introduction to Financial Analysis
- ECO 364 - Business Analytics
- ECO 390 - Economics Internships
- ECO 445 - Managerial Economics
- ECO 498 - Economics Senior Thesis 1
- ECO 499 - Economics Senior Thesis 2
- and **two** other courses in economics

- CSC 103 - Taming Big Data: Introduction to Computer Science
(or other versions of Introduction to Computer Science with advisor's consent)

- ACC 100 - Survey of Accounting

- MTH 101 - Calculus with Precalculus 2
or
- MTH 110 - Calculus 1: Differential Calculus
or
- MTH 113 - AP Calculus

Additional Requirements

Majors should consider taking additional courses in computer science, especially CSC 150. Majors are also encouraged to participate in a term abroad. Majors should normally complete the core sequence of ECO 241, ECO 242, and ECO 243 by the beginning of the junior year. Majors who have reached the junior year may not enroll in courses numbered below 240, except ECO 123. Majors must have a minimum grade of C in each of the courses in the core sequence of ECO 241, ECO 242, and ECO 243 by the beginning of the senior year before taking ECO 498-ECO 499. Students receiving a grade lower than C in any of the core sequence of ECO 241, ECO 242, and ECO 243 may repeat the core course only once. This requirement applies to students matriculating in Fall 2013 or later.

Requirements for Honors in Economics:

To earn departmental honors in economics, participants in the program must (1) have a minimum grade average of 3.3 or higher in ECO 241, ECO 242, and ECO 243; (2) be nominated for honors by the department at the end of the first term of thesis work; (3) pass an honors oral examination on their senior thesis in the second term of thesis work; (4) earn a minimum of "A minus" on the senior thesis; (5) receive approval of the final thesis from the honors oral examination committee; and (6) participate in the department's honors seminar. In addition, the student must satisfy all College requirements for departmental honors.

Course Selection Guidelines

Course Sequence: Students intending to major in economics should take ECO 101 in the first year, and complete MTH 101 or MTH 110 in the first year if possible, early in the sophomore year if not. They should also take one or more 200-level electives in the first or second year, since these courses are not open to junior and senior majors. In the sophomore year they should take the core ECO 241-ECO 242-ECO 243 sequence; the sequence need not be taken in numerical order but ECO 243 should normally not be taken first. Majors should complete several 300-level elective courses as juniors prior to enrolling in senior thesis, including where possible courses in the area of economics in which the thesis will be written; interdepartmental majors should complete at least one such course in the junior year, and preferably more.

Placement: The economics department gives credit for ECO 101 to students receiving a score of 5, 6, or 7 on the Higher Level International Baccalaureate exam, a grade of A or B on the economics A-levels, and a score of 4 or 5 on both the AP Microeconomics and Macroeconomics exam, but does not give credit for ECO 101 to students who have taken only one of the two AP exams, regardless of the score received.

Prerequisites: ECO 101 is a prerequisite for all courses in the department, unless otherwise indicated.

Master of Arts in Teaching (MAT)

Catherine Snyder, Chair, Department of Education

Clarkson University

Students at Union College can become certified to teach at the secondary school level through a graduate program with the Department of Education at Clarkson University's Capital Region Campus. Students can be certified to teach grades 7-12 in the following academic areas: English, languages (Chinese, French, German, Greek, Latin, and Spanish), mathematics, science (biology, chemistry, earth science, physics, and general science), social studies, and technology.

Students complete a Master of Arts in Teaching (M.A.T.) degree from the Department of Education at Clarkson University's Capital Region Campus. The cost of the graduate program is significantly lower than the cost of each year in the undergraduate school.

Undergraduate Component: Students complete the traditional undergraduate major, Educational Psychology (PSY 246), at least one term of a foreign language, and the structured field experience, ED-500.

Admission to the MAT Program

Students should declare their interest in applying to this program by completing an application to the Department of Education at Clarkson University's Capital Region Campus. The graduate application form can be obtained from either the Clarkson University Admission's office, 80 Nott Terrace, Schenectady, NY 12308 or under Admissions at <http://graduate.clarkson.edu>

Courses to be Completed During the Undergraduate Program:

Students complete the regular requirements for their college academic major in addition to courses related to education. Specific courses that are required for each major are listed within the departmental listings of biology, chemistry, classics, economics, English, geology, history, mathematics, modern languages, physics, political science, and sociology.

Required prerequisite courses related to education include:

- PSY 246 - Educational Psychology (In order to take PSY 246, Union undergraduates must take the pre-requisite PSY 100);
- Structured Field Experiences (ED 500 a non-credit course) before graduating from the undergraduate college. Students spend two consecutive school days on each of two site visits observing classes and meeting with secondary school teachers in the discipline for which they seek certification. At least one experience must be in a junior high or middle school and at least one must be a high school experience. One visit must be either in an urban or rural high-needs district. Visitations will be arranged during term breaks in the student's sophomore, junior or senior years. In unusual cases, exceptions can be made for observations to take place during the MAT year, but it is strongly discouraged. Students can obtain information and arrangement forms from the Department of Education prior to arrangement of these experiences.
- At least one term of one foreign language is required of all teachers seeking NYS certification.

Overview of the MAT Program:

In the summer between their senior and graduate year, students will complete Psychology of Teaching (ED 540), Curriculum and Methods (ED 511, 512, 513, 514, 515, or 516), a Micro teaching Lab (ED 540L), and ED 541 Literacy for Secondary Teachers. In the fall, term students will complete the Effective Teaching for All Learners (ED 550A), Writing Literacy (ED 544) and begin a year-long teaching internship (ED 551-552). In the spring term, students will complete the teaching internship, the Modern Teacher seminar (ED 560), the MAT Project class (ED 580), and a research class. It may be recommended that students take an additional discipline specific class if there is a gap in content knowledge.

Other program requirements include the New York State mandated workshops, e.g. SAVE school violence prevention, DASA, bullying.

New York State Certification

Program and faculty advisors will meet with students throughout their program to plan how to best meet these criteria through a variety of courses and experiences. Upon successful completion of the M.A.T. program and verification of meeting the criteria for certification, students will be recommended by Clarkson University for New York State certification (many other states have reciprocity agreements with New York).

Each applicant for an initial teaching certificate must also achieve a satisfactory level of performance on the:

ALST (Academic Literacy Skills Test), EAS (Educating All Students) the Teacher Performance Assessment - (eTPA), and the Content Specialty Test (CST);

Applicants for a professional certificate are required to satisfy all requirements for initial certification and also:

Have a master's degree functionally related to the field of teaching;
Have three years of full-time teaching experience with one of those years as a mentored year.

Clarkson University's M.A.T. degree provides graduates with the master's degree functionally related to their field of teaching and qualifies them for Professional Certification once they have completed three years of successful teaching (which does NOT have to be in New York State or in a public school). Candidates' questions regarding teacher certification can be directed to the Department of Education of Clarkson's Capital Region Campus at 518-631-9870.

Master of Business Administration and M.B.A in Healthcare Management

Dean: Dayle Smith, Clarkson University School of Business

Associate Dean of Graduate Business Programs: Alan Bowman (located at Clarkson University Capital Region Campus)

Clarkson University offers accelerated MBA programs for Union College students. Union College undergraduates are able to take selected graduate courses through the Clarkson University School of Business. These courses count for credit toward the MBA programs and count toward the bachelor's degree. All Union College academic majors provide a suitable foundation for the Clarkson University MBA programs. Students in the accelerated program typically complete the MBA with only one additional year of study beyond the bachelor's degree. Students may earn an MBA or an MBA in Healthcare Management.

Please note: Union College students may take up to two MBA courses without matriculating into the MBA program. Please see the section below titled Clarkson University School of Business Courses Open to Undergraduates

Admission: Students who wish to matriculate into an MBA program should consult their Union College advisor and apply for admission to Clarkson University School of Business in their sophomore, junior, or the first term of their senior year.

Application Requirements:

- Undergraduate transcript
- Graduate Management Admission Test (GMAT) / GRE. Union College students with a GPA of 3.4 or above may waive the GMAT or GRE requirement; however the GMAT is required to be considered for merit scholarship.
- Two letters of recommendation.
- Written statement that explains the motivation for pursuing a management degree.
- An undergraduate GPA of 3.0 or better and a GMAT score of 500 or better are benchmarks for admission. Students that do not meet these benchmarks, however, are encouraged to apply and may be admitted based on other strengths evident in their application file

The MBA and MBA in Healthcare Management degrees are comprised of 16 courses. Union College Accelerated students may take up to three graduate level courses while enrolled at Union College at no additional tuition. These courses double-count for both graduate and undergraduate credit. Students must receive approval from their Union College advisor to ensure the courses will count towards their undergraduate degree.

Accelerated students may commence taking courses in their junior year; however the bulk of graduate course work is typically completed in the senior and fifth years. Additional program and contact information for the Clarkson University School of Business can be found on the Clarkson University website at <http://clarkson.edu>.

The following course, taught by Clarkson University School of Business faculty, is a Union College course taught regularly for all undergraduates. This course does not substitute for AC 604 , a graduate level accounting course:

ACC 100 (Survey of Accounting)

Clarkson University School of Business Courses Open to Undergraduates

Undergraduates who are not planning to enroll in the accelerated M.B.A. program may take two graduate courses (no tuition due to Clarkson University). To register, students complete a one page application and submit an unofficial transcript. The courses listed below are open to undergraduates; however Clarkson University School of Business maintains the right to limit the number of undergraduate students in each class to no more than five students. For a complete description of these and other Clarkson University School of Business courses, see the catalog of the Clarkson University School of Business, available at <http://clarkson.edu>

Union College undergraduate students interested in Clarkson University School of Business graduate school courses or programs should contact Erin Wheeler, Director of Admissions and Student Recruitment, Clarkson University Capital Region Campus (wheelere@clarkson.edu).

- **HC 500** - Introduction to Health Systems
- **OM 607** - Global Supply Chain Management
- **AC 604** - Financial and Managerial Accounting for Decision Making
- **MK 601** - Marketing Management
- **OS 603** - Leadership and Organizational Behavior

Master of Science in Electrical Engineering, Master of Science in Mechanical Engineering, and Master of Science in Energy Systems

Dean: Robert Kozik, Clarkson University Capital Region Campus

Union College undergraduate students with a strong academic record may apply for a combined degree program with the Masters in Electrical Engineering, Masters in Mechanical Engineering, and Master of Science in Energy Systems. A cumulative average of 3.0 in undergraduate course work is expected (cumulative average less than 3.0 should be discussed with the Dean, School of Engineering and Computer Science). Acceptance into the program enables students to apply up to three graduate college courses for credit in fulfillment of both undergraduate Union College and Clarkson University Capital Region Campus graduate degree requirements. All program applicants are encouraged to apply during their sophomore

or junior year but no later than the end of the fall term of their senior year at Union College. Students are required to notify both Registrars that they are in a joint program. All Union College students are encouraged to contact the Clarkson University Capital Region Campus graduate Engineering program, Associate Dean Robert Kozik, for information regarding these programs and additional opportunities as noted below:

Clarkson University Capital Region Campus graduate Engineering courses are available as Union College electives subject to Union College student advisor and Clarkson's Associate Dean, School of Engineering approval. A non-degree application, Union transcript, and course registration are required.

Union College undergraduate students interested in graduate school should discuss Clarkson's opportunities regarding the above programs, the Master of Science in Engineering and Management Systems, and scholarship opportunities for Union College graduates with Associate Dean Robert Kozik, Clarkson University Capital Region Campus, graduate Engineering programs.

Mathematics

Chair: Professor K. Lesh

Faculty: Professors D. Cervone, B. Johnson, K. Lesh, K. Rosenthal, A. Taylor, C. Tønnesen-Friedman, W. Zwicker; Associate Professor L. Khatami, Assistant Professors E. Gasparovic, R. Hoerl, J. Jauregui, K. Plofker, J. Wang; Senior Lecturer P. Friedman; Visiting Assistant Professors J. Hatley, G. Todd

Staff: J. Higgins (Administrative Assistant)

Course Selection Guidelines

Placement: Students who receive a score of 5 on the AB Advanced Placement exam, or a score of 4 or 5 on the BC Advanced Placement exam may receive credit for MTH 110 and MTH 112. Students who receive a score of 3 or 4 on the AB Advanced Placement exam, or a score of 3 on the BC Advanced Placement exam, or a 6 or 7 on the Higher Level Math IB (International Baccalaureate) exam may receive credit for MTH 110. Students with a 4 or a 5 on the Advanced Placement Statistics exam can also earn credit for STA 104 .

Mathematics Placement Exam: All incoming students are required to take a Mathematics Placement Exam (MPE). Students receive a recommendation concerning their first mathematics course based on the information they provide and their performance on the MPE. Students should consult this recommendation and their academic advisor before enrolling in a mathematics course

Common Curriculum Courses

Calculus continues to be the most common way for both science and non-science majors to meet the Quantitative and Mathematical Reasoning requirement at Union. The following courses (MTH 051 through MTH 061 and STA 064) represent alternatives that also fulfill that requirement. These courses normally are not open to students who have passed calculus courses. Note that there also are courses in computer science and philosophy that can be used to fulfill the QMR requirement.

Mathematics (ID), B.S.

Mathematics Requirements for any Interdepartmental Major having Mathematics as a Component:

A student seeking an interdepartmental major with mathematics as a component must submit a proposal for approval by the department chair. The proposal will give a rationale for the choice of an interdepartmental major and indicate the list of courses in both departments that are to be part of the major.

An interdepartmental major with mathematics as a component requires seven courses in the department numbered 115 or higher, including the following courses:

- MTH 115
- At least one of the following: MTH 117 , MTH 130 or MTH 234
- MTH 199
- Four courses from the lists below, including **at least one from List 1**

List 1:

- MTH 332 - Abstract Algebra 1
- MTH 336 - Real Variable Theory
- MTH 340 - Linear Algebra
- MTH 430 - Complex Analysis
- MTH 432 - Abstract Algebra 2
- MTH 436 - Topology
- MTH 448 - Differential Geometry
- MTH 480 - Foundations of Mathematics

List 2:

- MTH 219 - Topics in Discrete Mathematics
- MTH 221 - Mathematical Cryptology
- MTH 224 - Geometry
- MTH 235 - Number Theory
- MTH 325 - Knot Theory

Requirements for Honors in Math:

Candidates for honors in mathematics or in any interdisciplinary program of which mathematics is a part must fulfill the college-wide criteria for honors. In addition, they must have a grade point average of at least 3.5 in courses in the mathematics department numbered 199 and above, take at least two non-thesis MTH courses at the 400-level, and either complete a two-term honors thesis in the mathematics department with a grade of A or A-, or complete a one-term honors thesis in the mathematics department with a grade of A or A- and take an additional non-thesis 400-level MTH course.

Mathematics Minor

Requirements for a Minor in Mathematics:

Five courses in the department (MTH or STA) numbered 115 or higher, including MTH 199 and at least two courses having MTH 199 as a prerequisite.

Mathematics, B.S.

Requirements for the Major:

Twelve courses in the mathematics department (MTH or STA) numbered 101 or higher including the following courses:

- MTH 113 - AP Calculus

or

- MTH 110 - Calculus 1: Differential Calculus
and
- MTH 112 - Calculus 2: Integral Calculus
or
- MTH 100 - Calculus with Precalculus 1
and
- MTH 101 - Calculus with Precalculus 2
and
- MTH 102 - Calculus with Precalculus 3

- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
- MTH 117 - Calculus 4: Integral Vector Calculus
- MTH 199 - Introduction to Logic and Set Theory
- MTH 332 - Abstract Algebra 1
- MTH 336 - Real Variable Theory
- MTH 340 - Linear Algebra

- MTH 497 - Mathematics One Term Senior Thesis
or
- MTH 498 - Mathematics Senior Thesis 1
and
- MTH 499 - Mathematics Senior Thesis 2

- At least five MTH-coded courses that do not satisfy the WS requirements and are numbered 200 level or higher
and
- PHY 120 - Matter in Motion

Advanced placement credit may be used to satisfy at most two of the twelve required math courses.

It is also recommended that two courses with substantial mathematical content be taken outside the department. Mathematics majors considering graduate work are recommended to take one of French, German, or Russian as a foreign language. Mathematics majors considering applying to a master's program in teaching are advised to incorporate MTH 128, MTH 224, and Computer Science into their undergraduate program.

Requirements for Honors in Math:

Candidates for honors in mathematics or in any interdisciplinary program of which mathematics is a part must fulfill the college-wide criteria for honors. In addition, they must have a grade point average of at least 3.5 in courses in the mathematics department numbered 199 and above, take at least two non-thesis MTH courses at the 400-level, and either complete a two-term honors thesis in the mathematics department with a grade of A or A-, or complete a one-term honors thesis in the mathematics department with a grade of A or A- and take an additional non-thesis 400-level MTH course.

Mechanical Engineering

Chair: Associate Professor D. Hodgson

Faculty: Professors A. Anderson, B. Bruno, W. Keat, R. Wilk; A. Rapoff; Associate Professors R. Bucinell, R. Cortez, A. Ramasubramanian, F. Wicks; Lecturer G. Sanders, A. Tchako; Visiting Assistant Professor J. Kupperts, J. Vanderover.

Staff: S. Gorski (Technology Coordinator), R. Becker (Administrative Assistant)

The Mechanical Engineering Department at Union College is committed to thoroughly preparing students in the fundamentals of mechanical engineering and instilling a passion for life-long learning by building on the values of a liberal arts education. The Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET, <http://abet.org/>.

Mechanical Engineering Minor

Requirements for the Minor:

The Mechanical Engineering Minor is composed of MER 201, MER 231, and any four additional courses in Mechanical Engineering except MER 010 and MER 490 and higher.

Mechanical Engineering, B.S.

Requirements for the Major:

Course requirements with a typical schedule are given for the Class of 2019 below. Students should consult their academic advisor about the scheduling and sequencing of courses .

First Year*

- ESC 100 - Exploring Engineering
- MER 101 - Engineering Graphics
- MTH 113 - AP Calculus **
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
- MTH 117 - Calculus 4: Integral Vector Calculus
- PHY 120 - Matter in Motion
- PHY 121 - Principles of Electromagnetics
- CHM 101 - Introductory Chemistry 1
- First Year Preceptorial (FPR 100 or FPR 100H)
- CSC 109 - Computer Programming for Engineers: Introduction to Computer Science ***

Sophomore Year

- ECE 222 - Introduction to Circuits and Electronics
- MER 201 - Statics
- MER 212 - Dynamics
- MER 213 - Material Science
- MER 214 - Strength of Materials
- MER 231 - Thermodynamics 1
- MER 232 - Thermodynamics 2
- MTH 130 - Ordinary Differential Equations
- Sophomore Research Seminar
- Elective****

Junior Year****

- MER 301 - Engineering Reliability
- MER 311 - Advanced Mechanics
- MER 312 - Dynamics and Kinematics
- MER 322 - Dynamics of Physical Systems
- MER 331 - Fluid Mechanics 1
- MER 333 - Heat Transfer Analysis and Design
- Elective****
- Elective****
- Elective****
- Elective****

Senior Year

- MER 419 - Design of Mechanical Systems
- MER 439 - Design of Thermal/Fluid Systems
- Senior Experience***** (two courses/three courses)
- Elective****
- Elective****
- Elective****
- Elective****
- Elective****
- Elective****

Note(s):

(1)* Students *must* declare their ME Major prior to or during the sixth week of their first year spring term (prior to registering for courses for the following Fall). Students not declared as ME Majors will likely not be admitted to 200-level ME courses.

(2)** An alternate mathematics sequence in the first year is possible depending on the math preparation of the student. Consult with your academic advisor.

(3)*** ME students are expected to fulfill the computer science requirement by satisfactorily completing CSC 109 (Computer Programming for Engineers) or by satisfactorily completing one course from CSC 103, CSC 104, CSC 106, CSC 107 and demonstrating proficiency in the MATLAB programming language (typically demonstrated by passing a proficiency exam).

(4)**** The 11 electives must be satisfied as follows:

- Core Curriculum (1 Social Science, 1 Literature Humanities, 1 additional Humanities, 2 Linguistic and Cultural Competency)
- 1 Math/Science Elective (This course is intended to count toward the ABET math/science requirements. This course must be a math/science course and count toward a Mathematics, Physics, Chemistry, Biology, or Geology major to qualify). AP credit can be used to satisfy this requirement.
- 2 Engineering Depth Electives (defined as any course in mechanical engineering, electrical engineering, engineering science, computer engineering, bioengineering, or any approved course offered by the ME division of Union Graduate College, that has at least one 200-level

engineering course prerequisite from any of the aforementioned engineering programs). At least one of the engineering depth electives must be an ME course.

- 3 Free Electives

(5)***** The fall term of junior year is the recommended term for satisfying the Linguistic and Cultural Competency component of the Core Curriculum through a term abroad. Students may complete this requirement in other terms as well. Students should determine as early as possible how they will satisfy the requirements of the Linguistic and Cultural Competency Core Curriculum component and should work closely with their academic advisor to develop the appropriate plan of study that will allow them to pursue the desired option.

(6)***** The Senior Experience is satisfied by completing (a) MER 487 (Writing Seminar) **plus** an additional engineering depth elective in ME or (b) MER 487 **plus** MER 490 and MER 486 (Competition Team Design) or (c) MER 497 and MER 498 (Senior Project).

Requirements for the Five-Year Combined BS/MS in Mechanical Engineering:

Union undergraduate students may apply to this program offered in conjunction with Clarkson University where both a B.S. and an M.S. degree in mechanical engineering are earned in five years. Students are encouraged to apply during sophomore year but no later than the end of the fall term of their senior year. A 3.0 overall GPA is expected for admission. Students enrolled in the program may count up to three Mechanical Engineering courses toward both degrees. A petition requesting overlapping degree credit must be approved by the undergraduate and graduate advisors and filed with the graduate office. The Master of Science program is described in the catalog of Clarkson University.

Requirements for Honors:

In addition to the college wide Departmental Honors requirements enumerated in the Academic Policies of the College, candidates must (1) conduct themselves in a manner consistent with the Union College Academic Honor Code and the National Society of Professional Engineers Code of Ethics for Engineers; (2) earn at least a grade of A- in four Mechanical Engineering courses required for the major exclusive of MER 487, MER 497 and MER 498; (3a) earn grades of at least B+ in MER 497 and at least A- in MER 498 or (3b) earn grades of at least B+ in a Mechanical Engineering elective and at least A- in MER 487 or (3c) earn grades of at least B+ in MER 486 and at least A- in MER 487; (4) submit a senior thesis which is in accordance with College and Schaeffer Library policy and represents evidence of independent, original work as part of a research or design project; (5) participate in the ASME student chapter's oral presentation competition; and (6) be nominated and receive a vote of approval by the faculty of Mechanical Engineering.

Course Selection Guidelines

Current Mechanical Engineering Major worksheets can be found at: <http://muse.union.edu/me/for-students>. It is strongly suggested that students and their advisers consult with these worksheets prior to selecting courses (even during the first year). Please consult with a Mechanical Engineering faculty member if additional information or clarification is required.

Minimum grades in Prerequisite Courses: In order to qualify to take any mechanical engineering course, a minimum grade of C- must be earned in all mechanical engineering (MER) and mathematics (MTH) courses that are listed as prerequisites for the course. Mathematics courses with the IMP designation are excluded from this requirement.

Clarkson University Capital Region Campus: Selected graduate courses in engineering mathematics, solid mechanics, and the thermal fluid sciences offered by Clarkson University Capital Region Campus are available to qualified undergraduates. For further information, please consult the catalog of Clarkson University for the MS program in Mechanical Engineering.

Major Courses

(Prerequisites and co-requisites are listed for each of the major courses. Under extraordinary circumstances, a student may petition the instructor and Department Chairman to take a prerequisite as a co-requisite for a major course.)

Elective Courses

These may be taken to satisfy the engineering depth or free elective requirements. Consult the Mechanical Engineering Department Chair and course listings for additional MER, BNG, ESC, CSC, ECE, and Clarkson University Capital Region Campus courses that satisfy the engineering elective requirement.

Modern Languages and Literatures

Chair: Associate Professor M. Ferry

Faculty: Professors C. Batson, W. Garcia, C. Henseler, V. Martinez; Associate Professors K. Bidoshi, M. Chilcoat, D. Mosquera, C. Ndiaye, E. Nelson-Mukherjee, M. Ricci Bell, J. Ueno, Z. Zhang; Senior Lecturer M. Osuna; Assistant Professor S. Mueller; Visiting Assistant Professors C. Mouflard, D. Collinge

Administration: A. Sartiaux (Director of Language Center)

Staff: J. Tominosky (Administrative Assistant)

All students who begin the study of a new foreign language at Union College are encouraged to pursue it for at least three terms. Students who take 100-level courses in more than one foreign language will receive credit for the second 100-level course only upon completion of the 101-level course in at least one of the two languages. Students continuing a foreign language previously studied will be assigned to the proper course level by the department. Placement will be made in consultation with the Chair and faculty members of the department on the basis of the secondary school record and testing scores. Students may construct full majors or interdepartmental majors in Chinese, French and Francophone, German and Spanish and Hispanic Studies. Students in Japanese, and Russian have the option of an interdepartmental major with any other field. Minors are possible in Chinese, French, German, Japanese, Russian, and Spanish. Students of Chinese and Japanese have the option of the major or interdepartmental major in Asian Studies. Introductory courses are also offered in Arabic, Hebrew, Italian and Portuguese.

Requirements in All Languages

Requirements for Honors:

- A candidate for honors shall have an index in Departmental courses of not less than 3.5 and an overall cumulative index of not less than 3.3.
- The candidate shall have achieved a grade of "A" in three courses in the department, with at least one at the 300-level or higher.
- *Additional stipulations for full and interdepartmental majors in French, German, and Spanish.* **Majors** shall have achieved a grade of at least "A-" in two 400-level courses (**not including FRN 489, GER 489, SPN 489**). Interdepartmental majors shall have achieved a grade of at least "A-" in no fewer than three courses at the 300-level or higher, with at least one at the 400-level (**not including FRN 489, GER 489, SPN 489**).
- *Additional stipulations for interdepartmental majors in Chinese, Japanese, and Russian.* **Interdepartmental majors** shall have achieved a grade of at least "A-" in no fewer than three courses at the 300-level or higher, and one in an MLT course.
- For the **major**, the honors candidate shall complete a project of a literary and/or cultural nature. For the **interdisciplinary major**, the candidate may elect to complete a thesis/project relating the candidate's chosen disciplines. **In all cases**, the topic shall have received prior approval from the faculty advisor.
- For the **major**, the honors project is expected to be written in the foreign language studied. For the **interdisciplinary major**, the honors project should be written in the language deemed appropriate by the faculty advisor. For the interdisciplinary major in *Chinese and Japanese*, the project shall normally be written in English.
- The honors project shall have been awarded a grade no lower than "A-."
- When declaring candidacy for honors, a student shall write a statement outlining the nature and scope of the project and present it to the faculty member chosen to supervise the honors project, as well as to the Chair of the Department. The candidate's proposal must meet with the approval of both faculty members. This stipulation is waived when the honors project is written under the direct supervision of a Departmental faculty member in a class setting.

Requirement for taking a course without its prerequisites

In order to be placed at the proper level for their first language course at Union or to be assigned to any other course without having completed its prerequisite, students should contact the Departmental office for an appointment with the appropriate professor to get a signed permission slip or petition on the necessary waiver.

German Studies

Open to all students; no knowledge of the German language required, unless the course is taken for German credit. Students seeking language credit for the German Studies Major should register for the corresponding German course number (see **GER 330-GER 334**) and **must complete a considerable part of their course-work in German. Prerequisite for German credit in the MLT courses is the completion of at least GER 201.**

Japanese and Russian Requirements

Course Selection Guidelines

Students should be aware that all of the courses in Modern Languages and Literatures carry HUM and LCC credit for Common Curriculum (CC) Requirements, and many of our MLT courses and upper-level literature and culture courses count towards the Humanities Literature requirement.

Students should also be aware that many of our language programs offer the 100 class (Basic 1) only in the Fall term. French is the only exception, offering FRN 100 in both Fall and Winter terms.

Students with previous experience in a language should come to the Department office to make an appointment to see a professor in the appropriate language for proper placement. Our MLT courses do not require such placement, as they are taught in English.

Courses in Modern Literature, Culture, and Cinema in Translation (Taught in English)

Faculty in the Department of Modern Languages & Literatures offer a variety of courses on works of literature, culture, cinema, and media that have been translated into English. "MLT" courses allow English-speaking students to engage with texts and other cultural artifacts from around the world to help them to develop the awareness of cultural diversity that is needed to be a global citizen in the twenty-first century.

Spanish Language and Culture

Literatures and Cultures (300-level courses)

Majors, ID majors, and minors must take two 300-level courses from different clusters; there are four clusters (listed below). Prerequisite for 300-level courses listed in this section is SPN 203 or permission of the instructor.

Literatures and Cultures (400-level courses)

Prerequisites for 400-level courses listed in this section are two 300-level courses.

Chinese (ID), B.A.

Requirements for the Interdepartmental Major in Chinese:

A minimum of seven courses beyond the 101-level, including two courses on the 300-level and one MLT course, or a third course at the 300-level. 4 courses beyond the 101-level are required if combined with participation in a Union Term Abroad to China.

Chinese Minor

Requirements for the Minor in Chinese:

A minimum of 6 courses at the 101-level or above. For students not participating in the Term Abroad in China, one of those six courses should be an MLT course. For students participating in the Term Abroad in China, students may complete their minor in Chinese with 3 additional courses (which can include 100). When selecting courses for the term abroad, students should select courses directly related to the host culture, with the approval of the department chair.

Chinese, B.A.

Requirements for the Major in Chinese:

A minimum of 10 courses beyond the 101-level, including three 300 level, two 400 level, and 489 (Senior Project). Students have the option of taking one China-related MLT course for Chinese credit in place of one 400-level course. Majors are expected to participate on the China Term Abroad program and are encouraged to improve their language skills by attending the weekly Chinese Table and participating in other extracurricular

activities. In addition, majors are urged to take other courses related to Chinese culture and history in academic fields such as history, philosophy, anthropology, art history, and political science.

French and Francophone Studies (ID), B.A.

Requirements for the Interdepartmental Major in French and Francophone Studies:

A minimum of seven courses beyond the 101-level, including two 400-level courses and either FRN 489 or a project that integrates the two disciplines.

French and Francophone Studies Minor

Requirements for the Minor in French:

A minimum of six courses, including two 300-level courses.

French and Francophone Studies, B.A.

Requirements for the Major in French and Francophone Studies:

A minimum of 10 courses beyond the 101-level, including two 300-level courses, three 400-level courses, and FRN 489 (Senior Project). Participation in a Union Term Abroad program is normally expected. Courses listed under "Literature in Translation" may or may not count toward the major, interdepartmental major, or minor. One term of related history, one term of philosophy, and one term of English literature are strongly recommended, as well as relevant courses in art history in the major.

German Studies (ID), B.A.

Requirements for the Interdepartmental Major in German Studies:

A minimum of seven courses beyond the 101-level, including two courses at the 300 level and one course at the 400 level if the senior project course GER 489 in German is chosen; or it can include, in addition to two 300 level courses, two courses at the 400 level if the thesis (with a considerable German component) is written in the second field. Students have the option of taking one MLT course (Literature in Translation) for German credit. Interdepartmental majors are urged to take the Term Abroad and are encouraged to improve their language skills by living in the German House, attending the weekly German Table, and participating in other extracurricular activities.

German Studies Minor

Requirements for the Minor in German Studies:

A minimum of six courses, including at least two 300-level courses, only one of which may be either GER 300T or the MLT for German credit.

German Studies, B.A.

Requirements for the Major in German Studies:

A minimum of 10 courses beyond the 101-level, including three 300 level, and two 400 level, and GER 489 (Senior Project). Majors are normally expected to take one Term Abroad and are encouraged to improve their language skills by living in the German House, attending the weekly German Table, and participating in other extracurricular activities. Students have the option of taking one MLT course (Literature in Translation) for German credit. In addition, majors are urged to take other courses related to German culture and history in other academic fields such as English, history, philosophy, music, art history, and political science.

Japanese (ID), B.A.

Requirements for the Interdepartmental Major in Japanese or Russian:

A minimum of seven courses beyond the 101-level, including two courses on the 300-level and one MLT course, or a third course at the 300-level. 4 courses beyond the 101-level are required if combined with participation in a Union Term Abroad to Japan, or a study abroad in Russia.

Japanese Minor

Requirements for the Minor in Japanese or Russian:

A minimum of 6 courses at the 101-level or above. For students not participating in the Term Abroad in Japan, or study abroad in Russia, one of those six courses should be an MLT course. For students participating in the Term Abroad in Japan or study abroad in Russia, students may complete their minor in Japanese or Russian with 3 additional courses (which can include 100). When selecting courses for the term abroad, students should select courses directly related to the host culture, with the approval of the department chair.

Russian (ID), B.A.

Requirements for the Interdepartmental Major in Japanese or Russian:

A minimum of seven courses beyond the 101-level, including two courses on the 300-level and one MLT course, or a third course at the 300-level. 4 courses beyond the 101-level are required if combined with participation in a Union Term Abroad to Japan, or a study abroad in Russia.

Russian Minor

Requirements for the Minor in Japanese or Russian:

A minimum of 6 courses at the 101-level or above. For students not participating in the Term Abroad in Japan, or study abroad in Russia, one of those six courses should be an MLT course. For students participating in the Term Abroad in Japan or study abroad in Russia, students may complete their minor in Japanese or Russian with 3 additional courses (which can include 100). When selecting courses for the term abroad, students should select courses directly related to the host culture, with the approval of the department chair.

Spanish and Hispanic Studies (ID), B.A.

Requirements for the Interdepartmental Major in Spanish and Hispanic Studies:

A minimum of seven courses beyond the 101-level, including two 300-level courses (from different clusters; see listing of clusters below) and two 400-level courses; one of the 400-level courses must be taken with WS designation in the Spring term of the senior year unless the student writes a thesis in the other department that integrates the two disciplines. Students who seek and qualify for departmental honors must take SPN 489 (Honors Senior Project), which will count as one 400-level course with WS designation. ID majors seeking honors must fulfill honors requirements in both departments/programs.

- 300-level Clusters
- Studies in Spanish Peninsular Literatures and Cultures (SPN 300-324)
- Studies in Latin American Literatures and Cultures (SPN 325-349)
- Studies in Latina/o Literatures and Cultures (SPN 350-360)
- Studies in Contemporary Communications (SPN 360-374)
- Studies in Comparative Perspectives (SPN 375-399)

Spanish and Hispanic Studies, B.A.

Requirements for the Major in Spanish and Hispanic Studies:

A minimum of 10 courses beyond the 101-level, including two 300-level courses (from different clusters; see listing of clusters below), and four 400-level courses, one of which must be taken with WS designation in the Spring term of the senior year. Students who seek and qualify for departmental honors must take SPN 489 (Honors Senior Seminar), which will count as one 400-level course with WS designation. Courses listed under "Literature, Culture, and Cinema in Translation" do not count toward the major or interdepartmental major. Majors are expected to participate in a Term Abroad program. Elective courses pertinent to the major/minor in Spanish from other humanities and social sciences areas such as history, philosophy, literature, political science and art history, etc. are strongly recommended.

- 300-level Clusters
- Studies in Spanish Peninsular Literatures and Cultures (SPN 300-324)
- Studies in Latin American Literatures and Cultures (SPN 325-349)
- Studies in Latina/o Literatures and Cultures (SPN 350-360)
- Studies in Contemporary Communications (SPN 360-374)
- Studies in Comparative Perspectives (SPN 375-399)

Spanish Minor

Requirements for the Minor in Spanish:

A minimum of six courses, including two 300-level courses (from different clusters; see listing of clusters below). No more than three 300-level courses can be counted for the minor. In place of one of the 300-level courses, one "Literature, Culture, and Cinema in Translation" (MLT) course (on Peninsular Spanish or Latin American literatures and cultures) can be counted towards the minor.

- 300-level Clusters
- Studies in Spanish Peninsular Literatures and Cultures (SPN 300-324)
- Studies in Latin American Literatures and Cultures (SPN 325-349)
- Studies in Latina/o Literatures and Cultures (SPN 350-360)
- Studies in Contemporary Communications (SPN 360-374)
- Studies in Comparative Perspectives (SPN 375-399)

Music

Chair: Professor H. Tann

Faculty: Professors D. McMullen J. Matsue (on leave Fall, Winter, Spring); Associate Professors T. Olsen

Staff: L. Goodman (Office Assistant), TBA (Administrative Assistant)

Ensembles and Lessons

Students are invited to participate in a variety of faculty-led ensembles. A list of approved instrumental and vocal instructors is available from the music faculty. There is no fee for participation in the ensembles; music lessons are paid for separately on an individual basis. To gain transcript recognition for participation in these activities, students must register with the registrar early in the term and achieve a passing grade from the teacher, director, or conductor. Requests to register for practicum transcript recognition after the drop-add period will not be honored. Each full music credit is accumulated from three previous passing grades in the same practicum (AMU 010, AMU 012, AMU 014, AMU 015, AMU 017, or AMU 018). There are no limits on how many practicum courses can appear on the student's transcript. To earn course credit a student must take three terms of the same practicum. At most two of these credits can be used towards graduation. Full music majors and ID majors must accumulate at least two years of practicum credit (in one (or more) faculty-led ensemble(s); music majors and minors must accumulate at least one year of practicum credit in a faculty-led ensemble.

Music (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses:

- AMU 101 - Theory 1: Diatonic Harmony
- AMU 102 - Theory 2: Chromatic Harmony

Two music history courses

Chosen from below, (**one** must be AMU 213 or AMU 214):

- AMU 212 - Baroque Music

- AMU 213 - Haydn, Mozart, Beethoven
- AMU 214 - Romanticism
- AMU 215 - Music in the 20th Century
- AMU 340 - Early Music Seminar

A world music course

- AMU 220 - Music and Culture

Additional Requirements

- Two electives (at least one 200-level or above)
- AMU 497
and
- at least two years of practicum credit in a faculty-led ensemble.

Requirements for Honors in Music:

To be eligible for departmental honors, a student must fulfill the following requirements: (1) a minimum index of 3.3 in music; (2) for full Majors: a grade of "A minus" or better in a two-term senior project in composition, performance, research, or analysis (AMU 498-AMU 499); for Interdepartmental Majors: a grade of "A minus" or better in a one-term senior project in composition, performance, research, or analysis (AMU 497). In addition, the student must satisfy College requirements for departmental honors.

Course Selection Guidelines:

Students are required to consult their music faculty advisors when choosing electives. Concentrations are available in composition, music history, performance, and ethnomusicology. All students should plan to complete the 100-level music theory sequence early in their music studies. Music theory 3 is strongly recommended as a capstone theory course for students specializing in composition, performance, or music history. The department values performance as an essential component of musical training. The list of ensembles follows the music course descriptions.

Music Minor

Requirements for the Minor in Music:

Six courses, including the theory sequence

- AMU 101 - Theory 1: Diatonic Harmony
- AMU 102 - Theory 2: Chromatic Harmony

Two music history courses

Chosen from below (must include either AMU 213 or AMU 214)

- AMU 212 - Baroque Music
- AMU 213 - Haydn, Mozart, Beethoven
- AMU 214 - Romanticism
- AMU 215 - Music in the 20th Century
- AMU 340 - Early Music Seminar

A world music course

- AMU 220 - Music and Culture

Minor in World Music and Cultures

For more information on this minor go to World Musics and Cultures Minor.

Additional Requirements

- One music elective chosen in consultation with student's departmental adviser
- and**
- At least one year of practicum credit in a faculty-led ensemble.

Course Selection Guidelines:

Students are required to consult their music faculty advisors when choosing electives. Concentrations are available in composition, music history, performance, and ethnomusicology. All students should plan to complete the 100-level music theory sequence early in their music studies. Music theory 3 is strongly recommended as a capstone theory course for students specializing in composition, performance, or music history. The department values performance as an essential component of musical training. The list of ensembles follows the music course descriptions.

Music, B.A.

Requirements for the Major:

Twelve courses, including the theory sequence

- AMU 101 - Theory 1: Diatonic Harmony
- AMU 102 - Theory 2: Chromatic Harmony
- AMU 200 - Theory 3: Phrase and Form

Three music history courses

Chosen from below, (one course **must** be AMU 213 or 214):

- AMU 212 - Baroque Music
- AMU 213 - Haydn, Mozart, Beethoven
- AMU 214 - Romanticism
- AMU 215 - Music in the 20th Century
- AMU 340 - Early Music Seminar

A world music course

- AMU 220 - Music and Culture

Additional Requirements

- Three music electives chosen in consultation with the student's departmental advisor (at least one 200-level or above)
- a two-term senior project and at least
- two years of practicum credit in faculty-led ensembles

Requirements for Honors in Music:

To be eligible for departmental honors, a student must fulfill the following requirements: (1) a minimum index of 3.3 in music; (2) for full Majors: a grade of "A minus" or better in a two-term senior project in composition, performance, research, or analysis (AMU 498-AMU 499); for Interdepartmental Majors: a grade of "A minus" or better in a one-term senior project in composition, performance, research, or analysis (AMU 497). In addition, the student must satisfy College requirements for departmental honors.

Course Selection Guidelines:

Students are required to consult their music faculty advisors when choosing electives. Concentrations are available in composition, music history, performance, and ethnomusicology. All students should plan to complete the 100-level music theory sequence early in their music studies. Music theory 3 is strongly recommended as a capstone theory course for students specializing in composition, performance, or music history. The department values performance as an essential component of musical training. The list of ensembles follows the music course descriptions.

Nanotechnology

Directors: Professor M. Hagerman (Chemistry); Associate Professor P. Catravas (Electrical and Computer Engineering)

Nanotechnology Minor

The interdisciplinary minor in nanotechnology is primarily aimed at science and engineering majors who wish to become more aware of the properties of matter at the nanoscale, the potential usefulness of those properties, and their social and economic implications. It will also appeal to students interested in science and technology policy who wish to expand their knowledge of science and technology.

Requirements for the minor:

1. Required courses for all minors (three courses):

- CHM 224 - Frontiers of Nanotechnology and Nanomaterials or
- ESC 224 - Frontiers of Nanotechnology and Nanomaterials
- ESC 324 - Advanced Topics in Nanoscience
- MER 213 - Material Science

2. Elective physical science course:

Any course outside of the student's major department that counts toward that department's major.

3. Elective Social Science or Humanities course:

Any course from the following list

- ANT 240 - Technology, Culture & Society
- HST 193 - Science, Medicine and Technology in Culture
- HST 253 - Physics and Politics
or
- PHY 053 - Physics and Politics
- PHL 232 - Philosophy of Science

4. The student's senior writing, research, or design project should involve elements of nanoscience or nanotechnology.

This senior project should be approved by one of the Nanotechnology program directors.

It is strongly recommended that minors complete MER 354 - Advanced Materials.

Neuroscience

Directors: Associate Professors C. Chabris (Psychology), Q. Chu-LaGraff (Biological Sciences)

Faculty: Professors L. Fleishman, R. Olberg (Biological Sciences), D. Burns, C. Weisse (Psychology); Associate Professors S. Kirkton (Biological Sciences), C. Fernandes, K. Striegnitz (Computer Science), C. Anderson-Hanley, S. Romero (Psychology); Assistant Professors J. Rieffel (Computer Science), T. Buma (Electrical and Computer Engineering), J. Wang (Mathematics), D. Barnett (Philosophy); Visiting Assistant Professors D. Hayes (PSY), N. Webb (Computer Science); Senior Lecturer B. Cohen (Biology)

The major in neuroscience is designed for students with interests that intersect the fields of biology, psychology, and computer science. Neuroscience focuses on the relationships among brain function, information processing, and behavior. Researchers in this field come from widely disparate backgrounds, including cognitive psychology, clinical neuropsychology, neuroimaging, neurobiology, molecular biology, genetics, neuroethology, biopsychology, physiology, neurology, psychiatry, philosophy, and computer science. Thus, research questions are considered from many different levels, and many different converging methodologies are used.

Neuroscience Minor

Requirements for the Minor:

Six courses from sections 1 or 2:

Note: For Biology majors at least four of these courses must come from the cognitive and/or computational tracks. For Psychology majors, at least four of these courses must come from the bioscience and/or computational tracks. For Computer Science majors, at least four of these courses must come from the bioscience and/or cognitive tracks.

Section 1:

- BIO 110 - (102) Heredity, Evolution, and Ecology
- BIO 112 - (101) Physiology of Cells and Organisms
- BIO 225 - Molecular Biology of the Cell
- BIO 242 - Neurobiology
- PHL 265 - Minds and Machines
- PSY 200 - Statistical Methods in Psychology
- PSY 210 - Behavioral Neuroscience
- PSY 220 - Attention and Memory
- **and**
- CSC 103 - Taming Big Data: Introduction to Computer Science
- **or**
- CSC 106 - Can Computers Think? Introduction to Computer Science

Section 2:

Bioscience Track:

- BIO 325 - Animal Behavior
- BIO 350 - Evolutionary Biology
- BIO 362 - Experimental Neurobiology
- BIO 363 - Cellular Neurosciences
- BIO 365 - Neural Circuits and Behavior
- BIO 370 - General Endocrinology
- BIO 384 - Genetics and Molecular Biology
- PSY 310 - Cognitive Neuroscience w/Lab

Cognitive Track:

- BIO 325 - Animal Behavior
- CSC 320 - Artificial Intelligence
- PSY 213 - Clinical Neuropsychology
- PSY 222 - Judgment and Decision Making
- PSY 310 - Cognitive Neuroscience w/Lab
- PSY 313 - (211) Sensation and Perception

Computational Track:

- CSC 206 - Natural Language Processing
- CSC 234 - Data Visualization
- CSC 235 - Modeling & Simulation
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 320 - Artificial Intelligence
- CSC 321 - Data Mining and Machine Learning
- CSC 325 - Robotics
- CSC 329 - Neural Networks
- PHL 442 - Advanced Logic
- PHL 462 - Philosophy of Language

Neuroscience, B.S.

The neuroscience major consists of three tracks: The Bioscience track, the Cognitive track, and the Computational track.

- The *Bioscience* track focuses on the biological basis of neural development, function, and plasticity. Students will develop an understanding of the nervous system and its role in cognition, perception, and action at the molecular, cellular, and systems level.
- The *Cognitive* track provides students with an understanding of how neural networks and brain mechanisms give rise to specific mental processes and behavior. Students begin with the processes that have been traditionally studied in the area of cognitive psychology, but can tailor the program to include phenomena that are traditionally studied in developmental or clinical psychology as well.
- The *Computational* track focuses on issues related to developing computational models of neuronal and mental processes. Students will develop an understanding of artificial intelligence that uses biologically plausible methods.

Requirements for the Major:

The neuroscience major consists of four parts: (1) a core of required courses that all majors must take; (2) required courses in one of three tracks—bioscience, cognitive, or computational; (3) a general elective; (4) a senior writing requirement. Unless noted below, course descriptions are listed under their home departments. It is not possible to be an interdepartmental major in Neuroscience.

1. Required courses for all neuroscience majors:

- BIO 110 - (102) Heredity, Evolution, and Ecology
- BIO 112 - (101) Physiology of Cells and Organisms
- BIO 225 - Molecular Biology of the Cell
- BIO 242 - Neurobiology
- PHL 265 - Minds and Machines
- PSY 200 - Statistical Methods in Psychology
- PSY 210 - Behavioral Neuroscience
- PSY 220 - Attention and Memory
- **and**
- CSC 103 - Taming Big Data: Introduction to Computer Science
- **or**
- CSC 106 - Can Computers Think? Introduction to Computer Science

2. Required and cognate courses in one of three tracks:

Bioscience Track:

Required Courses:

- BIO 362 - Experimental Neurobiology
or
- BIO 363 - Cellular Neurosciences

And any one of the following:

- BIO 325 - Animal Behavior
- BIO 350 - Evolutionary Biology
- BIO 362 - Experimental Neurobiology
- BIO 363 - Cellular Neurosciences
- BIO 365 - Neural Circuits and Behavior
- BIO 370 - General Endocrinology
- BIO 384 - Genetics and Molecular Biology
- PSY 310 - Cognitive Neuroscience w/Lab

Students must also take the following cognate courses:

- CHM 101 - Introductory Chemistry 1
- CHM 102 - Introductory Chemistry 2

- MTH 110 - Calculus 1: Differential Calculus
or
- MTH 112 - Calculus 2: Integral Calculus
or
- MTH 113 - AP Calculus
or
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
or
- MTH 117 - Calculus 4: Integral Vector Calculus

- **Note:** MTH 112 and one term of physics are recommended.

Cognitive Track:

Required Courses:

- PSY 310 - Cognitive Neuroscience w/Lab

And any one of the following:

- BIO 325 - Animal Behavior
- CSC 320 - Artificial Intelligence
- PSY 213 - Clinical Neuropsychology
- PSY 222 - Judgment and Decision Making
- PSY 313 - (211) Sensation and Perception
- PSY 410 - Seminar in Brain and Behavior

Students must also take the following cognate courses:

- CHM 101 - Introductory Chemistry 1
- MTH 110 - Calculus 1: Differential Calculus
or
- MTH 112 - Calculus 2: Integral Calculus
or
- MTH 113 - AP Calculus
or
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
or
- MTH 117 - Calculus 4: Integral Vector Calculus
and
- MTH 197 - Discrete Mathematics for Computer Science
or
- MTH 199 - Introduction to Logic and Set Theory
- PSY 300 - Research Methods in Psychology
- **Note:** MTH 112 and one term of physics are recommended.

Computational Track:

Required Courses:

Any TWO from the following list:

- CSC 206 - Natural Language Processing
- CSC 234 - Data Visualization
- CSC 235 - Modeling & Simulation
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 320 - Artificial Intelligence
- CSC 321 - Data Mining and Machine Learning
- CSC 325 - Robotics
- CSC 329 - Neural Networks
- PHL 442 - Advanced Logic

- PHL 462 - Philosophy of Language

Students must also take the following cognate courses:

- MTH 110 - Calculus 1: Differential Calculus
or
- MTH 112 - Calculus 2: Integral Calculus
or
- MTH 113 - AP Calculus
or
- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
or
- MTH 117 - Calculus 4: Integral Vector Calculus
and
- MTH 197 - Discrete Mathematics for Computer Science
or
- MTH 199 - Introduction to Logic and Set Theory
and
- CSC 150 - Data Structures W/Lab
- **Note:** MTH 112, CHM 101, and one term of physics are recommended.

3. Electives. One additional course from the following list:

- BIO 264 - Epigenetics, Development, and Diseases
- BIO 325 - Animal Behavior
- BIO 330 - Comparative Animal Physiology
- BIO 332 - Comparative Vertebrate Anatomy
- BIO 350 - Evolutionary Biology
- BIO 354 - Developmental Biology
- BIO 362 - Experimental Neurobiology
- BIO 363 - Cellular Neurosciences
- BIO 365 - Neural Circuits and Behavior
- BIO 370 - General Endocrinology
- BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates
- BIO 384 - Genetics and Molecular Biology
- CSC 206 - Natural Language Processing
- CSC 234 - Data Visualization
- CSC 235 - Modeling & Simulation
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 320 - Artificial Intelligence
- CSC 321 - Data Mining and Machine Learning
- CSC 325 - Robotics
- CSC 329 - Neural Networks
- ECE 487 - Medical Imaging Systems
- MTH 128 - Probability
- PHL 231 - Symbolic Logic
- PHL 232 - Philosophy of Science
- PHL 365 - Philosophy of Mind
- PHL 447 - Topics in Logic

- PHL 462 - Philosophy of Language
- PSY 213 - Clinical Neuropsychology
- PSY 215 - Health Psychology
- PSY 222 - Judgment and Decision Making
- PSY 225 - The Psychology of Language
- PSY 240 - Developmental Psychology
- PSY 250 - Abnormal Psychology
- PSY 300 - Research Methods in Psychology
- PSY 310 - Cognitive Neuroscience w/Lab
- PSY 313 - (211) Sensation and Perception
- PSY 331 - Psychology of Emotion
- PSY 352 - Psychological Assessment and Testing

- PSY 402 - Honors Colloquium 1
and
- PSY 403 - Honors Colloquium 2
and
- PSY 404 - Honors Colloquium 3

- PSY 410 - Seminar in Brain and Behavior
- PSY 411 - Seminar in Clinical Neuropsychology
- PSY 420 - Seminar in Cognitive Psychology
- PSY 422 - Communicating Psychological Science

4. Senior writing requirement. Either:

(a) One of the following senior seminars:

- BIO 487 - Senior Writing Seminar: Topics in Ecological and Evolutionary Biology
- BIO 488 - Senior Writing Seminar: Topics in Organismal and Physiological Biology
- BIO 489 - Senior Writing Seminar: Topics in Cellular and Molecular Biology
- PSY 410 - Seminar in Brain and Behavior
- PSY 411 - Seminar in Clinical Neuropsychology
- PSY 420 - Seminar in Cognitive Psychology
- PSY 422 - Communicating Psychological Science

(b) A two or three term senior thesis.

Students must register for senior thesis courses in the department of their thesis advisor:

Biology thesis advisors:

- BIO 497 - Biology Honors Research 1
- BIO 498 - Biology Honors Research 2

- BIO 499 - Biology Honors Research 3

Psychology thesis advisors:

- PSY 498 - Psychology Senior Thesis 1
- PSY 499 - Psychology Senior Thesis 2
or
- PSY 487 - Psychology 3 Term Thesis 1
- PSY 488 - Psychology 3 Term Thesis 2
- PSY 489 - Psychology 3 Term Thesis 3

Computer Science thesis advisors:

- CSC 497 - Computer Science Capstone Seminar
- CSC 498 - Computer Science Capstone Project 1
- CSC 499 - Computer Science Capstone Project 2

Thesis advisors from other departments:

Contact the Neuroscience program director(s) first.

Requirements for Honors:

In addition to meeting college-wide requirements, honors in Neuroscience requires: (1) a minimum grade point average of 3.30 in the major (including thesis grades, but not including the CHM or MTH cognate courses listed in #2 above); (2) a minimum of three grades of A or A- in the required courses for all majors (see #1 above); (3) satisfactory completion of a senior thesis with a minimum grade of A-; (4) presentation of the student's work, usually at the Steinmetz Symposium. Any non-adjunct professor or lecturer in the Psychology, Biology, or Computer Science departments may advise a senior thesis; faculty members *not* in those departments must be affiliated with the Neuroscience program in order to advise senior theses. Adjunct faculty members may only advise theses with explicit approval of the Neuroscience program director(s). However, to do a thesis advised by a faculty member not affiliated with the Neuroscience program, students must receive permission from the program director(s) in advance. Students are advised to start the process of finding a thesis topic and advisor as early in the junior year as possible.

Course Selection Guidelines for the Neuroscience Major:

It is recommended that students in this major start with BIO 110, BIO 112, and PSY 210 as these courses are prerequisites for Neuroscience students to take the neuroscience-related courses in the Psychology department without taking PSY 100 (Introduction to Psychology), which *does not count* toward the Neuroscience major. After completing PSY 210, Neuroscience students may take other Psychology courses without first completing PSY 100. *Students are strongly encouraged to take PSY 200, PSY 210, BIO 225, BIO 242 and CSC 106 (or CSC 103) as early as possible, preferably in the sophomore year.* CSC 106 is preferred over CSC 103, but both satisfy the same requirement. Students are also advised to take CHM 101 prior to taking BIO 225. Although not required, it is typical that Cognitive Track majors take senior seminars in the Psychology department, and Bioscience Track majors take senior seminars in the Biology department. Normally, courses taken outside of Union College will not be counted toward the major. However, exceptions can be made under extenuating circumstances on an ad-hoc basis. To receive Neuroscience credit for courses taken elsewhere, students must contact the program director(s) to request permission, and the courses must match a Union course or have similar neuroscience content to Union courses that do receive credit.

Organizing Theme

Organizing Theme B.S. / B.A.

The Organizing Theme Major is best suited for the self-motivated student who has a well-defined intellectual curiosity for a topic involving multiple disciplines and which cannot be accommodated by the already existing majors, double majors, or interdepartmental majors at Union College. The Organizing Theme Major encourages the exploration of thematically related connections across disciplines, and therefore must incorporate courses from at least three different departments, with no more than four courses from any one department to count toward the major. The student must choose and work with an advisor (or advisors) who is supportive of the student's proposed Organizing Theme Major and has a clear understanding of what the project entails.

The Application Process

The Organizing Theme Major proposal requires the approval of the chosen Organizing Theme advisor(s) and then a faculty committee established by the Dean of Studies. It may be proposed no sooner than the spring term of the freshman year and no later than the sixth week of the spring term sophomore year (in extremely rare cases, this deadline may be extended to the first week of the fall term of junior year). For more information about the Organizing Theme Major and the application process, see the Organizing Theme Web page or contact the Dean of Studies.

Requirements for the Major

The approved program must conform to the disciplines already established at Union. Your proposal may be submitted no sooner than spring term of your freshman year, and must be submitted, at the very latest, by week six of spring term of your sophomore year. It consists of a total of 12 courses that clearly relate to the organizing theme, at least two of which must be at the 300- or 400-level. In addition, the student must complete a one-term senior thesis or project (ORT 497). Or the student must complete 11 courses (at least two of which must be at the 300- or 400-level) and then a two-term senior thesis or project (ORT 498 & ORT 499). NOTE: When preparing the Organizing Theme Major proposal with the advisor(s), the student must identify these 12 courses, plus several (3-4) more that can stand in as alternates in case some of the courses you choose are not available at the time you wish to take them. It is the student's responsibility to check with departments to verify that the courses are offered in the time frame required. The one-term project (ORT 497) or two-term senior thesis (ORT 498 & ORT 499) must demonstrate an integration of the knowledge and skills gained from the Organizing Theme Major courses that the student has taken. The advisor(s) will direct this senior thesis or project.

Philosophy

Chair: Professor L. Zaibert

Faculty: Professor R. Baker; Associate Professor F. Davis; Assistant Professor K. Scheiter; Visiting Assistant Professors D. Nowakowski, K. Tullmann

Staff: L. Pelish (Administrative Assistant)

Introductory Courses

Introductory Courses, whether issues-oriented or historically-oriented, do not presuppose any prior acquaintance with philosophy. They may be taken in any order. For more advising information, consult the Philosophy Department website.

Intermediate Courses

Intermediate Courses do not presuppose any prior acquaintance with philosophy. They may be taken in any order; and are pitched at a level that is more appropriate for second and higher year students than for first year students. However, in some cases an order for taking intermediate courses is recommended (for this and other advising information, consult the Philosophy Department website).

Advanced Courses

Advanced courses may be taken in any order, although in some cases certain orders will be recommended. Unlike Introductory and Intermediate courses, most advanced courses presuppose that the student has already taken at least two philosophy courses. Although first and second year students will be allowed to take advanced courses, these courses are pitched at a level that is more appropriate for third and fourth year students. For more advising information, consult www.union.edu/academic_depts/philosophy.

Philosophy (ID), B.A.

Requirements for the Interdepartmental Major:

Seven courses in philosophy, of which four should be numbered 200 or above; of these four courses, two (excluding PHL 408/PHL 418, PHL 498, PHL 499, PHL 411, PHL 412 and Independent Study) should be numbered 400 or above. The seven courses should include:

- PHL 408 - New Directions in Philosophy
and
- PHL 418 - New Directions in Philosophy
or
- PHL 411 - Writing Philosophy Workshop
and
- PHL 412 - Writing Philosophy Workshop

two courses in the history of philosophy

- PHL 150 - Ancient Philosophy
- PHL 155 - Seventeenth and Eighteenth Century European Philosophy
- PHL 160 - Nineteenth and Twentieth Century Philosophy
- PHL 166 - Indian Philosophy
- PHL 167 - Chinese Philosophy
- PHL 245 - Buddhist Ethics
- PHL 338 - Zen and Tibetan Buddhism
- PHL 341 - The Contemporary Crisis of Truth
- PHL 450 - Topics in the History of Philosophy

one course in logic

- PHL 125 - Critical Thinking: An Introduction to Logic
- PHL 231 - Symbolic Logic
- PHL 235 - Reasoning and the Law
- PHL 447 - Topics in Logic

Requirements for Honors in Philosophy:

To be eligible for departmental honors, the candidate must (1) complete all requirements for a major in Philosophy, or for an ID major in Philosophy and another discipline; (2) have a minimum grade point average of 3.3 in philosophy; (3) have received at least three "A" or "A-" grades in philosophy courses, excluding the PHL 498 - Philosophy Honors Thesis 1/ PHL 499 - Philosophy Honors Thesis 2; (4) receive a grade of "A" or "A-" on their thesis; (5) publicly defend the thesis; and (6) be voted honors by a committee of three faculty members appointed by the department or, in the case of an ID major, by the Departments. In addition, the candidate must satisfy all College-wide requirements for honors or ID honors.

In satisfying departmental honors requirements, neither PHL 498 or PHL 499, neither PHL 408 or PHL 418, neither PHL 411 or PHL 412 counts towards the total number of advanced courses (≥ 400 level) you need to take to fulfill your philosophy major, but both courses do count towards the number of intermediate level courses (≥ 200 level) that you need to take.

Course Selection Guidelines

Course Numbering: While our course numbers reveal levels of difficulty (so that 100-level courses are introductory, 200-level and 300-level courses are intermediate, and 400-level courses are advanced), philosophy courses afford great flexibility. In other words, students, including non-majors, can sometimes take courses at the 200 and 300 level, even if they have not taken an introductory in philosophy. Please contact the professor offering any given course for further information and advice.

Senior Writing Requirement: Students who take Departmental Honors and ID majors who are required to write a senior thesis by their other major Department will satisfy this requirement by writing a senior thesis. All other students will in PHL 408/PHL 418 significantly develop a paper that they have written.

All students are strongly advised to consult the advising information on the Philosophy Department's Website.

Introductory Courses

Introductory Courses, whether issues-oriented or historically-oriented, do not presuppose any prior acquaintance with philosophy. They may be taken in any order. For more advising information, consult the Philosophy Department website.

Intermediate Courses

Intermediate Courses do not presuppose any prior acquaintance with philosophy. They may be taken in any order; and are pitched at a level that is more appropriate for second and higher year students than for first year students. However, in some cases an order for taking intermediate courses is recommended (for this and other advising information, consult the Philosophy Department website).

Advanced Courses

Advanced courses may be taken in any order, although in some cases certain orders will be recommended. Unlike Introductory and Intermediate courses, most advanced courses presuppose that the student has already taken at least two philosophy courses. Although first and second year students will be allowed to take advanced courses, these courses are pitched at a level that is more appropriate for third and fourth year students. For more advising information, consult www.union.edu/academic_depts/philosophy.

Philosophy Minor

Requirements for the Minor:

Five courses in philosophy, of which two should be numbered 200 or above. The five courses should include:

one course in the history of philosophy

i.e., one of the following:

- PHL 150 - Ancient Philosophy
- PHL 155 - Seventeenth and Eighteenth Century European Philosophy
- PHL 160 - Nineteenth and Twentieth Century Philosophy
- PHL 166 - Indian Philosophy
- PHL 167 - Chinese Philosophy
- PHL 245 - Buddhist Ethics
- PHL 338 - Zen and Tibetan Buddhism
- PHL 341 - The Contemporary Crisis of Truth
- PHL 450 - Topics in the History of Philosophy

and one course in logic

- PHL 125 - Critical Thinking: An Introduction to Logic
- PHL 231 - Symbolic Logic
- PHL 235 - Reasoning and the Law
- PHL 447 - Topics in Logic

Philosophy, B.A.

Requirements for the Major:

Eleven courses in philosophy, of which seven should be numbered 200 or above; of these seven courses, three (excluding PHL 408/PHL 418, PHL 498, PHL 499, and Independent Study) should be numbered 400 or above. The eleven courses should include:

Two courses in the history of philosophy

- PHL 150 - Ancient Philosophy
- PHL 155 - Seventeenth and Eighteenth Century European Philosophy
- PHL 160 - Nineteenth and Twentieth Century Philosophy
- PHL 166 - Indian Philosophy
- PHL 167 - Chinese Philosophy
- PHL 245 - Buddhist Ethics
- PHL 338 - Zen and Tibetan Buddhism
- PHL 341 - The Contemporary Crisis of Truth
- PHL 450 - Topics in the History of Philosophy

One course in logic

- PHL 125 - Critical Thinking: An Introduction to Logic
- PHL 231 - Symbolic Logic
- PHL 235 - Reasoning and the Law
- PHL 447 - Topics in Logic

Additional Requirements:

- PHL 408 - New Directions in Philosophy
- PHL 418 - New Directions in Philosophy
- PHL 411 - Writing Philosophy Workshop
- PHL 412 - Writing Philosophy Workshop

Requirements for Honors in Philosophy:

To be eligible for departmental honors, the candidate must (1) complete all requirements for a major in Philosophy, or for an ID major in Philosophy and another discipline; (2) have a minimum grade point average of 3.3 in philosophy; (3) have received at least three "A" or "A-" grades in philosophy courses, excluding the PHL 498 - Philosophy Honors Thesis 1/ PHL 499 - Philosophy Honors Thesis 2; (4) receive a grade of "A" or "A-

" on their thesis; (5) publicly defend the thesis; and (6) be voted honors by a committee of three faculty members appointed by the department or, in the case of an ID major, by the Departments. In addition, the candidate must satisfy all College-wide requirements for honors or ID honors.

In satisfying departmental honors requirements, neither PHL 498 or PHL 499, neither PHL 408 or PHL 418, neither PHL 411 or PHL 412 counts towards the total number of advanced courses (≥ 400 level) you need to take to fulfill your philosophy major, but both courses do count towards the number of intermediate level courses (≥ 200 level) that you need to take.

Course Selection Guidelines

Course Numbering: While our course numbers reveal levels of difficulty (so that 100-level courses are introductory, 200-level and 300-level courses are intermediate, and 400-level courses are advanced), philosophy courses afford great flexibility. In other words, students, including non-majors, can sometimes take courses at the 200 and 300 level, even if they have not taken an introductory in philosophy. Please contact the professor offering any given course for further information and advice.

Senior Writing Requirement: Students who take Departmental Honors and ID majors who are required to write a senior thesis by their other major Department will satisfy this requirement by writing a senior thesis. All other students will in PHL 408/PHL 418 significantly develop a paper that they have written.

All students are strongly advised to consult the advising information on the Philosophy Department's Website.

Introductory Courses

Introductory Courses, whether issues-oriented or historically-oriented, do not presuppose any prior acquaintance with philosophy. They may be taken in any order. For more advising information, consult the Philosophy Department website.

Intermediate Courses

Intermediate Courses do not presuppose any prior acquaintance with philosophy. They may be taken in any order; and are pitched at a level that is more appropriate for second and higher year students than for first year students. However, in some cases an order for taking intermediate courses is recommended (for this and other advising information, consult the Philosophy Department website).

Advanced Courses

Advanced courses may be taken in any order, although in some cases certain orders will be recommended. Unlike Introductory and Intermediate courses, most advanced courses presuppose that the student has already taken at least two philosophy courses. Although first and second year students will be allowed to take advanced courses, these courses are pitched at a level that is more appropriate for third and fourth year students. For more advising information, consult www.union.edu/academic_depts/philosophy.

Physics

Chair: Professor R. Koopmann

Faculty: Professors S. Maleki, G. Reich (on leave Spring), M. Vineyard (on leave, Fall, Spring); Associate Professors S. Amanuel, C. Orzel; Assistant Professors N. Mann, H. Watson; Senior Lecturer S. LaBrake, J. Marr, F. Wilkin; Visiting Assistant Professor G. Hallenbeck

Staff: J. Sheehan (Technician), L. Stec (Administrative Assistant)

The Physics and Astronomy Department offers a bachelor of science degree in Physics as well as minors in Astronomy, Astrophysics, and Physics. Example 4-year schedules are available on the Department of Physics & Astronomy website. The Physics and Astronomy Department offers a bachelor of science degree in Physics as well as minors in Astronomy, Astrophysics, and Physics.

Common Curriculum (CC) Courses

Courses numbered in the 050's are designed particularly for non-science majors seeking to satisfy Common Curriculum requirements, and all of these courses carry Common Curriculum credit. These courses may count toward the major in astronomy or the interdepartmental major (see requirements for the Astronomy, B.A. major and Astronomy (ID), B.A. ID major), but they may not be counted toward the major in physics or toward any other science or engineering major.

Course Selection Guidelines

Placement: Students who score a grade of 4 or 5 on the Advanced Placement C-exam (mechanics and/or electromagnetics), an A on the physics A-levels, a 5 or above on the Higher Level or a 6 or above on the standard exam of the International Baccalaureate (provided they earn the IB diploma), may be given credit for up to a maximum of two courses (PHY 120 and/or PHY 121). If a student does not earn the IB diploma, they will be given credit only if they pass the higher level exam with a grade of 6 or above. Students who score a grade of 4 or 5 on both the Physics 1 and Physics 2 AP exams will earn one SET credit in Physics.

Courses Suitable for Non-Majors: The following courses are designed to fulfill the Science and Technology Common Curriculum requirement (some of these courses have labs and some do not): AST 050, AST 051, AST 052, AST 058, PHY 051, PHY 053, and PHY 054. Life-science students should take PHY 110-PHY 111. Engineering and physical-science students should take PHY 120-PHY 121. Other courses suitable for selected non-majors include AST 100, AST 105, AST 200, AST 210, AST 220, AST 230, AST 240, PHY 122, PHY 123, and PHY 210.

Prerequisites: There are no placement test requirements for courses in the Department of Physics and Astronomy. All courses numbered 100 or above have prerequisites. Please review the course descriptions below to identify the requirements.

Physics (ID), B.S.

Requirements for the Interdepartmental Major:

Students taking physics or astronomy as part of an 8-6 interdepartmental major program can choose from either a conceptual or a calculus track. Suitable choices of courses numbered in the 50s, as well as independent study courses 495-498, can count toward the *conceptual track* ID major (such as Arts and Physics or Physics and Society). Suitable choices of courses numbered 100 or greater can count toward a *calculus track* ID major (such as Computational Physics, Biophysics, Geophysics, Environmental or Chemical Physics). For any of these ID majors, a written proposal must be submitted by the student, in consultation with their faculty advisor, for approval by the Department of Physics and Astronomy.

Requirements for the Leadership in Medicine Program:

Students in the Leadership in Medicine program whose science emphasis is in physics should take the following seven courses: PHY 110, PHY 111 (both already core courses), PHY 122, PHY 123, PHY 210, and two additional 200-level, 300-level, or PHY 490/495. Students with AP credit for PHY 120 and/or PHY 121 should take one additional physics elective (and one additional math course) in consultation with their physics advisor.

Physics Minor

Requirements for the Minor:

The Department of Physics and Astronomy offers academic minors in physics, astronomy, and astrophysics.

Students wishing to minor in physics should take:

- PHY 120 - Matter in Motion
- PHY 121 - Principles of Electromagnetics
- PHY 122 - Relativity, Quantum, and Their Applications

And three other courses in consultation with the Department.

If a life science student:

- PHY 110 - Physics for the Life Sciences 1
- PHY 111 - Physics for the Life Sciences 2
- PHY 210 - The Physics of Modern Medicine: Applications in Imaging, Surgery and Therapy
and
- Three other courses in consultation with the Department.

Physics, B.S.

Requirements for the Physics Major:

A minimum of ten courses in physics:

- PHY 120 - Matter in Motion
- PHY 121 - Principles of Electromagnetics
- PHY 122 - Relativity, Quantum, and Their Applications
- PHY 123 - Heat and Light
- PHY 220 - Relativity and Introduction to Quantum Mechanics
- PHY 230 - Intermediate Classical Mechanics
- PHY 270 - Intermediate Electromagnetism
- PHY 300 - Methods of Modern Experimental Physics
- PHY 310 - Advanced Topics in Physics 1

- PHY 490 - Physics Research 1 *

- PHY 491 - Physics Research 2
or
- PHY 493 - Physics 1 Term Research

* (PHY-490 is required for **all** students, whether continuing on with 491 or 493)

Math

- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
and
- MTH 117 - Calculus 4: Integral Vector Calculus

And two other science courses numbered 100 or above

At least one of which must be taken outside the department. Students are expected to attend the weekly departmental colloquium series to gain an appreciation for current research in physics and related areas.

Graduate Curriculum

For those students wishing to consider graduate work in physics or a closely related discipline (e.g., astronomy, materials science, applied physics), the department advises the following curriculum:

Physics

- PHY 120 - Matter in Motion
- PHY 121 - Principles of Electromagnetics
- PHY 122 - Relativity, Quantum, and Their Applications
- PHY 123 - Heat and Light
- PHY 220 - Relativity and Introduction to Quantum Mechanics
- PHY 230 - Intermediate Classical Mechanics
- PHY 270 - Intermediate Electromagnetism
- PHY 300 - Methods of Modern Experimental Physics
- PHY 310 - Advanced Topics in Physics 1
- PHY 311 - Advanced Topics in Physics 2
- PHY 350 - Advanced Quantum Mechanics
- PHY 490 - Physics Research 1
- PHY 491 - Physics Research 2

Math

- MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory
- MTH 117 - Calculus 4: Integral Vector Calculus
and
- MTH 130 - Ordinary Differential Equations

These students are also strongly encouraged to take electives from the following:

- PHY 210 - The Physics of Modern Medicine: Applications in Imaging, Surgery and Therapy
- PHY 312 - Advanced Topics in Physics 3

Astronomy

- AST 200 - Stellar Structure and Evolution
- AST 210 - Galaxies
- AST 220 - Cosmology and General Relativity
- AST 230 - Observational Astronomy
- AST 240 - Radio Astronomy

Math

- MTH 127 - Numerical Methods
- MTH 140 - Applied Linear Algebra

Electrical and Computer Engineering

- ECE 225 - Electric Circuits

Possible Substitution Courses

For students interested in pursuing careers that do not require graduate work in physics, some substitutions of courses in engineering will be considered by the department. Students must request formal approval from the Department of Physics and Astronomy for any such substitution. Examples include:

- MER 212 - Dynamics
for
- PHY 230 - Intermediate Classical Mechanics
and
- ECE 343 - Introduction to Electromagnetic Engineering
for
- PHY 270 - Intermediate Electromagnetism

Requirements for Honors in Physics and Astronomy:

In addition to the requirements for the major, the student must take at least one additional course in research (PHY 491), submit an honors thesis, and satisfy College requirements for departmental honors.

Requirements for the Leadership in Medicine Program:

Students in the Leadership in Medicine program whose science emphasis is in physics should take the following seven courses: PHY 110, PHY 111 (both already core courses), PHY 122, PHY 123, PHY 210, and two additional 200-level, 300-level, or PHY 490/495. Students with AP credit for PHY 120 and/or PHY 121 should take one additional physics elective (and one additional math course) in consultation with their physics advisor.

Political Science

Chair: Professor M. Angrist

Faculty: Professors M. Angrist, C. Brown, L. Marso, Z. Oxley; Associate Professors M. Dallas, B. Hays, R. Hislope, G. Seri; Assistant Professors C. Cidam; Senior Lecturer T. Lobe; Visiting Professor T. Weiner

Staff: C. Fortsch (Administrative Assistant).

The Political Science Department helps build within students the knowledge, skills, and desire to be lifelong public and global citizens. Students are challenged to think critically about their beliefs and understandings of the world around them, while developing the language, analytical and writing skills necessary for them to present these ideas effectively to others. Beyond the classroom we hope to provide students with the inspiration and opportunities to engage with politics in its multiple forms and locations. We offer instruction in the four traditional subfields of the discipline of Political Science: Political Theory, Comparative Politics, International Politics, and United States Politics.

For a listing of all the Political Science courses broken down by category, please go to Course Listings and select the Prefix PSC.

Political Science (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses in the department, including:

Note: Internship courses, such as PSC 277 and PSC 280T, may not be counted toward the eight courses required for the interdepartmental major.

- PSC 111 - Introduction to US Politics
or
- PSC 112 - Introduction to Global Politics
and
- PSC 113 - Introduction to Political Thought
- IDM 498 - Interdepartmental Senior Thesis 1

Note: The senior thesis is a two-term project, one term of which counts toward the Political Science portion of the ID major. The Department of Political Science requires its ID majors to choose a senior thesis topic that incorporates elements of both disciplines, and to seek out appropriate guidance regarding the contributions of the second discipline to the project.

At least one "R" course to fulfill the research requirement.

A Foreign Experience Requirement.

Note: The primary option to fulfill the foreign experience requirement will be the completion of a three-course language sequence. If students begin their language sequence beyond the introductory course, only two language courses are required. We recommend that all political science students begin a language track early in their academic career and do not wait until senior year.

The foreign experience requirement can also be completed by going on a full-length term abroad (mini-terms will not fulfill this requirement). We strongly advise students not to count on acceptance into a term abroad program, as they have highly competitive application processes. If students make the decision not to start a language early and are not admitted to a full-length term abroad, they will not be guaranteed the language of their choice if they must fulfill the language requirement in their senior year. If accepted into the Term in Washington, D.C. program, foreign students (on an F-1 or J-1 visa) can count that term, assuming all three courses are passed, as their foreign experience requirement.

Alternatively, a student may petition the department chair with a proposal that includes a Union mini-term abroad or other organized foreign experience of at least three weeks' length, plus two associated Union courses. These three components must demonstrate regional or thematic coherence. Normally, only one component can be in process or complete at the time of the proposal's submission. Foreign students may submit a proposal that features a domestic mini-term plus two associated courses. For more information on this option, please refer to the guidelines and proposal form, which are posted on the FAQ section of the Political Science Department's website at <http://muse.union.edu/politicalscience>. The department chair makes the final determination regarding proposal approval.

Requirements for Honors in Political Science:

To receive departmental honors the student must fulfill the following requirements: (1) a minimum index of 3.50 in political science; (2) completion of a political science seminar with a grade of "A minus" or better; (3) a grade of "A minus" or higher on the senior project, and (4) delivery of an oral presentation of the senior project research at the Steinmetz Symposium unless exceptional circumstances warrant an alternative forum. Students who do not attain an A minus or better grade in the seminar may still be eligible for honors if their departmental grade point average is 3.70 or higher. In

addition the student must satisfy College requirements for departmental honors, which are described in the Academic Policies section of this catalog. **Note:** you must take a seminar to qualify for honors.

Course Selection Guidelines

Placement: Students who received a score of 4 or 5 on the Advanced Placement exam for U.S. Government and Politics may earn credit for PSC 111. Students who earned a 4 or 5 on the Comparative Government and Politics Advanced Placement exam may earn one unspecified political science course credit. Credits earned from Advanced Placement exams can count toward the Political Science major or minor.

Course Numbering: These guidelines are offered so that students may make informed choices in the selection of courses appropriate to their level of education. 200-level political science courses are oriented towards a wide student audience from across the College whereas 300-level courses are focused more on advanced political science issues and therefore are more appropriate for upperclass political science majors as well as interested juniors and seniors from other majors. For subfield-specific descriptions of 200 and 300-level courses, please go to Course Listings and select the Prefix PSC.

It is important for students to know that 200-level courses are not "easier" than 300-level courses in terms of reading load, course assignments, or the amount of work and effort expected of students. That said, as a general rule, 300-level courses will be more theoretically and/or conceptually dense. Non-majors are welcome, but should understand that such courses typically will demand that students embrace key theories, concepts, frameworks, and/or methods in the discipline.

Political Science Minor

Requirements for the Minor:

Six courses including:

Note: No internships or independent studies may be counted toward the minor without approval of the Chair.

- PSC 111 - Introduction to US Politics
or
- PSC 112 - Introduction to Global Politics
and
- PSC 113 - Introduction to Political Thought

Of the four remaining courses, at least three upper-level courses must all be drawn from one of the following four sub-fields:

Political Theory:

- PSC 231 - Theories of Peace and War
- PSC 234 - Women Political Theorists
- PSC 235 - African American Political Thought
- PSC 236 - Police, Security and Biopower
- PSC 237 - Music and Politics
- PSC 330 - Enlightenment and Its Discontents
- PSC 230 - (331) Ancient Political Thought
- PSC 239 - (332) American Political Thought To World War I
- PSC 333 - Twentieth Century American Political Thought
- PSC 334 - Contemporary Continental Theory
- PSC 339 - Seminar: Black Radical Politics and Legacies of Malcom X

- PSC 434 - Feminist Film
- **Comparative Politics:**
- PSC 213 - Contemporary China: Politics, Economy and Society
- PSC 216 - Politics in Africa
- PSC 240 - Comparative Ethnic and Racial Politics
- PSC 243 - Latin American Politics
- PSC 245 - Populisms in Latin America
- PSC 248 - The Politics of the New Europe
- PSC 249 - Middle East Politics
- PSC 340 - Politics and Film
- PSC 341 - Genocide
- PSC 342 - Challenges to Democratization in Latin America
- PSC 343 - Women and Politics in the Muslim World
- PSC 347 - Comparative Left Politics
- PSC 349 - Seminar: Comparative Politics
- **International Politics:**
- PSC 251 - American Foreign Policy
- PSC 252 - Global Value Chains
- PSC 253 - International Relations of East Asia
- PSC 254 - Politics of the Arab-Israeli Conflict
- PSC 256 - Model United Nations
- PSC 350 - Theories of International Politics
- PSC 351 - Global Organized Crime
- PSC 352 - International Organizations
- PSC 353 - Terrorism and Torture
- PSC 355 - Defense Policy
- PSC 358 - Wealth and Power Among Nations
- PSC 359 - Seminar: International Politics
- **United States Politics:**
- PSC 260 - Policy Making and American Society
- PSC 261 - Public Opinion
- PSC 263 - The Politics of Poverty and Welfare
- PSC 264 - Congressional Politics
- PSC 266 - Women and Politics
- PSC 268 - Electoral Politics
- PSC 269 - Media and Politics
- PSC 272 - The Environment, Energy, and US Politics
- PSC 273 - The Supreme Court and Judicial Politics
- PSC 274 - Political Parties in the US Political System
- PSC 364 - (275) Law and Film
- PSC 277 - Capital Region Political Internships
- PSC 280T - Washington, DC Internship Program
- PSC 281 - Issues in American Education
- PSC 282 - Health Politics and Policy
- PSC 283 - Social Movements, the Environment and Society
- PSC 284 - Political Sociology
- PSC 365 - (285) Law, Society, and the Wire
- PSC 288 - American Constitutional Theory
- PSC 289T - New Hampshire Primary Mini-Term
- PSC 361 - Political Psychology
- PSC 270 - (362) CIA and the Art of Intelligence
- PSC 286 - The Modern Presidency

- PSC 287 - (367) The Contemporary Presidency
- PSC 369 - Seminar: US Politics
- PSC 370 - Constitutional Law
- PSC 371 - Civil Rights and Civil Liberties

Note: If you are at all unclear regarding which sub-field a course counts towards, please contact the Chair.

Political Science, B.A.

Requirements for the Major:

Twelve courses in the department.

- PSC 111 - Introduction to US Politics
or
- PSC 112 - Introduction to Global Politics
and
- PSC 113 - Introduction to Political Thought
- PSC 498 - Political Science Senior Thesis 1
- PSC 499 - Political Science Senior Thesis 2

Of the twelve, no more than two may be internship courses (i.e. PSC 277, PSC 280T).

Eight non-specified courses:

Note: at least three of the four major areas of the discipline must be covered

Political Theory:

- PSC 231 - Theories of Peace and War
- PSC 234 - Women Political Theorists
- PSC 235 - African American Political Thought
- PSC 236 - Police, Security and Biopower
- PSC 237 - Music and Politics
- PSC 330 - Enlightenment and Its Discontents
- PSC 230 - (331) Ancient Political Thought
- PSC 239 - (332) American Political Thought To World War I
- PSC 333 - Twentieth Century American Political Thought
- PSC 334 - Contemporary Continental Theory
- PSC 339 - Seminar: Black Radical Politics and Legacies of Malcom X
- PSC 434 - Feminist Film

Comparative Politics:

- PSC 213 - Contemporary China: Politics, Economy and Society
- PSC 216 - Politics in Africa
- PSC 240 - Comparative Ethnic and Racial Politics
- PSC 243 - Latin American Politics
- PSC 245 - Populisms in Latin America
- PSC 248 - The Politics of the New Europe

- PSC 249 - Middle East Politics
- PSC 340 - Politics and Film
- PSC 341 - Genocide
- PSC 342 - Challenges to Democratization in Latin America
- PSC 343 - Women and Politics in the Muslim World
- PSC 347 - Comparative Left Politics
- PSC 349 - Seminar: Comparative Politics

International Politics:

- PSC 251 - American Foreign Policy
- PSC 252 - Global Value Chains
- PSC 253 - International Relations of East Asia
- PSC 254 - Politics of the Arab-Israeli Conflict
- PSC 256 - Model United Nations
- PSC 350 - Theories of International Politics
- PSC 351 - Global Organized Crime
- PSC 352 - International Organizations
- PSC 353 - Terrorism and Torture
- PSC 355 - Defense Policy
- PSC 358 - Wealth and Power Among Nations
- PSC 359 - Seminar: International Politics

United States Politics:

- PSC 260 - Policy Making and American Society
- PSC 261 - Public Opinion
- PSC 263 - The Politics of Poverty and Welfare
- PSC 264 - Congressional Politics
- PSC 266 - Women and Politics
- PSC 268 - Electoral Politics
- PSC 269 - Media and Politics
- PSC 272 - The Environment, Energy, and US Politics
- PSC 273 - The Supreme Court and Judicial Politics
- PSC 274 - Political Parties in the US Political System
- PSC 364 - (275) Law and Film
- PSC 277 - Capital Region Political Internships
- PSC 280T - Washington, DC Internship Program
- PSC 281 - Issues in American Education
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- PSC 286 - The Modern Presidency
- PSC 287 - (367) The Contemporary Presidency
- PSC 369 - Seminar: US Politics
- PSC 370 - Constitutional Law
- PSC 371 - Civil Rights and Civil Liberties

Within the eight non-specified courses, two courses need to fulfill the department's research requirement.

Note: Both research courses should be taken by the end of the student's junior year as preparation for the senior project (**PSC 498** and **PSC 499**). Students are welcome and encouraged to take more than two research courses; these are simply minimum requirements. Normally, a GPA of 3.0 is required to gain admittance to a seminar.

First, all students must take at least one "R" course.

Note: The presence of the "R" designation next to a course number in the registration materials (i.e., PSC 272R) denotes that the course will have a major research assignment as a central component of the course.

Second, students must take an additional "R" course, a seminar, or a research methods course:

Seminars:

- PSC 339 - Seminar: Black Radical Politics and Legacies of Malcom X
- PSC 349 - Seminar: Comparative Politics
- PSC 359 - Seminar: International Politics
- PSC 369 - Seminar: US Politics

Research methods:

- PSC 220 - Social Data Analysis
- PSC 222 - Qualitative Social Research Methods
- PSC 223 - Critical Comparisons in Politics

Note: Students may request from the political science chair that a research methods course in another department qualify as a methods course for satisfying this requirement

Two courses in any of the other social sciences (Economics, History, Sociology, and Anthropology) and/or Psychology and Philosophy.

A Foreign Experience Requirement.

Note:

The primary option to fulfill the foreign experience requirement will be the completion of a three-course language sequence. If students begin their language sequence beyond the introductory course, only two language courses are required. We recommend that all political science students begin a language track early in their academic career and do not wait until senior year.

The foreign experience requirement can also be completed by going on a full-length term abroad (mini-terms will not fulfill this requirement). We strongly advise students not to count on acceptance into a term abroad program, as they have highly competitive application processes. If students make the decision not to start a language early and are not admitted to a full-length term abroad, they will not be guaranteed the language of their choice if they must fulfill the language requirement in their senior year. If accepted into the Term in Washington, D.C. program, foreign students (on an F-1 or J-1 visa) can count that term, assuming all three courses are passed, as their foreign experience requirement.

Alternatively, a student may petition the department chair with a proposal that includes a Union mini-term abroad or other organized foreign experience of at least three weeks' length, plus two associated Union courses. These three components must demonstrate regional or thematic coherence. Normally, only one component can be in process or complete at the time of the proposal's submission. Foreign students may submit a proposal that features a domestic mini-term plus two associated courses. For more information on this option, please refer to the guidelines and proposal form, which are posted on the FAQ section of the Political Science Department's website at <http://muse.union.edu/politicalscience>. The department chair makes the final determination regarding proposal approval.

Note: Any request for exceptions to these requirements must be approved by the department chair.

Requirements for Honors in Political Science:

To receive departmental honors the student must fulfill the following requirements: (1) a minimum index of 3.50 in political science; (2) completion of a political science seminar with a grade of "A minus" or better; (3) a grade of "A minus" or higher on the senior project, and (4) delivery of an oral presentation of the senior project research at the Steinmetz Symposium unless exceptional circumstances warrant an alternative forum. Students who do not attain an A minus or better grade in the seminar may still be eligible for honors if their departmental grade point average is 3.70 or higher. In addition the student must satisfy College requirements for departmental honors, which are described in the Academic Policies section of this catalog. **Note:** you must take a seminar to qualify for honors.

Course Selection Guidelines

Placement: Students who received a score of 4 or 5 on the Advanced Placement exam for U.S. Government and Politics may earn credit for PSC 111. Students who earned a 4 or 5 on the Comparative Government and Politics Advanced Placement exam may earn one unspecified political science course credit. Credits earned from Advanced Placement exams can count toward the Political Science major or minor.

Course Numbering: These guidelines are offered so that students may make informed choices in the selection of courses appropriate to their level of education. 200-level political science courses are oriented towards a wide student audience from across the College whereas 300-level courses are focused more on advanced political science issues and therefore are more appropriate for upperclass political science majors as well as interested juniors and seniors from other majors. For subfield-specific descriptions of 200 and 300-level courses, please go to Course Listings and select the Prefix PSC.

It is important for students to know that 200-level courses are not "easier" than 300-level courses in terms of reading load, course assignments, or the amount of work and effort expected of students. That said, as a general rule, 300-level courses will be more theoretically and/or conceptually dense. Non-majors are welcome, but should understand that such courses typically will demand that students embrace key theories, concepts, frameworks, and/or methods in the discipline.

Psychology

Chair: Professor G. Bizer

Faculty: Professors S. Benack, G. Bizer, D. Burns, K. DeBono, L. Stanhope, W. Sternberg (Dean of Academic Departments and Programs), C. Weisse; Associate Professors C. Anderson-Hanley, C. Chabris (on leave Fall, Winter, & Spring), J. Hart, S. Romero; Visiting Assistant Professors E. Egan, D. Hayes, L. Morton, D.C. Walker.

Staff: C. Mennillo (Administrative Assistant)

Course Selection Guidelines

Common Curriculum(CC): In the Common Curriculum, all psychology courses count as if they are courses in the Division of the Social Sciences, except for PSY 210, PSY 212, PSY 310, PSY 311, PSY 312, PSY 313, PSY 315, and PSY 410, which can be counted toward the Common Curriculum science requirement. PSY 200 - Statistical Methods in Psychology does not count toward the Quantitative Methods Requirement (QMR).

Courses Suitable for Non-majors. All psychology courses are suitable for non-majors who have taken the prerequisite courses, with the exception of PSY 200 and PSY 300, the required methods courses for the major.

For Neuroscience Majors and Minors only, BIO 110 and BIO 112 may be substituted for PSY 100 as the prerequisite for PSY 210. Upon completion of PSY 210, neuroscience students may take other Psychology courses without first completing PSY 100.

Course Numbering: Psychology 100 or permission of the instructor is a prerequisite for all other psychology courses unless otherwise noted. 200-level courses typically treat basic topics and are appropriate to take with only PSY 100 as background. Courses that are cross-listed with other departments may have additional prerequisites. Most 300- and 400-level courses have PSY 300 as a prerequisite; these courses are appropriate for students in any class year, and for majors or non-majors, as long as they have fulfilled the prerequisites.

Seminars: Some seminars (e.g., PSY 410, PSY 420, PSY 430, PSY 440, PSY 450) may offer different topics in different terms. These may be taken more than once for credit, with the permission of the instructor.

Psychology (ID), B.S.

Requirements for the Interdepartmental Major:

An interdepartmental major must indicate to his or her advisor in psychology what courses within the Psychology Department will constitute the psychology component of the interdepartmental major and must submit an application form. The set of courses should demonstrate a genuine connection to the chosen interdepartmental major and must be approved by the department chair. Normally, specification of these courses will occur by either late in the sophomore or early in the junior year.

Eight courses in psychology including the following:

- PSY 100 - Introduction to Psychology
- PSY 200 - Statistical Methods in Psychology

Please note: The remaining six courses cannot include cognate courses.

Students wishing to do an interdepartmental senior thesis will also take:

- PSY 300 - Research Methods in Psychology

Honors in Psychology (ID)

Interdepartmental majors who wish to earn honors will do an interdepartmental thesis. ID majors must also meet the same GPA requirements for psychology courses as full majors, although only two grades of "A" or "A minus" in psychology "core" courses will be required. Please note that PSY 200 and PSY 300 are prerequisites to registering for a thesis.

All proposals for honors theses must be submitted to the department administrative assistant no later than the end of the eighth week of the spring term of the junior year. The proposal should be one typewritten page describing the general area of the project, the student's preparation for the project (e.g., related course work), and the proposed faculty supervisor. Further information is available from the department administrative assistant.

Requirements for Honors in Psychology:

In addition to meeting College-wide requirements, honors in psychology requires:

1. A psychology grade point average of 3.40 or higher

2. Three grades of "A" or "A minus" in psychology "core" courses, which include:

- PSY 200 - Statistical Methods in Psychology
- PSY 210 - Behavioral Neuroscience
- PSY 212 - Neurobiology
- PSY 213 - Clinical Neuropsychology
- PSY 220 - Attention and Memory
- PSY 222 - Judgment and Decision Making

- PSY 230 - Social Psychology
- PSY 240 - Developmental Psychology
- PSY 250 - Abnormal Psychology
- PSY 251 - Personality
- PSY 300 - Research Methods in Psychology
- PSY 313 - (211) Sensation and Perception

3. A two-term thesis with a grade of "A" or "A minus"

4. An oral presentation of the student's work (usually at the Steinmetz Symposium)

Psychology Minor

Requirements for the Minor:

Six courses in Psychology, including:

- PSY 100 - Introduction to Psychology
- PSY 200 - Statistical Methods in Psychology

One course from the following two content areas:

Area 1:

- PSY 210 - Behavioral Neuroscience
- PSY 212 - Neurobiology
- PSY 213 - Clinical Neuropsychology

Area 2:

- PSY 220 - Attention and Memory
- PSY 222 - Judgment and Decision Making

One course from the following two content areas:

Area 3:

- PSY 230 - Social Psychology
- PSY 240 - Developmental Psychology

Area 4:

- PSY 250 - Abnormal Psychology
- PSY 251 - Personality

Psychology, B.S.

Requirements for the Major:

The following major requirements apply to students in the class of 2019 and onward, until further notice. *Students from the classes of 2017 and 2018 should refer to their requirements specified further down on this page.

1. Psychology Requirements

- PSY 100 - Introduction to Psychology
- PSY 200 - Statistical Methods in Psychology
- PSY 300 - Research Methods in Psychology
- **Note:** Majors should normally complete PSY 200 and PSY 300 early in the junior year.

Nine other courses (one of which can be selected from a list of cognate courses from related disciplines):

Cognate courses from related disciplines:

- ANT 214 - Language and Culture
- ANT 222 - Childhood in Anthropological Perspective
- ANT 225 - Gender and Society
- ANT 272 - Psychological Anthropology
- ANT 373 Self & Life History in Anthropological Research
- CSC 103 - Taming Big Data: Introduction to Computer Science
- CSC 106 - Can Computers Think? Introduction to Computer Science
- CSC 206 - Natural Language Processing
- CSC 280 - User Interfaces
- CSC 320 - Artificial Intelligence
- CSC 329 - Neural Networks
- EGL 275 - Autobiography
- EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape
- MLT 250 - Language, Identity, and Power in Japan
- PHL 180 - Theories of the Good Life
- PHL 232 - Philosophy of Science
- PHL 365 - Philosophy of Mind
- PHL 462 - Philosophy of Language
- PHY 051 - Seeing the Light: Concepts of Vision
- PSC 361 - Political Psychology
- SOC 204 - Social Construction of Deviance

- SOC 206 - Aging and Society
- SOC 212 - The American Family and Cross-Cultural Perspectives
- SOC 360 - Domestic Violence
- SOC 374 - Mental Health and Society

Independent Study, Research, or Internship:

One course numbered PSY 451 through PSY 497 may count toward the major; however, students conducting an independent study abroad (ISA) may count **two** courses numbered PSY 451 through PSY 497 toward the major.

- PSY 451 - Human Relations 2: Internship
- PSY 487 - Psychology 3 Term Thesis 1
- PSY 488 - Psychology 3 Term Thesis 2
- PSY 489 - Psychology 3 Term Thesis 3
- or
- PSY 490 - Psychology Independent Study 1
- PSY 491 - Psychology Independent Study 2
- PSY 492 - Psychology Independent Study 3
- or
- PSY 493 - Psychology 2 Term Independent Study 1
- PSY 494 - Psychology 2 Term Independent Study 2
- or
- PSY 495 - Psychology 1 Term Senior Project
- or
- PSY 496 - Psychology 2 Term Senior Project 1
- PSY 497 - Psychology 2 Term Senior Project 2

2. At least one course from each of the following four content areas:

Area 1:

- PSY 210 - Behavioral Neuroscience
- PSY 212 - Neurobiology
- PSY 213 - Clinical Neuropsychology

Area 2:

- PSY 220 - Attention and Memory
- PSY 222 - Judgment and Decision Making

Area 3:

- PSY 230 - Social Psychology
- PSY 240 - Developmental Psychology

Area 4:

- PSY 250 - Abnormal Psychology
- PSY 251 - Personality

3. At least one laboratory course from the following list:

- PSY 310 - Cognitive Neuroscience w/Lab
- PSY 313 - (211) Sensation and Perception
- PSY 330 - Advanced Personality and Social Psychology
- PSY 351 - Human Relations 1: Communications

4. One seminar course from the following list:

- PSY 410 - Seminar in Brain and Behavior
- PSY 411 - Seminar in Clinical Neuropsychology
- PSY 420 - Seminar in Cognitive Psychology
- PSY 422 - Communicating Psychological Science
- PSY 430 - Seminar in Social Psychology
- PSY 431 - Seminar in Psychology of Religion
- PSY 432 - Love and Death
- PSY 440 - Seminar in Human Development
- PSY 441 - Seminar in Adolescence
- PSY 450 - Seminar in Clinical Psychology

5. Senior Writing Requirement:

Students may fulfill the senior writing requirement in psychology in one of three ways: (1) by writing a thesis; (2) by completing a seminar (400-level) course designated WS in the senior year (this course must be in addition to any other seminar used to fulfill the basic WAC requirements); or (3) by completing a one- or two-term senior project. Any seminar which fulfills the Senior Writing Requirement also counts toward the requirement of one seminar (see above).

*Requirements for Students in the Classes of 2017 and 2018:

As of September 2015 the requirements for the psychology major changed. Students in the classes of 2017 and 2018 are encouraged to fulfill the new major requirements, but may instead fulfill a hybrid of the old and new requirements as follows.

Core courses:

Students have the option of fulfilling either the old or the new area requirements (#2 above). Students who have taken PSY 211 with a lab may count PSY 211 as a Neuroscience (Area 1) course.

Lab courses: Students who have taken any of the following courses with a lab (PSY 210, PSY 211, PSY 220 or PSY 225) may count that course for the lab requirement (#3 above). Please note that students who have already taken PSY 210 with a lab may not also take PSY 310. Students who have completed PSY 211 with a lab may not take PSY 313.

Double counting courses: If a student has already taken PSY 210, PSY 211, PSY 220 or PSY 225 with an associated lab, the course may count as fulfilling both one of the core area requirements plus the new lab requirement. Note that if a course is "double counted" for requirements in this way, it still only counts as one of the 12 courses needed to complete the psychology major.

Seminar requirement: Only one 400-level class is required, and that must be a seminar between PSY 410 - PSY 450.

Honors in Psychology

All proposals for honors theses must be submitted to the department administrative assistant no later than the end of the eighth week of the spring term of the junior year. The proposal should be one typewritten page describing the general area of the project, the student's preparation for the project (e.g., related course work), and the proposed faculty supervisor. Further information is available from the department administrative assistant.

Requirements for Honors in Psychology:

In addition to meeting College-wide requirements, honors in psychology requires:

1. A psychology grade point average of 3.40 or higher
2. Three grades of "A" or "A minus" in psychology "core" courses, which include:
 - PSY 200 - Statistical Methods in Psychology
 - PSY 210 - Behavioral Neuroscience
 - PSY 212 - Neurobiology
 - PSY 213 - Clinical Neuropsychology
 - PSY 220 - Attention and Memory
 - PSY 222 - Judgment and Decision Making
 - PSY 230 - Social Psychology
 - PSY 240 - Developmental Psychology
 - PSY 250 - Abnormal Psychology
 - PSY 251 - Personality
 - PSY 300 - Research Methods in Psychology
 - PSY 313 - (211) Sensation and Perception
3. A two-term thesis with a grade of "A" or "A minus"
4. An oral presentation of the student's work (usually at the Steinmetz Symposium)

Religious Studies

Director: Professor P. Bedford

Faculty: Professors K. Brison (Anthropology), H. Mueller (Classics), P. Heinegg (English), S. Berk (History), D. McMullen (Music); Associate Professor J. Lewin (English); Wold Visiting Professor K. Wegter-McNelly

Religion in its varied expression informs the lives of most of the world's population, both currently and historically. It has been the inspiration for literature, art, and music, and the source of law, meaning and values, social solidarity, and conflict. Religion—Western, Eastern, and otherwise—is a vast cluster of cultural phenomena (including sacred texts, mythologies and theologies, moral codes, and every conceivable kind of ritual) that is best explored from the perspective of more than one discipline. The program is designed to enable students to gather insights from philosophy, psychology, sociology, anthropology, political science, history, literature and other disciplines by way of illuminating this practically universal form of human behavior. The academic study of religion examines religion from outside the framework of any particular belief system, and it does not aim to promote or undermine any particular religion or worldview. The program offers a major, interdepartmental major, and a minor.

Religious Studies (ID), B.A.

Requirements of the Interdepartmental Major:

At least eight courses in the program, including REL 103 and REL 300 and a Senior thesis.

Requirements for Honors in Religious Studies:

To be eligible for honors, the student must fulfill the following requirements: (1) a minimum index of 3.3 in courses in the Major; (2) a grade of at least "A minus" on the senior thesis; and (3) a grade of "distinction" or "high pass" in an oral examination based on the senior thesis. In addition, the student must satisfy College requirements for departmental honors.

Religious Studies Courses

The following is only a partial list of the classes counted towards the religious studies major and minor. See the Director of the program for a complete list.

Core Courses

- REL 103 - Introduction to Religious Studies
- REL 300 - Seminar: Theory and Method in the Study of Religion

Areas of Concentration

Judaism

- AMU 125 - World Religions and Music
- EGL 099 - (271) The Bible: An Introduction
- EGL 265 - (238) Jewish Women Writers
- HST 128 - The American Jewish Experience
- HST 157 - Modern Jewish History
- HST 158 - The Holocaust
- HST 195 - The Early History of the Jews
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 230 - Judaism and Christian Origins

Christianity

- AAH 300 - Italian Art and Architecture, 14th-15th Century
- AMU 060 - From Chant to Mozart
- AMU 125 - World Religions and Music
- AMU 212 - Baroque Music
- AMU 340 - Early Music Seminar
- ANT 252 - Anthropology of Christianity

- EGL 099 - (271) The Bible: An Introduction
- EGL 211 - Milton
- GRK 243 - New Testament Greek
- HST 171 - Europe and the Americas in the Era of Columbus
- HST 240 - The Crusades: Christianity and Islam in Conflict
- HST 241 - Mystics, Magic, and Witchcraft in Medieval and Early Modern Europe
- HST 245 - Occult Sciences and Societies
- HST 372 - Sex and Race in Latin America
- LAT 358 - Medieval Latin Literature and Culture
- MLT 284 - Popular Religion and Politics in Latin America
- PHL 261 - Philosophy of Religion
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 320 - Early Christian Thought
- REL 230 - Judaism and Christian Origins

Islam

- AAH 101 - (201) Islamic Art and Architecture
- AAH 286 - Art and Religion of the Silk Road
- HST 240 - The Crusades: Christianity and Islam in Conflict
- HST 243 - Ottoman History
- HST 302 - Comparing Muslim Cultures
- HST 401 - Seminar in Africa/Middle East
- PSC 343 - Women and Politics in the Muslim World
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 345 - Classical Islam

Religions of Asia

- AAH 286 - Art and Religion of the Silk Road
- AMU 125 - World Religions and Music
- ANT 232 - Bombs to Buddhism: Fatalism, Technology, and Modern Japanese Culture
- HST 183 - Introduction to South Asian Civilizations
- HST 384 - Historical Foundations of South Asian Religions
- PHL 166 - Indian Philosophy
- PHL 167 - Chinese Philosophy
- PHL 180 - Theories of the Good Life
- PHL 245 - Buddhist Ethics
- PHL 338 - Zen and Tibetan Buddhism

Religions of the Ancient Mediterranean

- CLS 110 - Ancient Egypt: History and Religion
- CLS 111 - Ancient Iraq: History and Religion
- CLS 132 - Religion in the Pagan World
- CLS 134 - Classical Art and Architecture
- CLS 143 - Classical Mythology
- CLS 154 - Poetry and the Cosmos

- CLS 161 - The Heroic Journey: Survey of Ancient Epic
- CLS 178 - Ancient World Mythology
- EGL 099 - (271) The Bible: An Introduction
- HST 195 - The Early History of the Jews
- REL 230 - Judaism and Christian Origins

Religion, Culture and Society

- AMU 125 - World Religions and Music
- ANT 252 - Anthropology of Christianity
- ANT 254 - Anthropology of Religion
- HST 372 - Sex and Race in Latin America
- MLT 284 - Popular Religion and Politics in Latin America
- PHL 180 - Theories of the Good Life
- PHL 240 - Contemplative Social Justice Ethics
- PSC 241R - Religion and Politics
- PSC 262 - Damnation, Revolution and the American Experiment
- PSC 337 - Theories of Modern Secularism
- PSC 343 - Women and Politics in the Muslim World
- PSY 431 - Seminar in Psychology of Religion
- REL 170 - Myth, Ritual and Magic
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 250 - Death and Immortality
- REL 271 - Religion and Food
- REL 280 - Religion and Science
- SOC 223 - Sociology of Religion

Religious Studies Minor

Requirements for the Minor:

- REL 103 - Introduction to Religious Studies
- plus five other courses, including at least two 200-level courses.

Religious Studies Courses

The following is only a partial list of the classes counted towards the religious studies major and minor. See the Director of the program for a complete list.

Core Courses

- REL 103 - Introduction to Religious Studies
- REL 300 - Seminar: Theory and Method in the Study of Religion

Areas of Concentration

Judaism

- AMU 125 - World Religions and Music
- EGL 099 - (271) The Bible: An Introduction
- EGL 265 - (238) Jewish Women Writers
- HST 128 - The American Jewish Experience
- HST 157 - Modern Jewish History
- HST 158 - The Holocaust
- HST 195 - The Early History of the Jews
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 230 - Judaism and Christian Origins

Christianity

- AAH 300 - Italian Art and Architecture, 14th-15th Century
- AMU 060 - From Chant to Mozart
- AMU 125 - World Religions and Music
- AMU 212 - Baroque Music
- AMU 340 - Early Music Seminar
- ANT 252 - Anthropology of Christianity
- EGL 099 - (271) The Bible: An Introduction
- EGL 211 - Milton
- GRK 243 - New Testament Greek
- HST 171 - Europe and the Americas in the Era of Columbus
- HST 240 - The Crusades: Christianity and Islam in Conflict
- HST 241 - Mystics, Magic, and Witchcraft in Medieval and Early Modern Europe
- HST 245 - Occult Sciences and Societies
- HST 372 - Sex and Race in Latin America
- LAT 358 - Medieval Latin Literature and Culture
- MLT 284 - Popular Religion and Politics in Latin America
- PHL 261 - Philosophy of Religion
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 320 - Early Christian Thought
- REL 230 - Judaism and Christian Origins

Islam

- AAH 101 - (201) Islamic Art and Architecture
- AAH 286 - Art and Religion of the Silk Road
- HST 240 - The Crusades: Christianity and Islam in Conflict
- HST 243 - Ottoman History
- HST 302 - Comparing Muslim Cultures
- HST 401 - Seminar in Africa/Middle East
- PSC 343 - Women and Politics in the Muslim World
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives

- REL 345 - Classical Islam

Religions of Asia

- AAH 286 - Art and Religion of the Silk Road
- AMU 125 - World Religions and Music
- ANT 232 - Bombs to Buddhism: Fatalism, Technology, and Modern Japanese Culture
- HST 183 - Introduction to South Asian Civilizations
- HST 384 - Historical Foundations of South Asian Religions
- PHL 166 - Indian Philosophy
- PHL 167 - Chinese Philosophy
- PHL 180 - Theories of the Good Life
- PHL 245 - Buddhist Ethics
- PHL 338 - Zen and Tibetan Buddhism

Religions of the Ancient Mediterranean

- CLS 110 - Ancient Egypt: History and Religion
- CLS 111 - Ancient Iraq: History and Religion
- CLS 132 - Religion in the Pagan World
- CLS 134 - Classical Art and Architecture
- CLS 143 - Classical Mythology
- CLS 154 - Poetry and the Cosmos
- CLS 161 - The Heroic Journey: Survey of Ancient Epic
- CLS 178 - Ancient World Mythology
- EGL 099 - (271) The Bible: An Introduction
- HST 195 - The Early History of the Jews
- REL 230 - Judaism and Christian Origins

Religion, Culture and Society

- AMU 125 - World Religions and Music
- ANT 252 - Anthropology of Christianity
- ANT 254 - Anthropology of Religion
- HST 372 - Sex and Race in Latin America
- MLT 284 - Popular Religion and Politics in Latin America
- PHL 180 - Theories of the Good Life
- PHL 240 - Contemplative Social Justice Ethics
- PSC 241R - Religion and Politics
- PSC 262 - Damnation, Revolution and the American Experiment
- PSC 337 - Theories of Modern Secularism
- PSC 343 - Women and Politics in the Muslim World
- PSY 431 - Seminar in Psychology of Religion
- REL 170 - Myth, Ritual and Magic
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 250 - Death and Immortality
- REL 271 - Religion and Food
- REL 280 - Religion and Science

- SOC 223 - Sociology of Religion

Religious Studies, B.A.

Requirements for the Major:

A minimum of twelve courses including two Core Courses, plus five courses in an Area of Concentration, plus two courses devoted to a Senior thesis (REL 498 & REL 499), plus three other Religious Studies courses of which at least two will be outside the selected Area of Concentration. Relevant intermediate-level language courses can be substituted with the permission of the Director of the program.

Requirements for Honors in Religious Studies:

To be eligible for honors, the student must fulfill the following requirements: (1) a minimum index of 3.3 in courses in the Major; (2) a grade of at least "A minus" on the senior thesis; and (3) a grade of "distinction" or "high pass" in an oral examination based on the senior thesis. In addition, the student must satisfy College requirements for departmental honors.

Religious Studies Courses

The following is only a partial list of the classes counted towards the religious studies major and minor. See the Director of the program for a complete list.

Core Courses

- REL 103 - Introduction to Religious Studies
- REL 300 - Seminar: Theory and Method in the Study of Religion

Areas of Concentration

Judaism

- AMU 125 - World Religions and Music
- EGL 099 - (271) The Bible: An Introduction
- EGL 265 - (238) Jewish Women Writers
- HST 128 - The American Jewish Experience
- HST 157 - Modern Jewish History
- HST 158 - The Holocaust
- HST 195 - The Early History of the Jews
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 230 - Judaism and Christian Origins

Christianity

- AAH 300 - Italian Art and Architecture, 14th-15th Century
- AMU 060 - From Chant to Mozart
- AMU 125 - World Religions and Music

- AMU 212 - Baroque Music
- AMU 340 - Early Music Seminar
- ANT 252 - Anthropology of Christianity
- EGL 099 - (271) The Bible: An Introduction
- EGL 211 - Milton
- GRK 243 - New Testament Greek
- HST 171 - Europe and the Americas in the Era of Columbus
- HST 240 - The Crusades: Christianity and Islam in Conflict
- HST 241 - Mystics, Magic, and Witchcraft in Medieval and Early Modern Europe
- HST 245 - Occult Sciences and Societies
- HST 372 - Sex and Race in Latin America
- LAT 358 - Medieval Latin Literature and Culture
- MLT 284 - Popular Religion and Politics in Latin America
- PHL 261 - Philosophy of Religion
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 320 - Early Christian Thought
- REL 230 - Judaism and Christian Origins

Islam

- AAH 101 - (201) Islamic Art and Architecture
- AAH 286 - Art and Religion of the Silk Road
- HST 240 - The Crusades: Christianity and Islam in Conflict
- HST 243 - Ottoman History
- HST 302 - Comparing Muslim Cultures
- HST 401 - Seminar in Africa/Middle East
- PSC 343 - Women and Politics in the Muslim World
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 345 - Classical Islam

Religions of Asia

- AAH 286 - Art and Religion of the Silk Road
- AMU 125 - World Religions and Music
- ANT 232 - Bombs to Buddhism: Fatalism, Technology, and Modern Japanese Culture
- HST 183 - Introduction to South Asian Civilizations
- HST 384 - Historical Foundations of South Asian Religions
- PHL 166 - Indian Philosophy
- PHL 167 - Chinese Philosophy
- PHL 180 - Theories of the Good Life
- PHL 245 - Buddhist Ethics
- PHL 338 - Zen and Tibetan Buddhism

Religions of the Ancient Mediterranean

- CLS 110 - Ancient Egypt: History and Religion
- CLS 111 - Ancient Iraq: History and Religion
- CLS 132 - Religion in the Pagan World

- CLS 134 - Classical Art and Architecture
- CLS 143 - Classical Mythology
- CLS 154 - Poetry and the Cosmos
- CLS 161 - The Heroic Journey: Survey of Ancient Epic
- CLS 178 - Ancient World Mythology
- EGL 099 - (271) The Bible: An Introduction
- HST 195 - The Early History of the Jews
- REL 230 - Judaism and Christian Origins

Religion, Culture and Society

- AMU 125 - World Religions and Music
- ANT 252 - Anthropology of Christianity
- ANT 254 - Anthropology of Religion
- HST 372 - Sex and Race in Latin America
- MLT 284 - Popular Religion and Politics in Latin America
- PHL 180 - Theories of the Good Life
- PHL 240 - Contemplative Social Justice Ethics
- PSC 241R - Religion and Politics
- PSC 262 - Damnation, Revolution and the American Experiment
- PSC 337 - Theories of Modern Secularism
- PSC 343 - Women and Politics in the Muslim World
- PSY 431 - Seminar in Psychology of Religion
- REL 170 - Myth, Ritual and Magic
- REL 203 - Judaism/Christianity/Islam: Comparative Perspectives
- REL 250 - Death and Immortality
- REL 271 - Religion and Food
- REL 280 - Religion and Science
- SOC 223 - Sociology of Religion

Russian and East European Studies

Director: Associate Professor K. Bidoshi (Modern Languages and Literatures)

This program provides a broad, area-oriented liberal arts education focusing on the languages, cultures, and social systems of Russia and Eastern Europe. It leads to a degree of Bachelor of Arts and is designed primarily for those seeking careers in government service, journalism, law, or business.

Russian and East European Studies, B.A.

Requirements for the Major:

Twelve courses including REE 498-499; three courses above RUS 102; two courses on the literature or culture of the country in question; and five appropriate courses from history, political science and economics. Students must enter the major by the fall of their junior year, and course selections must be approved by the REE director. Majors must have completed at least three courses in the department most directly related to their senior project and must pass a comprehensive examination in the form of an oral defense of their senior project.

Science, Medicine, and Technology in Culture

Director: Professor M. Walker (History)

Science, medicine, and technology all play important roles in modern society. Several different populations of students would be interested in studying Science, Medicine, and Technology in Culture (SMT):

- Science or engineering majors who want to place their interests in a social context
- Humanities or social sciences majors who want to include science, engineering, and their social consequences in their education
- Students who want to study science and engineering at a meta-level (philosophy of science, sociology of science, history of science, etc.).

Science, Medicine, and Technology in Culture (ID), B.A.

Requirements for the Interdepartmental Major:

The interdepartmental major will consist of eight courses: all students will take one of four introductory SMT courses, HST 138, HST 242, PHL 232, or SOC 228, as well as a two-term interdisciplinary senior thesis. If the other half of the interdepartmental major is in Sciences or Engineering, then these students will do a three course concentration in either history and political science, economics, sociology and anthropology, or philosophy, with all of these classes drawn from the list of SMT courses below, as well as three other SMT courses. If the other half of the interdepartmental major is in Humanities or Social Sciences, then these students will take three courses in engineering and science, each of which must count for the major of the respective engineering or science department, as well as three SMT courses from the list below.

SMT Courses

Core Courses (1 course)

- HST 138 - Big History
- HST 242 - The Scientific Revolution, 1400-1700
- PHL 232 - Philosophy of Science
- SOC 228 - Sociology of Medicine

Capstone Course

- SMT 498/499 Senior Thesis

Electives

Anthropology

- ANT 230 - Medical Anthropology
- ANT 240 - Technology, Culture & Society

Art History

- AAH 205 - The Art & Science of Painting

Astronomy

- AST 050 - The Solar System
- AST 058 - Astrobiology: Life in the Universe

Biology

- BIO 050 - Topics in Contemporary Biology
- BIO 055 - Evolution of Animal Behavior
- BIO 058 - Astrobiology
- BIO 065 - Food and Health in the 21st Century
- BIO 077 - Technology of Biology
- BIO 094 - Understanding Cancer
- BIO 201 - Food Ecology
- BIO 243 - Bioinformatics: Information Technology in the Life Sciences

Chemistry

- CHM 050 - Topics in Chemical Analysis - Forensic Chemistry
- CHM 060 - Meals to Molecules
- CHM 080 - Culinary Chemistry
- CHM 090 - The Art & Science of Painting

Classics

- CLS 190 - Science and Technology in the Ancient World
- CLS 192 - Ancient Medicine

Computer Science

- CSC 055 - Working with the Web
- CSC 080 - History of Computing
- CSC 103 - Taming Big Data: Introduction to Computer Science
- CSC 104 - Robots Rule! Introduction to Computer Science
- CSC 105 - Game Development: Introduction to Computer Science
- CSC 106 - Can Computers Think? Introduction to Computer Science
- CSC 107 - Creative Computing: Introduction to Computer Science
- CSC 240 - Web Programming
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 245 - The Computer Science of Computer Games

Economics

- ECO 228 - Environmental and Natural Resource Economics
- ECO 230 - Mind of the Entrepreneur

- ECO 331 - E-Commerce Economics
- ECO 332 - Economics of Technological Change
- ECO 335 - The Economics of Health
- ECO 375 - Efficient Management of Technology

Engineering Science/Engineering

- ESC 100 - Exploring Engineering

English

- EGL 221 - (235) Romanticism and Media Studies
- EGL 279 - (250) Literature and Science
- EGL 280 - Nature and Environmental Writing
- EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape
- EGL 306 - Jr. Seminar (Spring): Milton

Environmental Studies

- ENS 100 - Introduction to Environmental Studies
- ENS 201 - Food Ecology
- ENS 208 - Waste Management and Recycling
- ENS 209 - Renewable Energy Systems
- ENS 247 - Sustainable Infrastructure
- ENS 252 - Environmental Geotechniques
- ENS 253 - Environmentally Friendly Buildings
- ENS 277 - The Water Paradox
- ENS 299 - Environmental Forensics

Geology

- GEO 103 - Great Moments in The History of Life
- GEO 104 - Global Perspectives on Energy
- GEO 106 - Introduction to Oceanography
- GEO 108 - Earth Resources
- GEO 110 - Physical Geology
- GEO 112 - Environmental Geology
- GEO 117 - Natural Disasters
- GEO 120 - The Earth and Life Through Time
- GEO 220 - Mineral Science

History

- HST 138 - Big History
- HST 242 - The Scientific Revolution, 1400-1700
- HST 253 - Physics and Politics

- HST 256 - Modern European Ideas
- HST 291 - Construction for Humanity
- HST 292 - History of Computing

Interdisciplinary

- ISC 080 - (IDM-080) Practicum in Hospital Health Care

Mathematics

- MTH 051 - Cryptology: The Mathematics of Secrecy
- MTH 056 - History of Mathematics
- MTH 057 - Game Theory and its Applications in the Humanities and Social Sciences
- MTH 060 - Mathematics and Politics
- MTH 221 - Mathematical Cryptology

Philosophy

- PHL 232 - Philosophy of Science
- PHL 233 - Reason, Science, and Humanity
- PHL 265 - Minds and Machines
- PHL 273 - Environmental Ethics
- PHL 274 - Environmental History and Literature
- PHL 375 - Biomedical Ethics
- PHL 474 - Advanced Biomedical Ethics

Physics

- PHY 053 - Physics and Politics
- PHY 054 - Laser Technology and Modern Optics

Political Science

- PSC 123 - Topics in Mathematical Political Science
- PSC 272 - The Environment, Energy, and US Politics
- PSC 282 - Health Politics and Policy
- PSC 283 - Social Movements, the Environment and Society

Psychology

- PSY 210 - Behavioral Neuroscience
- PSY 215 - Health Psychology
- PSY 242 - Death and Dying

Science, Medicine, and Technology in Culture

- SMT 123 - Ethics, Technology & Society

Sociology

- SOC 228 - Sociology of Medicine
- SOC 270 - Social Movements, the Environment, and Society
- SOC 284 - Sociology of Women & Health
- SOC 370 - Public Health Care Policy and Society
- SOC 372 - Global Health
- SOC 374 - Mental Health and Society

Science, Medicine, and Technology in Culture Minor

Requirements for the Minor:

Students wishing to minor in SMT must take six SMT courses from the list below, drawn from at least three different departments and including at least one of the SMT core courses.

SMT Courses

Core Courses (1 course)

- HST 138 - Big History
- HST 242 - The Scientific Revolution, 1400-1700
- PHL 232 - Philosophy of Science
- SOC 228 - Sociology of Medicine

Capstone Course

- SMT 498/499 Senior Thesis

Electives

Anthropology

- ANT 230 - Medical Anthropology
- ANT 240 - Technology, Culture & Society

Art History

- AAH 205 - The Art & Science of Painting

Astronomy

- AST 050 - The Solar System
- AST 058 - Astrobiology: Life in the Universe

Biology

- BIO 050 - Topics in Contemporary Biology
- BIO 055 - Evolution of Animal Behavior
- BIO 058 - Astrobiology
- BIO 065 - Food and Health in the 21st Century
- BIO 077 - Technology of Biology
- BIO 094 - Understanding Cancer
- BIO 201 - Food Ecology
- BIO 243 - Bioinformatics: Information Technology in the Life Sciences

Chemistry

- CHM 050 - Topics in Chemical Analysis - Forensic Chemistry
- CHM 060 - Meals to Molecules
- CHM 080 - Culinary Chemistry
- CHM 090 - The Art & Science of Painting

Classics

- CLS 190 - Science and Technology in the Ancient World
- CLS 192 - Ancient Medicine

Computer Science

- CSC 055 - Working with the Web
- CSC 080 - History of Computing
- CSC 103 - Taming Big Data: Introduction to Computer Science
- CSC 104 - Robots Rule! Introduction to Computer Science
- CSC 105 - Game Development: Introduction to Computer Science
- CSC 106 - Can Computers Think? Introduction to Computer Science
- CSC 107 - Creative Computing: Introduction to Computer Science
- CSC 240 - Web Programming
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 245 - The Computer Science of Computer Games

Economics

- ECO 228 - Environmental and Natural Resource Economics
- ECO 230 - Mind of the Entrepreneur

- ECO 331 - E-Commerce Economics
- ECO 332 - Economics of Technological Change
- ECO 335 - The Economics of Health
- ECO 375 - Efficient Management of Technology

Engineering Science/Engineering

- ESC 100 - Exploring Engineering

English

- EGL 221 - (235) Romanticism and Media Studies
- EGL 279 - (250) Literature and Science
- EGL 280 - Nature and Environmental Writing
- EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape
- EGL 306 - Jr. Seminar (Spring): Milton

Environmental Studies

- ENS 100 - Introduction to Environmental Studies
- ENS 201 - Food Ecology
- ENS 208 - Waste Management and Recycling
- ENS 209 - Renewable Energy Systems
- ENS 247 - Sustainable Infrastructure
- ENS 252 - Environmental Geotechniques
- ENS 253 - Environmentally Friendly Buildings
- ENS 277 - The Water Paradox
- ENS 299 - Environmental Forensics

Geology

- GEO 103 - Great Moments in The History of Life
- GEO 104 - Global Perspectives on Energy
- GEO 106 - Introduction to Oceanography
- GEO 108 - Earth Resources
- GEO 110 - Physical Geology
- GEO 112 - Environmental Geology
- GEO 117 - Natural Disasters
- GEO 120 - The Earth and Life Through Time
- GEO 220 - Mineral Science

History

- HST 138 - Big History
- HST 242 - The Scientific Revolution, 1400-1700
- HST 253 - Physics and Politics

- HST 256 - Modern European Ideas
- HST 291 - Construction for Humanity
- HST 292 - History of Computing

Interdisciplinary

- ISC 080 - (IDM-080) Practicum in Hospital Health Care

Mathematics

- MTH 051 - Cryptology: The Mathematics of Secrecy
- MTH 056 - History of Mathematics
- MTH 057 - Game Theory and its Applications in the Humanities and Social Sciences
- MTH 060 - Mathematics and Politics
- MTH 221 - Mathematical Cryptology

Philosophy

- PHL 232 - Philosophy of Science
- PHL 233 - Reason, Science, and Humanity
- PHL 265 - Minds and Machines
- PHL 273 - Environmental Ethics
- PHL 274 - Environmental History and Literature
- PHL 375 - Biomedical Ethics
- PHL 474 - Advanced Biomedical Ethics

Physics

- PHY 053 - Physics and Politics
- PHY 054 - Laser Technology and Modern Optics

Political Science

- PSC 123 - Topics in Mathematical Political Science
- PSC 272 - The Environment, Energy, and US Politics
- PSC 282 - Health Politics and Policy
- PSC 283 - Social Movements, the Environment and Society

Psychology

- PSY 210 - Behavioral Neuroscience
- PSY 215 - Health Psychology
- PSY 242 - Death and Dying

Science, Medicine, and Technology in Culture

- SMT 123 - Ethics, Technology & Society

Sociology

- SOC 228 - Sociology of Medicine
- SOC 270 - Social Movements, the Environment, and Society
- SOC 284 - Sociology of Women & Health
- SOC 370 - Public Health Care Policy and Society
- SOC 372 - Global Health
- SOC 374 - Mental Health and Society

Science, Medicine, and Technology in Culture, B.A.

Requirements for the Major:

The major will consist of twelve courses: all students will take one of four introductory SMT courses, HST 138 , HST 242 , HST 232 , or SOC 228, a three course concentration in either history and political science, economics, sociology and anthropology, or philosophy, with all of these classes drawn from the list of SMT courses below, three courses in engineering and science, each of which must count for the major of the respective engineering or science department, and a two-term interdisciplinary senior thesis.

SMT Courses

Core Courses (1 course)

- HST 138 - Big History
- HST 242 - The Scientific Revolution, 1400-1700
- PHL 232 - Philosophy of Science
- SOC 228 - Sociology of Medicine

Capstone Course

- SMT 498/499 Senior Thesis

Electives

Anthropology

- ANT 230 - Medical Anthropology
- ANT 240 - Technology, Culture & Society

Art History

- AAH 205 - The Art & Science of Painting

Astronomy

- AST 050 - The Solar System
- AST 058 - Astrobiology: Life in the Universe

Biology

- BIO 050 - Topics in Contemporary Biology
- BIO 055 - Evolution of Animal Behavior
- BIO 058 - Astrobiology
- BIO 065 - Food and Health in the 21st Century
- BIO 077 - Technology of Biology
- BIO 094 - Understanding Cancer
- BIO 201 - Food Ecology
- BIO 243 - Bioinformatics: Information Technology in the Life Sciences

Chemistry

- CHM 050 - Topics in Chemical Analysis - Forensic Chemistry
- CHM 060 - Meals to Molecules
- CHM 080 - Culinary Chemistry
- CHM 090 - The Art & Science of Painting

Classics

- CLS 190 - Science and Technology in the Ancient World
- CLS 192 - Ancient Medicine

Computer Science

- CSC 055 - Working with the Web
- CSC 080 - History of Computing
- CSC 103 - Taming Big Data: Introduction to Computer Science
- CSC 104 - Robots Rule! Introduction to Computer Science
- CSC 105 - Game Development: Introduction to Computer Science
- CSC 106 - Can Computers Think? Introduction to Computer Science
- CSC 107 - Creative Computing: Introduction to Computer Science
- CSC 240 - Web Programming
- CSC 243 - Bioinformatics: Information Technology in the Life Sciences
- CSC 245 - The Computer Science of Computer Games

Economics

- ECO 228 - Environmental and Natural Resource Economics
- ECO 230 - Mind of the Entrepreneur

- ECO 331 - E-Commerce Economics
- ECO 332 - Economics of Technological Change
- ECO 335 - The Economics of Health
- ECO 375 - Efficient Management of Technology

Engineering Science/Engineering

- ESC 100 - Exploring Engineering

English

- EGL 221 - (235) Romanticism and Media Studies
- EGL 279 - (250) Literature and Science
- EGL 280 - Nature and Environmental Writing
- EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape
- EGL 306 - Jr. Seminar (Spring): Milton

Environmental Studies

- ENS 100 - Introduction to Environmental Studies
- ENS 201 - Food Ecology
- ENS 208 - Waste Management and Recycling
- ENS 209 - Renewable Energy Systems
- ENS 247 - Sustainable Infrastructure
- ENS 252 - Environmental Geotechniques
- ENS 253 - Environmentally Friendly Buildings
- ENS 277 - The Water Paradox
- ENS 299 - Environmental Forensics

Geology

- GEO 103 - Great Moments in The History of Life
- GEO 104 - Global Perspectives on Energy
- GEO 106 - Introduction to Oceanography
- GEO 108 - Earth Resources
- GEO 110 - Physical Geology
- GEO 112 - Environmental Geology
- GEO 117 - Natural Disasters
- GEO 120 - The Earth and Life Through Time
- GEO 220 - Mineral Science

History

- HST 138 - Big History
- HST 242 - The Scientific Revolution, 1400-1700
- HST 253 - Physics and Politics

- HST 256 - Modern European Ideas
- HST 291 - Construction for Humanity
- HST 292 - History of Computing

Interdisciplinary

- ISC 080 - (IDM-080) Practicum in Hospital Health Care

Mathematics

- MTH 051 - Cryptology: The Mathematics of Secrecy
- MTH 056 - History of Mathematics
- MTH 057 - Game Theory and its Applications in the Humanities and Social Sciences
- MTH 060 - Mathematics and Politics
- MTH 221 - Mathematical Cryptology

Philosophy

- PHL 232 - Philosophy of Science
- PHL 233 - Reason, Science, and Humanity
- PHL 265 - Minds and Machines
- PHL 273 - Environmental Ethics
- PHL 274 - Environmental History and Literature
- PHL 375 - Biomedical Ethics
- PHL 474 - Advanced Biomedical Ethics

Physics

- PHY 053 - Physics and Politics
- PHY 054 - Laser Technology and Modern Optics

Political Science

- PSC 123 - Topics in Mathematical Political Science
- PSC 272 - The Environment, Energy, and US Politics
- PSC 282 - Health Politics and Policy
- PSC 283 - Social Movements, the Environment and Society

Psychology

- PSY 210 - Behavioral Neuroscience
- PSY 215 - Health Psychology
- PSY 242 - Death and Dying

Science, Medicine, and Technology in Culture

- SMT 123 - Ethics, Technology & Society

Sociology

- SOC 228 - Sociology of Medicine
- SOC 270 - Social Movements, the Environment, and Society
- SOC 284 - Sociology of Women & Health
- SOC 370 - Public Health Care Policy and Society
- SOC 372 - Global Health
- SOC 374 - Mental Health and Society

Sociology

Chair: Professor D. Cotter

Faculty: Professors S. Ainlay (President), I. Kaplan, M. Goldner; Associate Professor D. Butler; Assistant Professor T. Stablein; Senior Lecturer J. Grigsby

Staff: K. Kuon (Administrative Assistant).

Internships and Field Research. The department encourages students to participate in community internships for academic credit under formal supervision by a member of the sociology faculty. Internships include human service organizations and government/policy offices. Students can enroll in SOC 385, SOC 386 and SOC 450. In addition, faculty work closely with students who conduct field research; many department majors present research papers at the National Conference on Undergraduate Research and at Union College's Steinmetz Symposium.

Community Service Mini-term. (Grigsby) A community-service based course held annually in December. See Description in course listing.

Sociology (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses, including:

- SOC 100 - Introduction to Sociology
- SOC 300 - Quantitative Methods of Social Research
- SOC 305 - History of Sociological Thought

An interdepartmental thesis and four sociology electives

Or a two-term Sociology thesis and three electives

Requirements for Honors in Sociology:

The student must fulfill the following requirements: (1) achieve a cumulative index of 3.30 or better; (2) a minimum index of 3.30 in all sociology courses; (3) completion of requirements for the sociology major or an interdepartmental major; (4) three grades of "A" or "A minus" in the major; and (5) at least a grade of "A minus" on the senior thesis. To be eligible for membership in the Alpha Kappa Delta sociology honor society, the student must fulfill all of the above requirements for honors and also have a class standing in the upper third.

Course Selection Guidelines

Common Curriculum (CC): In the Common Curriculum, all sociology courses count towards fulfillment of the social science requirement. Note that Quantitative Social Research Methods does not count toward the Quantitative and Mathematical Reasoning (QMR) requirement.

Course Sequencing for Majors: Majors are encouraged to fulfill the methods and theory requirements SOC 300 and SOC 305 prior to beginning their senior thesis. Students should note that these courses are generally offered only in the fall (SOC 300) and winter (SOC 305) terms each year.

Courses Suitable for Non-Majors: All upper level elective courses are suitable for non-majors who have completed SOC 100.

Course Numbering: SOC 100 or the permission of the instructor is a prerequisite for all other courses in the sociology department unless otherwise noted. While 200-level courses are not "easier" than 300-level courses in terms of workload, the 300-level courses generally assume a greater working knowledge of sociological theory and methods.

SOC 100 is a prerequisite for all Sociology courses.

Sociology Minor

Requirements for the Minor:

- SOC 100 - Introduction to Sociology
- SOC 300 - Quantitative Methods of Social Research
- SOC 305 - History of Sociological Thought

And three Sociology electives:

- SOC 201 - Social Data Analysis
- SOC 202 - Social Problems, Policy and Pop Culture
- SOC 203 - Social Psychology
- SOC 204 - Social Construction of Deviance
- SOC 205 - Social Work and Human Services
- SOC 206 - Aging and Society
- SOC 212 - The American Family and Cross-Cultural Perspectives
- SOC 222 - Schools and Societies
- SOC 223 - Sociology of Religion
- SOC 224 - Sociology of Community
- SOC 228 - Sociology of Medicine
- SOC 230 - Sociology of the Black Community
- SOC 231 - Sex and Gender in American Society
- SOC 233 - Race, Class, and Gender in American Society
- SOC 240 - Political Sociology
- SOC 260 - Demography: Population and Society
- SOC 261 - Crime and Justice in Society
- SOC 262 - Juvenile Delinquency
- SOC 270 - Social Movements, the Environment, and Society

- SOC 271 - Sociology of Disaster
- SOC 284 - Sociology of Women & Health
- SOC 285 - Food, Nutrition and Society
- SOC 290 - Personality, Media, and Society
- SOC 302 - Qualitative Social Research Methods
- SOC 314 - America's War on Drugs: Culture, Conflict, & Social Policy
- SOC 340 - Inequality and Mobility: From Penthouse to Poorhouse
- SOC 346 - Sociology of Black Women's Culture
- SOC 359 - Environmental Policy and Resource Management
- SOC 360 - Domestic Violence
- SOC 362 - Family and Community Services
- SOC 364 - Sex and Motherhood
- SOC 370 - Public Health Care Policy and Society
- SOC 372 - Global Health
- SOC 374 - Mental Health and Society
- SOC 385 - Internship in the Delivery of Human Services
- SOC 387T - Community Service Miniterm
- SOC 450 - Environmental Services and Policy

Sociology, B.A.

Requirements for the Major:

Students complete a twelve course major and are required to take

- SOC 100 - Introduction to Sociology
- SOC 300 - Quantitative Methods of Social Research
- SOC 305 - History of Sociological Thought

Complete a 2 term senior thesis:

- SOC 498 - Sociology Senior Thesis 1
- SOC 499 - Sociology Senior Thesis 2

Additionally, seven Sociology electives:

- SOC 201 - Social Data Analysis
- SOC 202 - Social Problems, Policy and Pop Culture
- SOC 203 - Social Psychology
- SOC 204 - Social Construction of Deviance
- SOC 205 - Social Work and Human Services
- SOC 206 - Aging and Society
- SOC 212 - The American Family and Cross-Cultural Perspectives
- SOC 222 - Schools and Societies
- SOC 223 - Sociology of Religion
- SOC 224 - Sociology of Community
- SOC 228 - Sociology of Medicine

- SOC 230 - Sociology of the Black Community
- SOC 231 - Sex and Gender in American Society
- SOC 233 - Race, Class, and Gender in American Society
- SOC 240 - Political Sociology
- SOC 260 - Demography: Population and Society
- SOC 261 - Crime and Justice in Society
- SOC 262 - Juvenile Delinquency
- SOC 270 - Social Movements, the Environment, and Society
- SOC 271 - Sociology of Disaster
- SOC 284 - Sociology of Women & Health
- SOC 285 - Food, Nutrition and Society
- SOC 290 - Personality, Media, and Society
- SOC 302 - Qualitative Social Research Methods
- SOC 314 - America's War on Drugs: Culture, Conflict, & Social Policy
- SOC 340 - Inequality and Mobility: From Penthouse to Poorhouse
- SOC 346 - Sociology of Black Women's Culture
- SOC 359 - Environmental Policy and Resource Management
- SOC 360 - Domestic Violence
- SOC 362 - Family and Community Services
- SOC 364 - Sex and Motherhood
- SOC 370 - Public Health Care Policy and Society
- SOC 372 - Global Health
- SOC 374 - Mental Health and Society
- SOC 385 - Internship in the Delivery of Human Services
- SOC 387T - Community Service Miniterm
- SOC 450 - Environmental Services and Policy

Note(s):

Majors may include within their seven remaining elective courses up to two cognates from political science, psychology, economics, history, philosophy and/or anthropology with approval of the department advisor. Courses in the Sociology Department include a variety of choices in areas such as community, family, health and medicine, public policy, the environment, diversity and change and crime and justice.

Requirements for Honors in Sociology:

The student must fulfill the following requirements: (1) achieve a cumulative index of 3.30 or better; (2) a minimum index of 3.30 in all sociology courses; (3) completion of requirements for the sociology major or an interdepartmental major; (4) three grades of "A" or "A minus" in the major; and (5) at least a grade of "A minus" on the senior thesis. To be eligible for membership in the Alpha Kappa Delta sociology honor society, the student must fulfill all of the above requirements for honors and also have a class standing in the upper third.

Course Selection Guidelines

Common Curriculum (CC): In the Common Curriculum, all sociology courses count towards fulfillment of the social science requirement. Note that Quantitative Social Research Methods does not count toward the Quantitative and Mathematical Reasoning (QMR) requirement.

Course Sequencing for Majors: Majors are encouraged to fulfill the methods and theory requirements SOC 300 and SOC 305 prior to beginning their senior thesis. Students should note that these courses are generally offered only in the fall (SOC 300) and winter (SOC 305) terms each year.

Courses Suitable for Non-Majors: All upper level elective courses are suitable for non-majors who have completed SOC 100.

Course Numbering: SOC 100 or the permission of the instructor is a prerequisite for all other courses in the sociology department unless otherwise noted. While 200-level courses are not "easier" than 300-level courses in terms of workload, the 300-level courses generally assume a greater working knowledge of sociological theory and methods.

SOC 100 is a prerequisite for all Sociology courses.

Theatre & Dance

Chair: Professor W. Finlay

Faculty: Professor C. Steckler; Senior Artist-in-Residence P. Culbert; Senior Artist-in-Residence and Director of the Dance Program M. Moutillet; Artist-in-Residence / Technical Director R. Bovard; Artist-in-Residence / Costume Designer B. Belz.

Administration: M. Rogers (Assistant Director of Dance)

Staff: TBD (Administrative Assistant), L. Goodman (Office Assistant), Robin MacDuffie (Shop Foreman)

Dance Minor

Requirements for the Minor:

A total of 6 credits required to achieve a minor in dance.

Students must take:

- ADA 130 - (050) The Dance Experience

One History course:

- ADA 140 - American Musical Theater and Dance
or
- ADA 142 - Dance in America
or
- ADA 153 - Histoire de la danse, Danse de l'histoire/History of Dance, Dance of History

One dance elective (in consultation with the Director of Dance):

- ADA 150 - Staging Exploration in Theater and Dance
or
- WMC 354T - (AMU-354T) Balinese Performing Arts Mini-term

One credit (depending on the student's interest) from:

- ADA 295H - Choreography Honors 1
and
- ADA 296H - Choreography Honors 2
or
- ADA 350 - Choreography

Two full practicum credits are also required in dance technique over six terms of study

Dance Technique Classes:

Ballet, Modern, Jazz, Lyrical, Tap, Broadway, Hip Hop, Dance & Fitness, Zumba and Pilates for Performers are offered in the dance studio. Each term a selection of these classes may be offered. A small fee is charged. To gain transcript recognition for dance technique classes, students must register with the registrar early in the term and achieve a passing grade from the faculty supervisor. Requests to register for practicum transcript recognition after the drop-add period will not be honored. During the senior year, students may request up to two full dance practicum credits towards graduation. Such requests are made to the registrar during the senior year transcript audit (or its equivalent for those who plan to graduate early). Each full dance practicum credit is accumulated from three previous passing grades (any combination of theater and dance practicum). No more than two such graduation credits are available, whatever the discipline (music, theater, or dance). Students are advised to select full practicum credits in whichever area best suits their academic program.

Theater (ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses plus one full theater practicum credit and one experience in the Art of Stage Management. Students are encouraged to audition for term productions. The interdepartmental major includes

- ATH 110 - Stage Craft 1
- ATH 112 - Acting 1
- ATH 113 - Introduction to Stage Design
- ATH 125 - Improvisation 1
- ATH 151 - Directing 1
- ATH 230 - Movement for Actors
- ATH 231 - Voice for the Stage
- ATH 342 - Acting 2

Note(s):

Highly recommended are additional electives/dance technique classes.

Requirements for Honors Theater:

ATH 498-ATH 499. Candidates must satisfy college qualifications for honors and receive a grade of at least "A minus."

Theater Minor

Requirements for the Minor:

Six courses plus one full theater practicum credit and one experience in the art of Stage Management. The Theater minor includes ATH 110 (Stage Craft I), ATH 120 (History of Theater) and the choice of one design class and one performance class offered by the Department. Also required are two electives from within the Department of Theater and Dance chosen in consultation with the student's Minor advisor. Minors are encouraged to audition for works on term productions.

Theater, B.A.

Requirements for the Major:

Twelve courses plus one full theater practicum credit. Students may focus their studies in one of three areas: Performance, Design & Technology or Directing. In addition to required courses (ATH 110, ATH 112, ATH 120, ATH 494, a design course, and ATH 497 or ATH 498 & ATH 499), students choose five or six courses, depending upon whether they take a one or two term senior thesis, from the "menu" of options in consultation with their faculty advisor. Majors are expected to audition for or work on term productions.

Requirements for Honors Theater:

ATH 498-ATH 499. Candidates must satisfy college qualifications for honors and receive a grade of at least "A minus."

Visual Arts: Art History and Studio Fine Arts

Chair: Professor D. Ogawa

Faculty: Professors M. Benjamin, C. Duncan, L. Matthew; Associate Professors L. Cox, D. Ogawa, F. Orellana; Assistant Professors S. Lullo, L. Nemett; Senior Lecturer S. Wimer

Staff: F. Rapant (Photography Technician), P. Healy (Studio Art Technician), Victoria Rotondi (Administrative Assistant), L. Goodman (Office Assistant)

Visual Arts (Art History Concentration ID), B.A.

Requirements for the Interdepartmental Major:

A minimum of eight courses in the Visual Arts Department, of which seven must be in Art History including four 100 or 200-numbered courses which must include three of the four cultural areas: The Americas, Asia, Europe, Middle East/Central Asia; three courses from the 300 and 400 numbered upper level courses at least one of which must be a 400 level seminar. Students also take one course in Studio Art. All proposals for interdepartmental majors including Art History must be approved by the Art History faculty.

Requirements for Honors in Art History:

To qualify for departmental honors, a student must fulfill the following requirements: (1) cumulative grade point average of 3.3; (2) a grade point average of 3.3 in the Art History concentration; (3) successful completion of a two-term senior thesis ("A" or "A-minus"); (4) approval by a second faculty reader; (5) an oral presentation at The Steinmetz Symposium in the spring term of senior year; and (6) a copy of the thesis must be left with the department's collection and archives. Having fulfilled the above, the student must then be nominated by the department for honors. Further guidelines for the senior thesis and departmental honors are available from the Art History faculty.

Course Selection Guidelines

Placement: Incoming first-year students who score a 4 or 5 on the AP exam in Art History may receive credit for one of the 100 or 200 numbered introductory Art History courses. Students who plan to major or minor in Art History are nonetheless encouraged to take the introductory courses as a way of deepening their backgrounds.

100-numbered courses: These courses are introductions to the study of Art History. They cover specific geographical and broad historical periods. Many are cross-listed or approved for credit in other disciplines or interdisciplinary programs. These courses are suitable for first-year students,

sophomores, juniors, and seniors, and many of them carry General Education LCC credit. They may also serve as the prerequisites for many 300 and 400 numbered courses.

200-numbered courses: These courses are introductions to sub-fields within Art History. They may be medium-specific or thematic, and will facilitate learning across cultures. They are designed to be introductory and do not carry prerequisites. Many are cross-listed or approved for credit in other disciplines or interdisciplinary programs. These courses are suitable for first-year students, sophomores, juniors, and seniors, and many of them carry General Education LCC credit; two currently carry SET credit.

300-numbered courses: These courses are advanced courses that concentrate on specific historical periods, geographic regions, or themes. They generally have prerequisites drawn from the 100 or 200 numbered Art History courses. These courses are generally suitable for sophomores, juniors, and seniors. Pre-requisite: any art history course or permission of the instructor)

400-numbered courses: This will be a rotating seminar taught by different faculty or with a different topic each year. It is designed for majors in their junior and senior years, and will involve advanced work in a specific topic or theme. It is required for juniors who intend to write a thesis in the senior year, and for seniors to fulfill their WS requirement.

Internships, Independent Studies, and Thesis: These courses are generally reserved for advanced Art History students, who must consult with the Art History program and arrange for academic sponsorship prior to registering for them.

Visual Arts (Art History Concentration), B.A.

Requirements for the Major:

Art History majors take twelve courses, including six 100 or 200 numbered courses which must include three of the four cultural areas: The Americas, Asia, Europe, Middle East/Central Asia; four 300 and 400 numbered courses, at least one of which must be a 400 numbered seminar. Art History majors also take two Studio Art courses. Students planning to do a two-term senior thesis should take the required 400 numbered seminar in the junior year; while those not doing a thesis may take the 400 numbered seminar in the senior year to fulfill the WS (senior writing requirement). Majors concentrating in Art History are encouraged to continue the study of at least one foreign language at Union.

To pursue a senior thesis, Art History majors must have a cumulative grade point average of 3.3 overall and 3.3 in their Art History concentration. The student must have successfully completed a junior qualifying paper ("B plus" or above) in the context of an upper-level (300s or 400s) Art History course, which will be reviewed by the thesis advisor. Art History majors who intend to write a two-term thesis must take the 400-numbered seminar in the junior year, and must obtain approval from a thesis advisor by the end of the junior year. Because thesis requirements vary between departments, all interdepartmental majors must consult with both major departments before planning to write a senior thesis.

Requirements for Honors in Art History:

To qualify for departmental honors, a student must fulfill the following requirements: (1) cumulative grade point average of 3.3; (2) a grade point average of 3.3 in the Art History concentration; (3) successful completion of a two-term senior thesis ("A" or "A-minus"); (4) approval by a second faculty reader; (5) an oral presentation at The Steinmetz Symposium in the spring term of senior year; and (6) a copy of the thesis must be left with the department's collection and archives. Having fulfilled the above, the student must then be nominated by the department for honors. Further guidelines for the senior thesis and departmental honors are available from the Art History faculty.

Architecture Track:

Union offers a studio fine arts concentration with a recommended sequence of courses for students who plan to apply for graduate school in architecture as well as related fields of historic preservation, landscape architecture, and urban planning. While graduate schools in these areas don't require a specific major, a thorough and strong Studio Art portfolio is essential and greatly enhanced by specific course work in engineering, art history, math, and science. Those interested should consult any of the studio advisors as early as possible for specific details. Advisors: Professors Benjamin, Duncan, Orellana; Senior Lecturer Wimer

Course Selection Guidelines

Placement: Incoming first-year students who score a 4 or 5 on the AP exam in Art History may receive credit for one of the 100 or 200 numbered introductory Art History courses. Students who plan to major or minor in Art History are nonetheless encouraged to take the introductory courses as a way of deepening their backgrounds.

100-numbered courses: These courses are introductions to the study of Art History. They cover specific geographical and broad historical periods. Many are cross-listed or approved for credit in other disciplines or interdisciplinary programs. These courses are suitable for first-year students, sophomores, juniors, and seniors, and many of them carry General Education LCC credit. They may also serve as the prerequisites for many 300 and 400 numbered courses.

200-numbered courses: These courses are introductions to sub-fields within Art History. They may be medium-specific or thematic, and will facilitate learning across cultures. They are designed to be introductory and do not carry prerequisites. Many are cross-listed or approved for credit in other disciplines or interdisciplinary programs. These courses are suitable for first-year students, sophomores, juniors, and seniors, and many of them carry General Education LCC credit; two currently carry SET credit.

300-numbered courses: These courses are advanced courses that concentrate on specific historical periods, geographic regions, or themes. They generally have prerequisites drawn from the 100 or 200 numbered Art History courses. These courses are generally suitable for sophomores, juniors, and seniors. Pre-requisite: any art history course or permission of the instructor)

400-numbered courses: This will be a rotating seminar taught by different faculty or with a different topic each year. It is designed for majors in their junior and senior years, and will involve advanced work in a specific topic or theme. It is required for juniors who intend to write a thesis in the senior year, and for seniors to fulfill their WS requirement.

Internships, Independent Studies, and Thesis: These courses are generally reserved for advanced Art History students, who must consult with the Art History program and arrange for academic sponsorship prior to registering for them.

Visual Arts (Art History/Studio Arts Dual Concentration), B.A.

Requirements for the Art History/Studio Arts Dual Concentration:

Students who wish to major in a combined dual concentration of studio art and art history must take seven courses in each area.

In Studio: Students take one course in three of the disciplines of the studio arts offered by the department (drawing and painting; photography; printmaking and two-dimensional design; sculpture and three-dimensional design; digital arts). Students may not exceed four introductory courses. Two intermediate-numbered courses are required in at least two studio art disciplines (AVA 210 - AVA 282). Two advanced courses are required in a single discipline (300 or above). For honors requirements, see below.

In Art History: Students take four 100 or 200 numbered courses which must include three of the four cultural areas: The Americas, Asia, Europe, Middle East/Central Asia; three courses from the 300 and 400 numbered courses at least one of which must be a 400 numbered seminar. The WS requirement for combined dual concentration may be fulfilled by an Art History seminar taken in the senior year or a combined senior project. For honors requirements see below.

Requirements for Honors in the Art History/Studio Combined Dual Concentration:

Honors for the combined concentration requires a cumulative grade point average of 3.3; a 3.3 grade point average for all courses counting toward the combined concentration; and one of three project options: 1) Successful completion of a two-term art history thesis ("A" or "A minus"), which also requires successful completion of a paper by the end of the junior year ("B plus" or above), a proposal approved by the advisor, approval of the final product by a second faculty reader, and an oral presentation at The Steinmetz Symposium in the spring term of the senior year; or 2) A two-term independent study project focusing on the student's particular area of interest in the studio arts, culminating in an exhibition ("A" or "A minus"); or 3) a two-term project that combines Art History and Studio Arts, which must be planned in consultation with an advisor from each discipline, and which must be proposed by the end of the junior year. For those doing a written work, a copy must be left with the department's collection and archives. For those completing a studio project, visual documentation (usually slide reproductions) of the project, a one-page abstract, and one original work must be left with the department. These requirements for project option #3 will be negotiated with the advisors on a case-by-case basis. All students must complete the WS requirement or an equivalent during the senior year.

Course Selection Guidelines

Placement: Incoming first-year students with Studio experience who are interested in placement beyond an introductory course should contact the department chair to arrange for a portfolio review with the appropriate Studio Art faculty.

Enrollment Limits: It is important to note that ALL introductory Studio Art courses are petition courses. Due to high demand and limited Studio Art facilities, declared Visual Arts majors and minors have priority in registration for all Studio Art courses, unless otherwise noted in the course listing schedule. Students who are interested in a major or a minor are strongly encouraged to meet with a member of the department and to declare as early as is practical. Most introductory courses reserve some openings for incoming first-year students in the fall term.

100-level courses: These courses are designed to introduce students to the fundamental materials and techniques of the various Studio Art disciplines. They do not carry prerequisites, nor do they require any previous Studio Art experience. These courses are suitable for first-year students, sophomores, juniors, and seniors; please note the enrollment priorities as stated above. Non-majors who are interested in these courses are strongly advised to consult with faculty before petitioning for these courses.

200-400-level courses: These courses are designed to build on the introductory courses, and all have introductory courses as their prerequisites. They are suitable for first-year students, sophomores, juniors, and seniors.

Internships, Independent Studies, and Thesis: These courses are generally reserved for advanced Studio Art students, but may be appropriate for other students as well. All students interested in these courses must consult with the Studio Art faculty and arrange academic sponsorship before registering for them.

Visual Arts (Studio Fine Arts Concentration ID), B.A.

Requirements for the Interdepartmental Major:

Eight courses with at least one course in three of the five general disciplines of studio visual arts (drawing/painting; photography; printmaking/two-dimensional design; sculpture/three-dimensional design; digital arts). No more than three introductory courses (AVA 100 - AVA 160); no more than two intermediate courses (AVA 200 - AVA 282); at least two advanced level courses (AVA-300 or above); at least one art history course; senior/honors sequence optional.

A studio art interdepartmental major with a digital arts focus requires four digital art courses, three studio courses in at least two of the four studio disciplines, and one art history course. Those interested should consult Professor Ogawa (Visual Arts), Professor Orellana (Visual Arts) or Professor Fernandes (Computer Science) for specific details.

Requirements for Honors in Studio Fine Arts:

Candidates must meet College qualifications for honors and secure approval from a visual arts faculty sponsor for the two-term project with culminating exhibit. Each honors student keeps a written journal during the two-term project, reflecting on his/her work. There is regular verbal and written input from the faculty sponsor. This journal forms the basis for a final paper of at least 15 pages, which satisfies the College's senior writing (WS) requirement. There are additional requirements for honors in studio fine arts and they should be obtained from your visual arts advisor. Students pursuing a one-term senior project must also secure approval from a studio visual arts faculty sponsor.

Course Selection Guidelines

Placement: Incoming first-year students with Studio experience who are interested in placement beyond an introductory course should contact the department chair to arrange for a portfolio review with the appropriate Studio Art faculty.

Enrollment Limits: It is important to note that ALL introductory Studio Art courses are petition courses. Due to high demand and limited Studio Art facilities, declared Visual Arts majors and minors have priority in registration for all Studio Art courses, unless otherwise noted in the course listing schedule. Students who are interested in a major or a minor are strongly encouraged to meet with a member of the department and to declare as early as is practical. Most introductory courses reserve some openings for incoming first-year students in the fall term.

100-level courses: These courses are designed to introduce students to the fundamental materials and techniques of the various Studio Art disciplines. They do not carry prerequisites, nor do they require any previous Studio Art experience. These courses are suitable for first-year students,

sophomores, juniors, and seniors; please note the enrollment priorities as stated above. Non-majors who are interested in these courses are strongly advised to consult with faculty before petitioning for these courses.

200-400-level courses: These courses are designed to build on the introductory courses, and all have introductory courses as their prerequisites. They are suitable for first-year students, sophomores, juniors, and seniors.

Internships, Independent Studies, and Thesis: These courses are generally reserved for advanced Studio Art students, but may be appropriate for other students as well. All students interested in these courses must consult with the Studio Art faculty and arrange academic sponsorship before registering for them.

Visual Arts (Studio Fine Arts Concentration), B.A.

Requirements for the Major:

Students take at least twelve courses in the department, with the following four courses as the core:

Design Fundamentals or Drawing

- AVA 100 - Design Fundamentals 1
or
- AVA 110 - Drawing 1

Sculpture and Three Dimensional Design

- AVA 130 - Sculpture 1
or
- AVA 140 - Three Dimensional Design 1

Photography

- AVA 120 - Photography 1 - Aesthetics, Film, Chemistry & Printing

Printmaking

- AVA 150 - Printmaking: Relief
or
- AVA 151 - Printmaking: Etching

To complete their studio requirements, students take:

Two additional studio courses

- AVA 160 - Digital Art
- AVA 210 - Drawing 2

- AVA 220 - Photography 2 - Intermediate Photography
- AVA 230 - Sculpture 2
- AVA 240 - Three-Dimensional Design 2
- AVA 260 - Painting: Oil
- AVA 261 - Painting: Watercolor
- AVA 262 - Real and Recorded Time - 4D Art
- AVA 270 - The Processed Pixel
- AVA 280 - Design Aesthetics
- AVA 282 - Digital Aesthetics

Two advanced studio courses

- AVA 320 - Photography 3 - Color Digital Photography
- AVA 330 - Sculpture 3
- AVA 345 - The Illustrated Organism
- AVA 350 - Advanced Printmaking
- AVA 360 - Advanced Painting
- AVA 363 - 3D Computer Modeling
- AVA 370 - Physical Computing
- AVA 400 - Special Projects in Photography
- AVA 405 - Special Projects in Painting
- AVA 410 - Drawing Independent Study 1
- AVA 420 - Photography Independent Study 1
- AVA 430 - Sculpture Independent Study 1
- AVA 450 - Printmaking Independent Study 1
- AVA 460 - Painting Independent Study 1
- AVA 470 - Studio Internship 1
- AVA 480 - Digital Art Independent Study

Two art history courses

Two other studio courses chosen in consultation with a visual arts faculty advisor

Additional Requirements

Most majors will do either a two-term senior honors project (AVA 498 - AVA 499) leading to a solo exhibition in the spring term, or a one-term independent senior studio project (with an optional exhibition). These comprise in-depth study in a studio discipline in the senior year. A senior honors project takes the form of a two-term independent study focusing on the student's particular area of interest in the visual arts during consecutive terms (first term, 498, pass/fail; second term, 499, with an overall grade for both terms). Visual arts majors who do not pursue a senior honors project may satisfy the WS requirement either through an art history senior seminar designated WS (for studio concentrators who have the necessary prerequisites in art history) or by obtaining a faculty sponsor for a one-term independent senior studio project with the required WS component.

Requirements for Honors in Studio Fine Arts:

Candidates must meet College qualifications for honors and secure approval from a visual arts faculty sponsor for the two-term project with culminating exhibit. Each honors student keeps a written journal during the two-term project, reflecting on his/her work. There is regular verbal and written input from the faculty sponsor. This journal forms the basis for a final paper of at least 15 pages, which satisfies the College's senior writing (WS) requirement. There are additional requirements for honors in studio fine arts and they should be obtained from your visual arts advisor. Students pursuing a one-term senior project must also secure approval from a studio visual arts faculty sponsor.

Course Selection Guidelines

Placement: Incoming first-year students with Studio experience who are interested in placement beyond an introductory course should contact the department chair to arrange for a portfolio review with the appropriate Studio Art faculty.

Enrollment Limits: It is important to note that ALL introductory Studio Art courses are petition courses. Due to high demand and limited Studio Art facilities, declared Visual Arts majors and minors have priority in registration for all Studio Art courses, unless otherwise noted in the course listing schedule. Students who are interested in a major or a minor are strongly encouraged to meet with a member of the department and to declare as early as is practical. Most introductory courses reserve some openings for incoming first-year students in the fall term.

100-level courses: These courses are designed to introduce students to the fundamental materials and techniques of the various Studio Art disciplines. They do not carry prerequisites, nor do they require any previous Studio Art experience. These courses are suitable for first-year students, sophomores, juniors, and seniors; please note the enrollment priorities as stated above. Non-majors who are interested in these courses are strongly advised to consult with faculty before petitioning for these courses.

200-400-level courses: These courses are designed to build on the introductory courses, and all have introductory courses as their prerequisites. They are suitable for first-year students, sophomores, juniors, and seniors.

Internships, Independent Studies, and Thesis: These courses are generally reserved for advanced Studio Art students, but may be appropriate for other students as well. All students interested in these courses must consult with the Studio Art faculty and arrange academic sponsorship before registering for them.

Visual Arts - Art History Minor

Requirements for the Minor:

Seven courses including:

At least four 100 and 200 numbered courses (must include three of the four cultural areas: The Americas, Asia, Europe, Middle East/Central Asia)

Two 300 or 400 level courses

One studio course

Visual Arts - Studio Fine Arts Minor

Requirements for the Minor:

Seven courses, including:

Three introductory

- AVA 100 - AVA 160
or
- AVA 345 - The Illustrated Organism
- AVA 100 - Design Fundamentals 1
- AVA 110 - Drawing 1
- AVA 120 - Photography 1 - Aesthetics, Film, Chemistry & Printing
- AVA 130 - Sculpture 1
- AVA 140 - Three Dimensional Design 1
- AVA 150 - Printmaking: Relief
- AVA 151 - Printmaking: Etching
- AVA 160 - Digital Art

Two intermediate

- AVA 200 - Design Fundamentals 2
- AVA 210 - Drawing 2
- AVA 220 - Photography 2 - Intermediate Photography
- AVA 230 - Sculpture 2
- AVA 240 - Three-Dimensional Design 2
- AVA 260 - Painting: Oil
- AVA 261 - Painting: Watercolor
- AVA 262 - Real and Recorded Time - 4D Art
- AVA 270 - The Processed Pixel
- AVA 280 - Design Aesthetics

One advanced course

- AVA 320 - Photography 3 - Color Digital Photography
- AVA 330 - Sculpture 3
- AVA 345 - The Illustrated Organism
- AVA 350 - Advanced Printmaking
- AVA 360 - Advanced Painting
- AVA 363 - 3D Computer Modeling
- AVA 370 - Physical Computing

One art history course is required.

World Musics and Cultures

Director: Associate Professor J. Matsue (Music)

Faculty: Associate Professor T. Olsen (Music)

The World Musics and Cultures Program at Union College is an interdisciplinary program offering courses, concerts and performance opportunities that explore, in a vibrant academic setting, the diversity of the world's people and the music that we make. Grounded in the Departments of Music and Anthropology, students can take a range of courses that reveal the intersection of music and cultural anthropology, develop skills in ethnographic methods, and encounter specific styles through both hands-on performance and academic study of the musics and cultures of Africa and the African Diaspora, Asia (Central, East, South and South East), Europe, Latin America, and North America.

World Musics and Cultures Minor

Requirements for the Minor

Six courses, including:

- AMU 220 - Music and Culture
- AMU 101 - Theory 1: Diatonic Harmony
- ANT 110 - Introduction to Cultural Anthropology

Two area courses:

- AMU 120 - Introduction to World Music
- AMU 131 - Music of Black America
- AMU 132 - The History of Jazz
- AMU 133 - Music of Latin America
- AMU 134 - Music and Culture of Africa
- AMU 136 - Popular Music in Modern Japan
- AMU 232 - Jazz Workshop
- AMU 233 - Japanese Drumming Workshop
- AMU 234 - Balinese Gamelan Workshop
- AMU 320 - Encounters with East Asian Music Cultures
- WMC 354T - (AMU-354T) Balinese Performing Arts Mini-term

One-year of practicum credit in an ensemble:

- AMU 012 - Union College Japanese Drumming Ensemble
- AMU 015 - Union College Jazz Ensemble

And a capstone experience:

- WMC 490 - World of Music Independent Study

Interdepartmental (ID) and Organizing Theme (OT) Major options

Students interested in pursuing further study in this area may complete an interdepartmental major (ID) in Music and Anthropology, or consider designing an Organizing Theme major (OT).

Courses associated with World Music and Cultures

Several department programs contribute towards the program in World Music and Cultures

World Music and Cultures Associated Courses

Course Listing

Courses listed below are grouped together **alphabetically by subject prefix**. To search for a specific course, please follow the instructions in the course filter box below and click on "Filter."

Departments and interdisciplinary programs are described in detail on the Majors, Minors, and Other Programs page within this catalog. Please refer to the detailed sections on each area of study for more information. Requirements to fulfill a major or minor appear within each program or area of study.

All students must also complete the courses in the Common Curriculum (General Education), including Writing Across the Curriculum (WAC) requirements and other requirements that pertain to the undergraduate degree. Courses are numbered as follows.

000-049 - Non-credit courses.

050-099 - Common Curriculum (General Education) courses and others that do NOT count toward the major.

100-199 - Introductory-level courses which count for the major.

200-299 - Sophomore/junior-level courses that often may be easily taken by non-majors. (Some departments may use 200-249 and 250-259 to delineate between sophomore and junior level offerings.)

300-399 - Upper-level courses intended primarily for majors - these are courses representing the depth component of the major.

400-499 - All advanced courses for seniors, including those used to fulfill WS (Senior Writing Experience requirement), small seminars, research, thesis, and independent studies.

Wherever possible, the departments have indicated the instructor and the term during which a course is given. Some courses are offered only occasionally and are so indicated. The College retains the right not to offer a course, especially if enrollment is insufficient.

A few courses are not valued at full course credit, and some carry double credit.

A full course unit may be equated to five quarter-credit hours, or three and one-third semester credit hours.

Art History

AAH 101 - (201) Islamic Art and Architecture

Course Units: 1

(Not offered this Academic Year) A broad and select survey of the art and architecture of Islamic cultures from the 7th through the 16th centuries that will stress the religious, social, economic, and historical contexts within which Islamic arts and architecture developed. We will study a variety of arts in addition to the traditional architecture, painting and sculpture familiar to students in Western art history surveys, including calligraphy and book painting, metalwork, ceramics, glass, carpets and textiles, and gardens and landscape design. **CC:** LCC, HUM

AAH 102 - Medieval Art and Architecture of Northern Europe, 5th-15th Century

Course Units: 1

(Fall; Matthew) An introductory survey of sculpture and decorative arts, manuscripts, painting and architecture from the seventh through fourteenth centuries north of the Alps. Examines the emergence of western medieval culture and attitudes toward the arts, as well as western European views of its Byzantine and Muslim neighbors. In addition to introducing major monuments and patrons, students will be introduced to the materials and techniques used to produce the art and architecture of the Middle Ages. The art of medieval Italy is covered in a separate course, AAH 300 **CC:** LCC, HUM

AAH 103 - Introduction to European Painting and Sculpture, 17th-20th century

Course Units: 1

(Not offered this Academic Year) Major works of art and artistic traditions from the 17th century to the present, primarily in western Europe. The vocabulary and techniques of painting, sculpture, architecture, the decorative arts, and printmaking; the emergence of modernism, abstraction, new materials, and non-objective art. Emphasis on the institutions of art and historical context as well. Visual analysis, verbal and written interpretation of art. **CC:** LCC, HUM

AAH 104 - Arts of China

Course Units: 1

(Fall, Spring; Lullo) This survey covers works of art and artistic traditions in China from the Neolithic period to the early 20th century. Lectures will focus on representative works in various media - calligraphy, painting, sculpture, architecture, and decorative arts - within the contexts of the tomb, court production, literati culture, Buddhist and Daoist temples, and interactions with other cultures. **CC:** LCC, HUM

AAH 105 - Arts of Japan

Course Units: 1

(Fall; Lullo) This introduction to the arts of Japan from the Neolithic period to the 20th century will focus on key monuments of sculpture, architecture, painting, calligraphy, gardens, printing, and other arts within their historical and cultural contexts. Themes discussed include: materials and technologies, sacred and profane spaces, patrons and viewers, tradition and modernity, and the creation of a distinctly "Japanese" aesthetic. **CC:** LCC, HUM

AAH 106 - Arts of India

Course Units: 1

(Spring; Lullo) This course is designed as an introduction to ways of seeing, understanding, and questioning the visual arts in India. You will learn how the visual arts (cities, architecture, monuments, statues and painting) have informed us about the history, culture, and religion of India from the rise of civilization to the colonial period. It is important to approach the works we will study not simply as objects of aesthetic taste, but as meaningful and functional to those who commissioned, used, created, and experienced them. In addition to studying the social and political nature of the arts, a large portion of this course looks at works that served to activate the sacred within and across several religious belief systems, including Buddhism, Hinduism, and Islam. **CC:** LCC, HUM

AAH 110 - (200) Classical Art and Architecture

Course Units: 1

(Same as CLS 134) **(Spring; Matthew)** An introductory survey of the arts of Greece and Rome, including painting, sculpture, architecture, and decorative arts. Emphasis will be placed upon learning art historical and archaeological terminology and methods, the place of art and architecture in ancient society and culture, and contacts with other cultures, in addition to becoming familiar with the most important monuments, artists, and patrons. **CC: LCC, HUM**

AAH 120 - (320) European Baroque Art and Architecture: 17th-18th Century

Course Units: 1

(Not offered this Academic Year) This course will cover the major European art movements of the 17th and 18th centuries. It will be structured chronologically and treat the art of the Catholic Counter-reformation, the "Golden Age" in the Netherlands, the art under the absolute monarchy in France, the Rococo period, and the rise of Neo-classicism during the Enlightenment. We will examine the stylistic characteristics of these major movements, and explore the relationships between art and religious, political, and cultural history. **CC: LCC, HUM**

AAH 160 - (260) Art and Architecture of the United States

Course Units: 1

(Not offered this Academic Year) An introductory survey of the visual culture of the United States from colonial times through the present including painting, sculpture, architectural structures, photography, folk traditions and objects more recently defined as "material culture." Artists and media are situated and studied within the context of broader cultural, political and social themes. Emphasis on visual and textual analysis. **CC: HUM**

AAH 163 - (263) Latin American & Caribbean Art of the 19th and 20th Century

Course Units: 1

(Not offered this Academic Year) An examination of the major aspects of Latin American and Caribbean art from the early 19th through the 20th century. Emphasis is placed on integrating the social and political background of the various cultures with the key artists, artistic issues and movements of particular countries and periods. Topics to be covered include: the influence of the major art academies in Mexico, Brazil and Ecuador, the strong links between art and politics, Indigenism, woman as artist and subject, and the on-going dialogue with the art of Europe and later the United States. **CC: LCC, HUM**

AAH 194 - (294) Visual Culture of Communist China, 1919 to Present

Course Units: 1

(Winter; Lullo) This course explores the relationship between ideology and visual culture in China, from the founding of the Communist Party in 1919, to Mao Zedong's prescriptions at the 1942 Yan'an Conference of Literature and Art, to art policy after the founding of the People's Republic of China in 1949. Readings and discussion will cover the range of adherence and resistance to the official party line by art workers. Topics include expressionism, socialist realism, peasant art, "wound art," cynical realism, political pop, and the avant-garde, as seen in painting, sculpture, architecture, posters, advertising, video, performance, and the material culture of quotidian life. **CC: LCC, HUM**

AAH 205 - The Art & Science of Painting

Course Units: 1

(Same as CHM 090) **(Not offered this Academic Year)** A historical and chemical grounding in the topic of painting and its impact on society, with a focus on the 14th to the 17th centuries. Topics include inorganic and organic pigments and binders used in late medieval workshops, fresco painting, the tempera tradition, and oil painting in the Renaissance (properties of oil, mixing pigments, glazing, drying). Students will work with primary sources and secondary literature, and engage in laboratory experimentation. **CC: SET, HUM**

AAH 206 - The Renaissance Tradition in Architecture, 15th-18th Centuries

Course Units: 1

(Winter; Matthew) An historical survey that examines the language and functions of architecture and its roles in Western European culture. The course begins with the revival of interest in classical antiquity in the 1400s in Italy and its effect on the practice and theory of architecture. We then examine the transmission of these ideas to northern Europe during the subsequent centuries, and the evolution of architectural ideas and practices both north and south of the Alps. **CC:** LCC, HUM

AAH 208 - The Business of Visual Art and Contemporary Entrepreneurship

Course Units: 1

(Spring; Cox) In this course students will study and learn the business of the art world and entrepreneurship in the visual arts from the early 20th century through today. Topics to be covered include the economics of the art market and the commodity of art, auction houses, private collectors, art fairs, gallery ownership, art foundations, non-for-profits, and art criticism. Group assignments, field trips and guest lectures form a large component of the course. **CC:** LCC, HUM

AAH 214 - The Golden Age of Venice: Art and Architecture in "The Most Serene Republic"

Course Units: 1

(Not offered this Academic Year) An introduction to the art and architecture of the Republic of Venice during the period of its economic, political, and artistic "golden age" - from the 14th through the 17th centuries. We will consider the many relationships between the material culture of the city, its maritime and land-based empires, and Venice's role as a commercial and cultural power in Western Europe during a period of great change. Objects and structures ranging from oil paintings to the new invention of printed books, not to mention the building in which they were created and used, will be examined from multiple points of view: materials, fabrication and workshop practice, artistic reputation, patronage and costs, site and functions, innovation and tradition. **CC:** HUM

AAH 222 - History of Photography

Course Units: 1

(Winter; Ogawa) An introductory survey of the history of photography from its pre-history to the present. We will explore the evolution of photographic expression in the period, and focus on relationships between photography and fine art, photography and popular culture, and photography and theory. We will spend time studying first-hand the original photographic works housed in Special Collections, Schaffer Library and in the Union College Permanent Collection. **CC:** HUM

AAH 223 - The Nude

Course Units: 1

(Not offered this Academic Year) The nude in its art historical and social contexts. Traditionally considered shorthand for abstract concepts such as "truth" or "beauty," the nude is in fact a powerful index to ideas about gender, power, and sexuality in any of the historical periods which produced it. Drawing on recent scholarship, we will examine works produced in Ancient Greece, the Renaissance, and the Modern Period in social and historical context, and consider ways in which the human body has been both a stylistic vehicle for artistic expression and a social tool for constructing ideas of masculinity and femininity. **CC:** LCC, HUM

AAH 251T - Visual Culture, Urban Landscape and Politics in Washington, DC

Course Units: 1

This course focuses on the ways Washington, DC residents, writers, politicians and critics have defined the nation's capital, exploring the dichotomy between Washington as the "lived" city, with that as the nation's public capital (and spectacle). The course examines the racial and class shifts over the last century in its residential space, its recent rapid gentrification, and the dramatic racial and class divide in both living space and working space. Moreover, the public space, such as presidential monuments, war memorials, federal museums, the White House, the Library of Congress, the Supreme Court, and the Mall are contentious political spaces as well as symbolic spaces for tourists viewing the "values" of the United States.

(Spring; Staff)

AAH 260 - Nature, Art, and The Environment

Course Units: 1

(Not offered this Academic Year) This course studies attitudes toward nature in Western Europe and North America from the Middle Ages through the 20th century. We will be examining cultural and artistic ideas related to the natural world, noting both continuity and change. In keeping with the interdisciplinary nature of the course, we will be examining such diverse sources as religion, literature and the printed book, gardens and landscape art, painting and printmaking, the history of botany, botanical art and scientific illustration, exploration and travel, climate and geography, agriculture and industrialization, and the development of "ecology".

AAH 265 - Environmentalism and Globalization in Contemporary Art

Course Units: 1

(Fall; Cox) This course examines artistic practices that meld science, aesthetics, and politics in imaginative and critical ways as they address environmentalism and globalization. The course primarily focuses on 21st century artists whose work takes on such subjects as pollution, biodiversity, sustainability and climate change. We will consider the blurring of the boundaries between art and activism and the many art genres and strategies used to address these issues from photography and sculpture to community collaborations and public art.

AAH 286 - Art and Religion of the Silk Road

Course Units: 1

(Not offered this Academic Year) Central Asia - broadly defined as the area occupied, from East to West, by present-day western China, Mongolia, Russia, Kazakhstan, Kyrgyzstan, northern India, Pakistan, Tajikistan, Afghanistan, Uzbekistan, Turkmenistan, and Iran - has been characterized as both harsh wasteland and cultural crossroads. This course concerns the visual culture of the Silk Road of Central Asia, focusing on the roles visual culture played in establishing modes of religious imagination in medieval culture. **CC: LCC, HUM**

AAH 295H - Art History Honors Independent Project 1

Course Units: 0

AAH 296H - Art History Honors Independent Project 2

Course Units: 1

AAH 300 - Italian Art and Architecture, 14th-15th Century

Course Units: 1

(Not offered this Academic Year) A study of art and architecture in Italy from 1100 to 1400 emphasizing religious, political, and cultural contexts and the role of the Byzantine tradition. Examination of paintings, sculpture, architecture, and the decorative arts in the major urban centers of the Italian peninsula, including Florence, Siena, Pisa, Rome and Milan, as well as the courts of northern Italy. Venetian topics are covered separately in AAH 206 and AAH 305. **Prerequisite(s):** One art history course or permission of the instructor. **CC:** HUM, LCC

AAH 304 - Renaissance Art in Italy: The 16th Century

Course Units: 1

(Not offered this Academic Year) A study of the visual arts that emphasizes painting, prints, sculpture, and the decorative arts. Particular attention to the growth of secular art, the role of court patronage, definitions of Mannerism, the cult of the artistic genius, and the emergence of a history of art in this period. **Prerequisite(s):** One art history course or permission of the instructor. **CC:** HUM, LCC

AAH 322 - 19th-Century European Art

Course Units: 1

(Fall; Ogawa) An advanced course examining major artistic movements and developments after 1789. We will examine the stylistic characteristics of these major movements, and consider art-making of this century in the context of the development of industrial capitalism, colonialism, and imperialism. We will also consider the development of such modern art institutions as the art museum and the commercial gallery. **Prerequisite(s):** At least one Art History course, or by permission of the instructor. **CC:** HUM, LCC

AAH 340 - European Modern Art, 1880-1940

Course Units: 1

(Spring; Ogawa) Major developments in modernism primarily in Europe. Traces the emergence of modernist visual vocabularies in painting, graphic arts, photography, sculpture, architecture, and "decorative arts" ranging from ranging from Van Gogh's post-impressionism, through the cubist art of Picasso and Dali's dream-like surrealism. Topics include the transformations of traditional modes of art making, the proliferation of movements and "-isms," the political functions of art and exhibitions, film as an art, and the rise of abstraction. Visual and textual analysis. **Prerequisite(s):** at least one art history course, or permission of the instructor. **CC:** HUM, LCC

AAH 360 - (460) Seminar: Visual Culture, Race & Gender

Course Units: 1

(Not offered this Academic Year) A lecture and discussion-based course concerned with how constructions of race and sexual differentiation are played out across art history and visual culture, focusing on the visual arts of Western Europe and the United States. The first half of the course investigates the constructs of gender and race from antiquity to the middle of the 20th century as expressed in art and visual culture. The second half of the course is a close study of female artists of color living and working in the United States, grouped as African- American, Latina/Chicana, Asian and Middle Eastern and Multi-ethnic. **CC:** LCC, HUM

AAH 363 - Early American Modernism, 1900-1945

Course Units: 1

(Not offered this Academic Year) A study of modern art in the United States from 1900-1945. Topics to be covered reflect the divergent styles, movements and influences that gave shape to the art of this period, including the rise of the avant-garde in New York City, important patrons, social realism, the WPA and the Harlem Renaissance to name a few. Art works are studied in relation to the cultural and political context of the period. Verbal and written interpretation of art; emphasis on visual and textual analysis. **CC:** HUM, LCC

AAH 366 - From Pollock to Post-Modern: European and American Art 1940-2000

Course Units: 1

(Not offered this Academic Year) Art of the United States and Europe since World War II in critical and historical perspective, emphasizing the influence of social movements on artistic thought and expression. Topics include the impact of technology and popular culture, the subversion of the traditional boundaries between arts, the rejection of the object, and the rise of pluralism. **CC:** LCC, HUM

AAH 390 - The Art Museum: History, Theory, and Practice

Course Units: 1

(Not offered this Academic Year) This upper-level course takes the art museum as its subject. It will examine the history of the art museum and its roots in late 18th century ideas about knowledge, display, and democratic politics, and trace the growth of the art museum over the course of the 19th and 20th centuries in the context of changing cultural notions of "the public," philanthropy, and modernist and avant-garde art practice. The course will be supplemented by visits to local art museums. This course also serves as a prerequisite to TAB 336T: Three Weeks in the Louvre. **CC:** LCC, HUM

AAH 440 - Seminar: Special Topics in Art History

Course Units: 1

(Winter; Lullo) Writing-intensive, research-oriented, discussion-based seminar that involves comparative methodologies; designed principally for majors. Topics vary. **CC:** HUM

AAH 490 - Art History Independent Study 1

Course Units: 1

AAH 491 - Art History Independent Study 2

Course Units: 1

AAH 492 - Art History Independent Study 3

Course Units: 1

AAH 493 - Art History Independent Study 4

Course Units: 1

AAH 495 - Museum Internship 1

Course Units: 1

Students who have largely fulfilled the requirements for a concentration in art history may be able to intern at the Albany Institute of History and Art, the Hyde Collection, the Schenectady Museum, other regional museums, or the National Buildings Museum in Washington, D.C. The latter is offered in conjunction with Union's spring term in Washington, D.C. Permission of the Chair required.

AAH 496 - Museum Internship 2

Course Units: 1

Students who have largely fulfilled the requirements for a concentration in art history may be able to intern at the Albany Institute of History and Art, the Hyde Collection, the Schenectady Museum, other regional museums, or the National Buildings Museum in Washington, D.C. The latter is offered in conjunction with Union's spring term in Washington, D.C. Permission of the Chair required.

AAH 498 - Art History Senior Thesis 1

Course Units: 0

Part 1 of a 2 term thesis; grades pass/fail.

AAH 499 - Art History Senior Thesis 2

Course Units: 2

Two term credits when completed.

Accounting

ACC 100 - Survey of Accounting

Course Units: 1

(Spring; McDonald) A survey of selected topics within various areas of accounting, such as managerial accounting, financial accounting, and tax accounting. Emphasis will be on concepts and not on record-keeping.

Dance

ADA 010 - Ballet 1

Course Units: 0

(Fall, Winter, Spring; Geren) An introduction to the basic techniques of classical ballet. Each class incorporates proper body alignment, balance and self-awareness of the classical form. Students learn ballet technique and style by combining a barre warm-up, centre phrases, and across-the-floor combinations. **Note:** *For all students.*

ADA 011 - Ballet 2

Course Units: 0

(Fall; Geren, Winter; Geren, Spring; Moutillet) The intermediate ballet level is designed for dancers who have been trained in the classical form. Class includes complex combinations at the barre and in the center. Musical accompaniment will explore the lyricism of the classical form. Insight into progressive step combinations, physical control, and variations through turns, jumps, adagios and allegros. Repertoire and new creations will be taught in class. **Note:** *For intermediate level.*

ADA 012 - Ballet 3

Course Units: 0

(TBD) This advanced ballet level emphasizes academic training as well as repertoire. Depending on student's ability and strength, pointe work will be added. Variations from original or traditional ballets will be learned in class. Dancers who have a desire to perform are encouraged to attend. **Note:** *For advanced level.*

ADA 020 - Jazz Dance 1

Course Units: 0

(Winter; Rogers) Learn the basics of Jazz technique, a high powered energy form that moves to fast rhythms. A challenging free style that uses dynamic body movements, flexibility and present day dance steps. **Note:** *For beginner level.*

ADA 021 - Jazz Dance 2

Course Units: 0

(Fall; Winter; Rogers) Dancers continue their training for a solid technique in the jazz form. Combinations will include several styles as well as explore the classical, funky and contemporary aspects of dance. **Note:** *For intermediate level.*

ADA 022 - Lyrical Jazz

Course Units: 0

(Fall, Winter, Spring; Rogers) This class will primarily focus on self expression, exploration and musicality. Dancers will learn metaphorical and symbolic movements to convey an array of emotions. Class will include warm-up, technical progression and a contemporary combination. **Note:** *For intermediate level*

ADA 023 - Broadway Dance Practicum

Course Units: 0

(Fall, Spring; Rogers) This class focuses on dance styles that use gestures and ensemble movements done in musicals. Students will learn a variety of numbers from shows including repertoire from both past and present productions. Different styles will consist of a diverse selection of Broadway musical theater dance. **Note:** *For all students*

ADA 030 - Modern Dance 1

Course Units: 0

(Fall; Cawley, Winter, Spring; Staff) This contemporary form focuses on gaining an in depth understanding of how the body moves, proper placement, alignment, and flexibility. This class explores different ways of using organic and creative movements, the floor and traveling through space. **Note:** *For beginner level.*

ADA 031 - Modern Dance 2

Course Units: 0

(Spring; Cawley) Explore the dynamics, rhythms, phrasing and use of space unique to contemporary dance while developing technical strength. Reinforce your physical possibilities and perfect your inner potential toward dance expression. The use of music, space and choreographic gestures will be learned through challenging group choreography. **Note:** *For intermediate level.*

ADA 035 - Dance and Fitness

Course Units: 0

(Not offered this Academic Year) Provides students with the study of a trained body in modern dance, yoga and fitness routines. Emphasis on proper alignment, quality of movements and tempo. Gain expertise on how to shape and train your body to its fullest potential. **Note:** *For all students.*

ADA 036 - Pilates For Performers

Course Units: 0

In class, students learn the basic, intermediate, and advanced exercises of the Pilates workout. The course focuses specifically on technique that helps with centering of body work for the Performing Arts. Strengthening and working on flexibility enhance performers' abilities. Gain confidence and awareness of body placement as well as studying a technique for warming up before shows. The Pilates for Performers is an ideal training base for all performance artists, including novices. **Note:** *For all students.*

ADA 037 - Zumba

Course Units: 0

Zumba combines high energy and inspiring music with unique moves and combinations that allow the Zumba participants to dance. It is based on the principle that dance steps are fun and easy to follow allowing Zumba participants to enjoy the art of dancing and achieve long-term health benefits. ZUMBA is a fusion of Latin and International music that creates a dynamic, exciting, and effective aerobic/dance training. The combination of movements to fast and slow rhythms tones and sculpts the body. Experience a mix of diverse dance styles such as salsa, reggaeton, merengue, cha cha, belly dance, cumbia and more. **Note:** *For all students.*

ADA 040 - Afro-Dance

Course Units: 0

(Not offered this Academic Year) A class built for everyone who wants to dance to African rhythms. Emphasizes stamina and the learning of exiting dance routines. A cultural dance style and technique welcoming dancers of all levels into a rich range of African dance movements. **Note:** *For all students.*

ADA 045 - Tap Dance 1

Course Units: 0

(Not offered this Academic Year) For beginners who want to explore the world of tap dance. Students will learn basic footwork, and routines on exciting rhythms and combinations. **Note:** *For beginner level.*

ADA 046 - Tap Dance 2

Course Units: 0

(Fall, Spring; Rogers) Tap dance provides students with the study of steps found in the tap dancing art form. Students will be introduced to proper warm up, tap steps, specific exercises in rhythms, routines, and use of music. Students that have previous experience in tap will be able to expand their expertise. **Note:** *For intermediate level*

ADA 050 - Rehearsal and Production:

Course Units: 0

(Same as ATH 050) Students are invited to participate in theater or dance productions in a variety of capacities, both on-stage and off-stage. To gain transcript recognition for participation in these activities, students must register for the theater or dance practicum with the registrar and achieve a passing grade from the faculty supervisor.

ADA 060 - Hip Hop 1 Dance Class

Course Units: 0

(Fall, Winter, Spring; Wasbes) This class gives students the opportunity to learn the basic of a popular and contemporary dance form, based on routines from street jazz, breaking, popping, and locking. This dazzling style gives students a way to gain confidence in their body to today's most celebrated pop music. **Note:** *For all students.*

ADA 061 - Hip Hop 2 Dance Class

Course Units: 0

(Fall, Winter, Spring; Wasbes) This level 2 class provides dancers with a high energy, and innovative dance experience. Hip Hop is urban, it's diverse, and it's forever changing. This freestyle dance fusion gives students the opportunity to develop their own style to the latest hit songs. **Note:** *For intermediate level.*

ADA 070 - Choreography - Modern

Course Units: 0

(Winter; Staff) This creative class gives students the opportunity to focus on a particular theme that will generate choreographic scenes. The dance vocabulary aims to combine an amalgam of styles to produce a contemporary vision. Each week the class will build on material that will be presented as part of the winter dance concert at the Yulman Theater. **Note:** *For intermediate level.*

ADA 071 - Choreography - Jazz

Course Units: 0

(Winter; Rogers) Each week this class works toward the composition of innovative dance movements found in the jazz form incorporating

vocabulary such as lyrical, funk jazz and musical theatre dance. Students explore a wide range of intricate steps as a mean of self-expression.. The finalized choreography will be presented as part of the winter dance concert. **Note:** *For intermediate level.*

ADA 072 - Choreography - Ensemble

Course Units: 0

(Winter; Moutillet, Rogers) This class concentrates on creating a choreography that will give students the opportunity to work as a unit.. The Ensemble practicum encourages cooperation between students and faculty members striving to create momentum for the winter dance concert. **Note:** *For intermediate level*

ADA 073 - Choreography - Rhythms

Course Units: 0

(Winter; Rogers) This practicum will focus on developing various rhythms to create vibrant sounds and a challenging choreography. The dance vocabulary stresses the primacy of percussive beats. This dance style includes tap dancing, stepping and rhythms with the body or with percussive instruments that is performed in our winter dance concert. **Note:** *For intermediate level.*

ADA 074 - Choreography - Ballet

Course Units: 0

(Winter; Moutillet) This class emphasizes either the traditional or contemporary repertoire to present the lyricism of the classical form. Dancers to perform classical dance will be part of a creation that embraces their expertise. Depending on the dance concert, this choreography class will focus on a particular era, technique or master choreographer. The creation is presented in our winter dance concert. **Note:** *For intermediate level.*

ADA 130 - (050) The Dance Experience

Course Units: 1

(Spring; Moutillet) An experiential survey course introducing the many facets of the art of making dances. Through lectures, workshops and performances students discover new dance techniques, dance vocabulary, styles, and inner skills. Special emphasis on creative abilities, built on trust, and exploration. Students work as a choreographer in an individual and collective dance piece to be performed publicly at the Steinmetz Symposium and An Intimate Afternoons with Dancers. **CC:** HUM

ADA 140 - American Musical Theater and Dance

Course Units: 1

(Same as ATH 140) **(Fall; Moutillet)** This course is an introduction to the American Musical from Vaudeville and Minstrel Shows to today's contemporary Broadway shows. Through lectures, video viewing and workshops students learn the historical background that focuses on the work of lyricists, composers, dancers, signers, choreographers, directors and producers. This unique American entertainment art form reflects American diversity and culture, changing times, values and trends. **Prerequisite(s):** No prerequisite. **CC:** LCC, HUM

ADA 142 - Dance in America

Course Units: 1

(Not offered this Academic Year) An introduction to dance in America from Native American to contemporary diverse styles, approached through

lecture, video viewing, and dance workshops. A voyage through time from the French Court with the birth of Classical Dance through the twentieth century with the development of Modern and Post-Modern Dance. Study of the advent of new music and dance with the African American heritage and American contributions towards social dancing. Special emphasis on historical background and international influences, studying the dancers, choreographers, traditions, and trends that influence the making of contemporary dance as an art and form of expression. **Prerequisite(s):** No prerequisite. **CC:** LCC, HUM

ADA 150 - Staging Exploration in Theater and Dance

Course Units: 1

(Same as ATH 150) **(Not offered this Academic Year)** This course is based on the close examination of a particular period or theme of multidisciplinary artistic production that offers students an immersion into important developments in performative expressions. This course explores dynamic movements in the artistic avant-garde, its historical background, and its principal creators in theater, dance and associated performing arts, through discussions, lectures, studio work, and collaborative creation. The resulting collaboration is produced and performed at Yulman Theater during our winter dance concert. **Prerequisite(s):** No prerequisite. **CC:** HUM

ADA 153 - Histoire de la danse, Danse de l'histoire/History of Dance, Dance of History

Course Units: 1

(Same as FRN 421, MLT 211) **(Not offered this Academic Year)** Examination of Western European dance and dance texts as revelatory of broader historical and cultural patterns, with special analyses of dance as a key tool of nation-building (as with the court of Louis XIV) and/or a central medium of artistic creation (as in 1920s Paris). Primary focus on France as creator, user, and potential abuser of dance's power, but some attention given other European models (Berlin, St. Petersburg, London). Readings from theoreticians, historians, and dance litterateurs (Moliere, Gautier, Cocteau). **CC:** HUL, LCC

ADA 295H - Choreography Honors 1

Course Units: 0

This course seeks to develop students' choreographic potential through research and exploratory exercises. Methods focus on concept, phrase development, compositional tools, design and artistic presentation. Through discussions, decision-making, individual and group work, the choreographer develops a sense of craft used in the art of making dances. *Prerequisite:* ADA130. Dance Experience or by permission of faculty. **Prerequisite(s):** A weekly dance technique class is required. **CC:** HUM

ADA 296H - Choreography Honors 2

Course Units: 1

Students create choreography and work in collaboration with dancers, designers or any inter-disciplinary artists to fulfill their creative objectives. The final dance piece is presented publicly in the dance concert (winter) or Steinmetz Dance Performance (spring). **Prerequisite(s):** A weekly dance technique class is required. **CC:** HUM

ADA 350 - Choreography

Course Units: 1

Students can elect to pursue a specific area of interest. Subjects might include dance styles, a choreographer or dancer's life and achievements, a dance craze as well as a specific dance technique. Students can develop their own dance style, create a dance piece, restage the work of a famous choreographer or make a dance film or documentary. The student will act as an Artistic Director, overseeing their creation as well as being in charge

of their collaborators such as musicians, actors, dancers, sculptors or any other inter-disciplinary artists. **Prerequisite(s):** ADA 130 and a weekly technical dance class. **CC:** HUM

ADA 370 - Theatre or Dance Internship

Course Units: 1

As a professional work/study experience, students can elect to pursue a specific area of interest in a one-term internship with a professional theatre or dance company. The precise form of this project will vary with the student and area of focus within the department, but may include production, performance, management, or administrative work in the field or other projects approved by the faculty. Appropriate credit is granted upon completion of the internship. This course will be taken Pass/Fail. An appropriate Departmental faculty member will be assigned to oversee the internship. Students planning on applying for ATH-370 Theatre Internship or ADA- 370 Dance Internship approval will be expected to complete a Departmental form which must be submitted to the Chair ideally no later than the fifth week of the term prior to the internship term. Appropriate advisement and guidance will be available to the student. **Prerequisite(s):** Sophomore standing and approval of Departmental Chair.

Africana Studies

AFR 100 - Introduction to Africana Studies

Course Units: 1

(Fall; Staff) An interdisciplinary introduction to the field of Africana Studies. This course will examine the issues and perspectives-social, economic, political, historical, and cultural-of the peoples of Africa and the African diaspora. **CC:** LCC

AFR 295H - Africana Studies Honors Independent Study 1

Course Units: 0

AFR 296H - Africana Studies Honors Independent Study 1

Course Units: 1

AFR 490 - Africana Studies Independent Study 1

Course Units: 1

AFR 491 - Africana Studies Independent Study 2

Course Units: 1

AFR 498 - Africana Studies Senior Thesis 1

Course Units: 0

AFR 499 - Africana Studies Senior Thesis 2

Course Units: 2

Prerequisite(s): AFR 498

Asian Studies

AIS 295H - Asian Studies Honors Independent Project 1

Course Units: 0

(Fall, Winter, Spring; Staff)

AIS 296H - Asian Studies Honors Independent Project 2

Course Units: 1

(Fall, Winter, Spring; Staff)

AIS 490 - Asian Studies Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff)

AIS 491 - Asian Studies Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff)

AIS 492 - Asian Studies Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Prerequisite(s): AIS 491

AIS 498 - Asian Studies Senior Project 1

Course Units: 0

(Fall, Winter; Staff) Interdisciplinary investigation of a topic in Asian Studies.

AIS 499 - Asian Studies Senior Project 2

Course Units: 2

(Fall, Winter; Staff) Interdisciplinary investigation of a topic in Asian Studies.

Music

AMU 010 - Instrumental and Vocal Lessons

Course Units: 0

Individual instruction is offered in voice, keyboard, guitar, wind, string, brass, and percussion instruments. Lessons offered at a cost of \$500 per term. Scholarships are available by application to music majors, IDs, and minors to offset the cost of lessons. For registration information and a list of approved instructors see Professor McMullen.

AMU 012 - Union College Japanese Drumming Ensemble

Course Units: 0

(Fall; Staff) The Union College Japanese Drumming Ensemble (Zakuro-Daiko) rehearses weekly on a variety of Japanese drums and other forms of global percussion. The ensemble regularly performs both on- and off-campus. No previous musical experience is required, though members need to audition/interview to determine participation at the discretion of the instructor. See Professor Matsue.

AMU 014 - Union College Chorale

Course Units: 0

The Union College Chorale performs works from a broad chronological and stylistic range, including western and non-western traditions. The ensemble performs at least once each term and normally performs at one off-campus venue each year. This ensemble is open by audition to all students and prior experience is not necessary. See Professor McMullen.

AMU 015 - Union College Jazz Ensemble

Course Units: 0

The Union College Jazz Ensemble meets weekly and performs throughout the year in both formal and informal settings. Experience in improvisation is desirable but not required. Instrumentalists and vocalists are welcome to audition. See Professor Olsen.

AMU 016 - Union College Camerata Singers

Course Units: 0

(Not offered this Academic Year) The rehearsal and performance of a cappella literature from five centuries of the choral tradition. Open by

audition to all Union College students. The Camerata Singers, a select group of twelve to sixteen singers, rehearses twice a week and offer one formal concert each term.

AMU 017 - Union College and Community Orchestra

Course Units: 0

The Orchestra meets once a week and presents at least one concert each term. The Orchestra is open by audition to all students and members of the community. Section and principal chairs are assigned on a rotating basis. See Professor Tann.

AMU 018 - Early Music Ensemble

Course Units: 0

The Early Music Ensemble, open to both singers and instrumentalists, is devoted to the study and performance of music from the Middle Ages through the Early Viennese Era. Participants will play on both modern instruments and reproductions of historic instruments, including the harpsichord, organ, and recorder. Emphasis will be placed upon historical performance practices, as described in music treatises and other documents and as understood by scholars and performers today. The Ensemble, open by audition, rehearses twice a week. See Professor McMullen.

AMU 050 - The Language of Music

Course Units: 1

(Not offered this Academic Year) An introductory survey of the main aspects of music theory and practice including rhythm, intervals, scales and keys, melody, harmony, and form. Designed for students with no formal background in music. Does not count toward major. **CC: HUM**

AMU 060 - From Chant to Mozart

Course Units: 1

(Not offered this Academic Year) A chronological study of compositions from the ninth century through the time of the French Revolution. Gregorian chant; Renaissance court music; the effect of the Reformation and Counter-Reformation on music; Florentine opera; Vivaldi's concertos; sacred music of Bach and Handel; symphonies, keyboard works, and operas of Haydn and Mozart. **CC: HUM**

AMU 061 - From Beethoven to Bernstein

Course Units: 1

(Spring; McMullen) A study of composers and their works from the end of the eighteenth century through the present. Beethoven, Chopin, Berlioz, Mendelssohn, Schubert, Schumann, Verdi, Wagner, Brahms, Debussy, Stravinsky, Schoenberg, Ives, Copland, Varese, among others. **CC: HUM**

AMU 100 - Elements of Music Theory

Course Units: 1

(Not offered this Academic Year) An introduction to the art of music for students already familiar with the basics of notation. A review of musical elements (intervals, triads, scales, durations) complemented by hands-on creative work in the Music Technology Studio. **CC: HUM**

AMU 101 - Theory 1: Diatonic Harmony

Course Units: 1

(Fall, Winter; Tann) Traditional harmony and modulation approached through short written exercises and listening assignments. **Prerequisite(s):** ability to read (sing/play) music. **CC:** HUM

AMU 102 - Theory 2: Chromatic Harmony

Course Units: 1

(Winter; Tann) Chromatic harmony: models drawn from late Classical and Romantic composers. **Prerequisite(s):** AMU 101 or permission of the instructor. **CC:** HUM

AMU 110 - Class Piano 1

Course Units: 1

(Not offered this Academic Year) This course, aimed at students with no experience in piano playing, integrates basics of music theory with learning to play the piano. Students will first learn to read treble and bass clefs at the keyboard and then come to an understanding of keys and basic harmonic principles while learning to play music from a variety of repertoires. **CC:** HUM

AMU 111 - Class Piano 2

Course Units: 1

(Not offered this Academic Year) A continuation of Class Piano I. Students learn to perform intermediate-level piano works from classical and popular music repertoires, develop sight reading skills, and learn to harmonize melodies with more than three chords. **Prerequisite(s):** AMU 110 or permission of the instructor. **CC:** HUM

AMU 120 - Introduction to World Music

Course Units: 1

(Same as ANT 148) **(Not offered this Academic Year)** Introduces musics from various world areas including Africa, Latin America, Asia, and Europe through live performance, lecture, video and audio. Students will increase familiarity with a wide range of musical styles while also exploring the relationship between music and society. **CC:** LCC, HUM

AMU 125 - World Religions and Music

Course Units: 1

(Not offered this Academic Year) Music, deemed by some to be a gift from the Divine, continues to play an important role in the histories of all religions. Through an examination of three religions - Buddhism, Judaism, and Christianity - students will come to an understanding of the intricate relationships among music, theology, liturgy, ritual, and human religious expressions in different cultures and at different time periods. **CC:** HUM, LCC

AMU 130 - American Music

Course Units: 1

(Not offered this Academic Year) American music-cultures approached through performance, lecture, video, and audio. Survey samples from popular, classical, and folk traditions. **CC:** HUM

AMU 131 - Music of Black America

Course Units: 1

(Not offered this Academic Year) Black music in America from its African beginnings to present-day pop styles, approached through live performance, lecture, video, and sound recordings. Special emphasis on gospel, blues, jazz, and rap. **Prerequisite(s):** No prerequisite. **CC:** LCC, HUM **Note:** Not open to students who have taken AMU 132.

AMU 132 - The History of Jazz

Course Units: 1

(Fall; Olsen) A study of the important personalities and trends in the evolution of jazz, approached through reading, video and sound recordings, and live performance. **Prerequisite(s):** No prerequisite. **CC:** LCC, HUM **Note:** Not open to students who have taken AMU 131.

AMU 133 - Music of Latin America

Course Units: 1

(Spring; Olsen) Latin American music-cultures approached through live performance, lecture, video, and audio. Survey samples from folk, popular, and classical traditions, with special emphasis on the musics of Cuba and Brazil. **CC:** LCC, HUM

AMU 134 - Music and Culture of Africa

Course Units: 1

(Not offered this Academic Year) Through an examination of traditional and popular musics from across the continent, students will gain a better understanding of the integral role played by music in African culture. **CC:** LCC, HUM

AMU 136 - Popular Music in Modern Japan

Course Units: 1

(Not offered this Academic Year) Explores the development of popular music in modern Japan from Meiji period military music to contemporary urban popular musics. Intended for students interested in Japanese cultural history and Japanese music, as well as popular music and culture more broadly. **Prerequisite(s):** No prerequisite. **CC:** LCC, HUM

AMU 200 - Theory 3: Phrase and Form

Course Units: 1

(Spring; Tann) Larger features of music approached through analysis of scores and compositional assignments. **Prerequisite(s):** AMU 102 or permission of the instructor. **CC:** HUM

AMU 204 - Introduction to Composition

Course Units: 1

(Fall; Tann) The creation and notation of freestyle compositions with emphasis on individual instruction. **Prerequisite(s):** AMU 101 or permission of the instructor. **CC:** HUM

AMU 212 - Baroque Music

Course Units: 1

(Not offered this Academic Year) A study of music composed between 1600 and 1750. Origins and development of opera from Monteverdi through Handel; the influence of dance rhythms; the development of the concerto; harpsichord and organ music by Frescobaldi, Couperin, and Bach; performance practice issues and modern-day musicians; and sacred and secular music of Bach and Handel. **CC:** HUM

AMU 213 - Haydn, Mozart, Beethoven

Course Units: 1

(Fall; McMullen) Through a study of the works and lives of these three composers, students will come to a better understanding of Vienna at one of the city's greatest musical heights. Emphasis will be placed on the composers' contributions to the development of the symphony, string quartet, opera, and piano sonata. **CC:** HUM

AMU 214 - Romanticism

Course Units: 1

(Winter; McMullen) Through a study of scores and historical documents this course examines selected works from a variety of views, ranging from music analytical to historical. Emphasis will be placed on understanding the individual styles developed by composers such as Chopin, Berlioz, Verdi, Wagner, and Brahms over the course of the nineteenth century. **CC:** HUM

AMU 215 - Music in the 20th Century

Course Units: 1

(Not offered this Academic Year) The study of significant styles and developments in the music of the last century (both "classical" and popular), approached through analysis, performance, and/or composition. **Prerequisite(s):** AMU 101 or permission of the instructor. **CC:** HUM

AMU 220 - Music and Culture

Course Units: 1

(Same as ANT 274) **(Not offered this Academic Year)** This seminar explores the relationship between music and culture through live performance, discussion, video and audio, and workshops in a variety of world music areas. Students will also consider how one conducts research on performing arts, culminating in a focused project on music-making in the community. Students thus will encounter diverse peoples and their musical practices in cross-cultural comparison while also exploring research methodology through their own work. **Prerequisite(s):** AMU 101, AMU 120 / ANT 148 or permission of the instructor. **CC:** LCC, HUM

AMU 221 - From Rhythm and Blues to Radiohead: The History of Rock & Roll

Course Units: 1

(Not offered this Academic Year) Explores the historical development of Anglo-American rock-and-roll through lecture, video and sound recordings. This course will rely heavily on film, with an accompanying series featuring documentaries, concert films, musicals and more. Students will gain a greater understanding of the socio-cultural contexts that informed stylistic change, as well as consider the continued relevancy of rock today. **Prerequisite(s):** No Prerequisite.

AMU 230 - Vocal Workshop

Course Units: 1

(Not offered this Academic Year) Performance and historical study of music written for small vocal ensembles. Repertoire from many eras. **CC:** HUM

AMU 231 - Chamber Music Workshop

Course Units: 1

(Spring; Tann) Rehearsal and performance of chamber music primarily from Classical and Romantic periods. **CC:** HUM

AMU 232 - Jazz Workshop

Course Units: 1

(Winter; Olsen) Performance, analysis, and composition of music written in jazz idioms. **CC:** HUM

AMU 233 - Japanese Drumming Workshop

Course Units: 1

(Fall; Matsue) Study of Japanese music and culture, with an emphasis on the performance of Japanese ensemble drumming. No prior musical experience necessary. **CC:** LCC, HUM

AMU 234 - Balinese Gamelan Workshop

Course Units: 1

(Not offered this Academic Year) Study of Balinese music and culture, with an emphasis on the performance of Balinese gong kebyar (an orchestral form featuring xylophones, gongs, drums, and cymbals). No prior musical experience necessary. **CC:** LCC, HUM

AMU 295H - Music Honors Independent Project 1

Course Units: 0

AMU 296H - Music Honors Independent Project 2

Course Units: 1

Prerequisite(s): AMU 295H

AMU 302 - Special Topics: Global Popular Music

Course Units: 1

(Not offered this Academic Year) This seminar explores popular music around world, considering in particular the culturally-specific adaptations of global popular forms such as pops, hip-hop, reggae, and rock. **CC:** HUM

AMU 303 - Special Topics: Conducting

Course Units: 1

(Not offered this Academic Year) Fundamentals of conducting vocal and instrumental ensembles, including score reading and preparation, beat patterns, gestures, and rehearsal techniques. **Prerequisite(s):** permission of the instructor. **CC:** HUM

AMU 304 - Projects in Composition and Performance

Course Units: 1

(Not offered this Academic Year) Self-selected group and individual projects in composition or performance or both. Instrumental ability not necessarily a prerequisite. **CC:** HUM

AMU 305 - Special Topics: Vocal Arranging

Course Units: 1

(Not offered this Academic Year) Writing and arranging for the voice, in folk, classical, jazz, and popular contexts. **Prerequisite(s):** AMU 102 or permission of the instructor. **CC:** HUM

AMU 306 - The Evolution of Popular Song

Course Units: 1

(Not offered this Academic Year) From minstrelsy and vaudeville through Tin Pan Alley, Motown, the Beatles, Burt Bacharach, and Billy Joel, this course will examine the creation, performance, transmission, and reception of popular song. In addition to analyzing lyrical/musical content as well as historical context, students will compose words and music in the styles of established master songwriters. **Prerequisite(s):** AMU 101 or permission of the instructor. **CC:** HUM

AMU 320 - Encounters with East Asian Music Cultures

Course Units: 1

(Not offered this Academic Year) Through live performance, discussion, and composition, this course explores key characteristics of East Asian Music Cultures. Particular attention is paid to the processes of cultural exchange between China, Korea, Japan and the rest of the world that have resulted in the rich breadth of performance traditions expressed today. **Prerequisite(s):** AMU-101 or permission of the instructor. **CC:** LCC, HUM

AMU 340 - Early Music Seminar

Course Units: 1

(Not offered this Academic Year) This course focuses on repertoire from the Medieval, Renaissance, and Early Baroque Eras, with a particular emphasis on performance practice. Among the genres considered are Gregorian chant, troubadour and trouvère songs, Notre Dame polyphony, Masses, chanson, madrigals, Lieder, motets, dance music, and a variety of instrumental music. **CC:** HUM

AMU 490 - Music Independent Study 1

Course Units: 1

AMU 491 - Music Independent Study 2

Course Units: 1

AMU 492 - Music Independent Study 3

Course Units: 1

AMU 497 - Music One Term Senior Project

Course Units: 1

AMU 498 - Music Two Term Senior Project 1

Course Units: 0

AMU 499 - Music Two Term Senior Project 2

Course Units: 2

Prerequisite(s): AMU 498 **CC:** WS

WMC 354T - (AMU-354T) Balinese Performing Arts Mini-term

Course Units: 1

(Fall even years; Moutillet) This Mini-term focuses on the study of the Performing Arts of Bali. Students will have daily group instruction with Master Performers of gamelon (The Balinese orchestra of gongs and xylophones) and dance, as well as additional lessons in an art form of one's choosing (e.g. painting and puppetry, etc)> This instruction will culminate in final presentations and performances. Students will also visit many

important artistic and ritual locations, attend professional performances and meet with local Balinese peoples in a variety of contexts. No previous experience is required. **CC: LCC**

WMC 490 - World of Music Independent Study

Course Units: 1

Anthropology

TAB 109T - Hindi Studied Abroad 1

Course Units: 1

ANT 110 - Introduction to Cultural Anthropology

Course Units: 1

(Fall, Winter, Spring; Staff) The basic concepts, methodology, and findings of cultural anthropology. Examines the similarities and diversity of human societies through in-depth case studies and cross-cultural comparisons. **CC: LCC, SOCS**

ANT 111 - Cultures Through Film

Course Units: 1

(Not offered this Academic Year) This course explores other cultures as they are portrayed in ethnographic and documentary film. The course introduces students to ethnographic film and to the broad range of cultures and issues that are the subjects of these films. **CC: LCC**

ANT 130 - Food and the Self

Course Units: 1

(Not offered this Academic Year) What is the relationship between food and the body? What are the boundaries of food and the body? Are you what you eat or how you eat? This course looks at anthropological approaches to eating, consumption, identity, the body and food, while also examining current controversies such as obesity, genetically modified foods, and food taboos. While much of the course concerns itself with the cultural and historical construction of the American diet, it also draws examples from other cultures. **CC: LCC**

ANT 148 - Introduction to World Music

Course Units: 1

(Same as AMU 120) **(Not offered this Academic Year)** Introduces musics from various world areas including Africa, Latin America, Asia, and Europe through live performance, lecture, video and audio. Students will increase familiarity with a wide range of musical styles while also exploring the relationship between music and society. **CC: LCC, HUM**

ANT 170 - Myth, Ritual and Magic

Course Units: 1

(Same as REL 170) **(Not offered this Academic Year)** This course examines some of the theoretical issues surrounding myth, ritual and magic as well as specific examples of their cultural expression. How do people make sense of themselves, their society and the world through myth and ritual? How do cosmology and belief systems help them gain and organize knowledge about the world and themselves? The course will be examining a number of "occult" and "esoteric" practices, that is, practices that were not commonly known to all members of society, including sufism, kabbalah, alchemy, and shamanism. **CC: LCC, HUM**

ANT 181 - Anthropology of Sub-Saharan Africa

Course Units: 1

(Not offered this Academic Year) This course offers an ethnographic and ethnological survey of the diverse peoples and cultures of sub-Saharan Africa. To gain insight into the lives and experiences of peoples from across the region, we will examine both historical and contemporary forces that continue to shape political, economic, and sociocultural development. The course is organized thematically around a series of readings that give students an overview of the continent, its history and key topics in African anthropology. Anthropological approaches will be used to understand many of the challenges and innovations experienced across sub-Saharan Africa, including political conflict and democratization, development dilemmas, disease etiologies and witchcraft, popular culture, urbanization and environmental conservation. Through lectures, course readings, and discussions, students will enhance their knowledge of both Africa and anthropology. **CC: LCC**

ANT 184 - Contemporary Japanese Society

Course Units: 1

(Not offered this Academic Year) An anthropological introduction to contemporary Japanese society and culture. Provides an historical overview, then explores in greater depth such topics as family structure, education, religious traditions, the work place, women, and contemporary social problems. **CC: LCC**

ANT 210 - The Anthropology of Poverty

Course Units: 1

(Not offered this Academic Year) Why has urban poverty remained so entrenched in the United States, even amidst the unprecedented economic expansion of the postwar period? This course will seek to answer this question by exploring the relationships between race, public institutions, economic change and inequality within American society. In doing so, the course will examine the theoretical and practical dimensions of anthropology's engagement with poverty. We will begin by examining theoretical approaches for understanding the persistence of poverty in the United States, as well as the major policy frameworks that seek to reduce poverty. In addition, the course will cover anthropological critiques of these approaches and anthropological accounts of the everyday realities and struggles of poor people. Students will do internships in local organizations dealing with poverty and will use this experience to reflect on larger debates. **CC: LCC**

ANT 214 - Language and Culture

Course Units: 1

(Fall; Brison) This course examines the complex relationship between culture and language. Lectures and readings will use case materials drawn from North America, Southeast Asia, the Caribbean, Oceania, and Europe to explore theories about how language is shaped by, and in turn shapes, culture and social relations. We will start by looking at the influence of linguistic categories on the way we view the world around us. We will look at color terminology, racial and ethnic categories, pronoun use, and differences in vocabulary used to talk about men and women. Next, we will turn to cultural differences in communicative behavior. We will examine theories that suggest that males and females, and members of various ethnic groups, use language differently in everyday social interaction. These differences in communicative strategies lead to systematic miscommunication and perpetuate stereotypes. We will then turn to the ways changes in communicative technologies such as the internet and cell phones change social

relations. Finally, we will explore the ways that language reflects and supports social class, and the patterning of language use in multilingual nations. **CC: LCC**

ANT 220 - Women's Lives Across Cultures

Course Units: 1

(Not offered this Academic Year) Examines women's lives in different cultures through detailed case studies and film, focusing on common experiences (e.g., motherhood, work), gender-based inequality, and sources of women's power and influence. It also examines topics that exclusively or disproportionately affect women (e.g., female genital cutting, domestic violence, rape, sex tourism) as well as the varied forms feminism takes in other cultures. **CC: LCC**

ANT 222 - Childhood in Anthropological Perspective

Course Units: 1

(Fall; Brison) This course examines childhood across cultures. Lectures and readings will use case materials drawn from North America, Europe, Africa, Oceania, and Asia to explore ways in which culture affects how parents deal with children. We will also examine the acquisition of culture by young children. We will look closely at ways in which different cultural practices shape the experience of childhood from infancy to adolescence. Topics addressed will include: beliefs about infants, language acquisition, cultural differences in theories about learning, the nature of schools in various cultures, the role of play and mass media in shaping children, the cultural shaping of gender identity, and adolescent initiation rites. **CC: LCC**

ANT 225 - Gender and Society

Course Units: 1

(Fall; Khan) An examination of the role gender plays in human life. How does being labeled and socialized to be male or female shape peoples' daily life and life chances? How do our culture and others regard people who do not fit mainstream conceptions of maleness or femaleness? The course will discuss the concepts of gender and sex, gendered behavior and expectations, "third genders" (e.g., the North American berdache, the Indian hijra), homosexuality, transgendered individuals and sex-reassignment surgery, and cross-cultural similarities and differences. **CC: LCC**

ANT 226 - Education and Culture

Course Units: 1

(Not offered this Academic Year) This course examines the relationship between educational systems, on the one hand, and their cultural and social environment, on the other hand. The course will consider such as issues as: 1) the relationship between schools and ethnic and national identity; how do educational systems attempt to construct national identities? Do they succeed? How are ethnic divisions reinforced or mediated by educational systems? 2) the relationship between imported international educational models and local cultures: how do the assumptions embedded in imported educational models conflict with local understandings about authority, knowledge, and society? 3) the ways that cultural assumptions are implicit in classroom routines; how can we analyze classroom routines to reveal the "hidden curriculum" of assumptions about knowledge, authority, and the qualities needed to be a good and successful person. Students will conduct participant observation in a local school, will read and discuss works on education and society and will analyze local schools in papers. **CC: LCC Note:** Electives (only one cross-listed course can count for the major or minor)

ANT 230 - Medical Anthropology

Course Units: 1

(Spring; Osborn) An examination of beliefs about illness, healing, and the body and how these are shaped by culture and society. Topics include healing practices across cultures, political forces shaping medical practice in the U.S., and birthing practices in different cultures. **CC: LCC**

ANT 232 - Bombs to Buddhism: Fatalism, Technology, and Modern Japanese Culture

Course Units: 1

(Not offered this Academic Year) An exploration of Japanese culture through critical reading of a variety of texts including classic literature, historical accounts, contemporary fiction, manga (Japanese comics), anime (Japanese animation), and film. Throughout the course, students will question what religious beliefs, natural disasters and historical events have shaped Japanese media, which, in turn, will deepen our understanding of contemporary Japanese society. The importance of such disparate phenomena as Buddhism, the dropping of the nuclear bomb, the 1954 film "Godzilla;" and the mega - manga "Akira" will be considered. **CC: LCC**

ANT 237 - Gangs and Youth Violence

Course Units: 1

(Fall; Samet) Bloods. Crips. Mara Salvatrucha (MS-13). The 18th St. Gang (M-18). Latin Kings. The names have become synonymous with senseless violence. Both feared and fetishized, the street gang became a focal point of urban politics in the United States and Latin America during the late twentieth century. Beginning with the neoliberal reforms of the 1980s, young, poor, minorities have found themselves at the center of a socio-economic crisis that has been accompanied by the rise of zero-tolerance policing. For the purposes of this class, the youth gang phenomenon will serve as a window in to the experience of racial, ethnic and economic marginalization under late capitalism. We will explore the context that gives rise to gang violence through a combination of anthropological, sociological, and historical approaches. By the end of the quarter, students will be familiar with the macro-social factors that shape both gangs and the politics of urban violence in the Americas. **CC: LCC**

ANT 239 - Family and Kinship

Course Units: 1

(Not offered this Academic Year) This course provides an analysis of families in the U.S. and other cultures. The aim is to develop an appreciation for the variety of ways that family life can be organized as well as an understanding of the causes and consequences of different family and kinship patterns. **CC: LCC**

ANT 240 - Technology, Culture & Society

Course Units: 1

(Not offered this Academic Year) Examines the role of technology in cultural change and the role of culture in technological change. Particular attention will be given to: the Internet and other so-called "virtual community" formations, graphic design and other media, "reality" TV, cross-cultural advertising, and popular music. **CC: LCC**

ANT 241 - Environmental Anthropology

Course Units: 1

(Not offered this Academic Year) This course examines anthropological approaches to the environment and environmentalism. It asks questions such as: How does culture shape our perception of nature? What can conflicts over environmental protection, natural resources and human manipulations of natural materials tell us about contemporary societies? What does it mean to call an issue "political" or "cultural," versus "scientific" or "technical"? Students will develop the critical analysis skills to examine the natural world as a site of cultural politics, using anthropological concepts to examine environmentalism in diverse geographical and historical settings, including the Amazon, the Niger Delta, the suburban mall, and the Union campus. **CC: LCC**

ANT 242 - Economic Anthropology

Course Units: 1

(Not offered this Academic Year) This course explores the social and cultural dimensions of production, exchange and consumption. Do all people everywhere seek to accumulate property, and to maximize profits? Is "rationality" the same in every culture? Do all think the same way about debt, bribery, gambling or marriage payments? Do human economies evolve inexorably—for example, from public to private property, from cowrie shells to electronic money, or from gifts and barter to sale and credit? Or is the picture more complex and the direction inconstant? Is there really any such thing as a "free" gift? What does The Godfather have to do with the exchange of necklaces and armbands in the South Pacific? Who wins and loses from "globalization"? Why do people value things? **CC: LCC**

ANT 243 - Anthropology and International Development

Course Units: 1

(Not offered this Academic Year) Faith in twentieth-century development and progress has been severely shaken by the environmental crisis and the failures of the international development assistance. What is development? What is the third world? How was it made? What problems does it face and how is it changing? What are the causes of failure in development / aid programs? Drawing on a variety of ethnographic materials and case studies, this course discusses the nature of economic and social changes in post colonial societies and underdeveloped areas in the West / North, offers a critical analysis of sustainable development, and introduces the students to the practices, anthropological and otherwise, of planning policy interventions. The course shows how anthropological knowledge and understanding can illuminate "development issues" such as rural poverty, environmental degradation and the globalization of trade. **CC: LCC**

ANT 245 - Sport, Society, and Culture

Course Units: 1

(Spring; Gmelch G) The comparative study of the role of sport in society. Topics include the meaning of play and sport; the evolution of sport; sport and socialization; ritual in sport; sport and gender; sport and race; sport and education; sport, conflict and violence; and sport and cultural change.

ANT 246 - Anthropology of Human Rights

Course Units: 1

(Not offered this Academic Year) In recent years, anthropological discussions of human rights have gone beyond the traditional debate between universalism and relativism sparked by the 1948 Universal Declaration of Human Rights. Marginalized peoples who are the traditional subjects of anthropological research are increasingly using human rights rhetoric to advance their own causes or draw attention to their plight. This course will examine philosophical and anthropological discussions of human rights and contemporary debates and controversies surrounding human rights. In particular, we will examine the deployment of truth commissions in the aftermath of political violence, the role of human rights NGOs, contested claims of suffering, and human rights interventions.

ANT 247 - Living With Globalization

Course Units: 1

(Not offered this Academic Year) In recent decades, technologically-enabled increases in flows of capital, people, things, images and ideas around the world have resulted in the process of global integration and compression commonly called "globalization." In this course we will explore globalization from the perspective of anthropology, tracing its consequences both for the world's economic and political systems, and for the everyday lives of people around the globe. Topics will include: cultural dimensions of changing labor practices and systems of production, the role of globalization in cultural homogenization and differentiation, the ways the migrants, refugees, tourists and others forge new supra-national forms of sociality and identity, and the role of media flows and commodity consumption in the production of global identities. **CC: LCC**

ANT 252 - Anthropology of Christianity

Course Units: 1

(Not offered this Academic Year) Although Christianity has its historical roots in the Mediterranean world, during its 2000 year history it has migrated to almost every geographical area of the globe giving rise to many vibrant local Christianities with distinct and culturally specific identities. While many people associate contemporary Christianity with Euro- Americans, scholars point to Christian churches dating from the 5th century in North Africa and in India. Scholars argue that the demographic center of Christianity has already shifted to the Global south. This course investigates the ways Christianity has been shaped by contact with different world cultures and the social processes and religious changes implicit in the acculturation of Christianity in diverse geographical regions and cultural contexts. Questions addresses will include: i) how has Christianity been localized in various areas of the world?; ii) what is the appeal to Pentecostalism in the global south? Is it a conservative force directing attention away from social inequalities or does it challenge social inequalities? iii) what kinds of transnational networks are formed by contemporary Christians and how do these shape new kinds of identities?; iv) what is the appeal of apparently patriarchal and conservative forms of Christianity to women, who form the majority of Christians in most areas? **CC: LCC**

ANT 254 - Anthropology of Religion

Course Units: 1

(Not offered this Academic Year) Comparative study of religious behavior and ideology. Examines the ways that a wide array of religions help individuals to cope with life problems and reinforce social groups. Examines debates about the extent to which religion shapes human motivation and about the relationship between religion and society. **CC: LCC**

ANT 255T - Culture and Work

Course Units: 1

(Winter; Witsoe) This course takes a broad perspective on the relationship between culture and work. Course readings, assignments and discussions, will prompt students to consider how work activities are shaped by culture and the larger social context by examining: i) institutional cultures involving idiosyncratic authority structures, routines, shared knowledge and so on; ii) how local cultures are influenced by their place in larger international production chains. **CC: LCC**

ANT 258 - Anthropology of Media

Course Units: 1

(Spring; Samet) How do communications media reshape ourselves and the worlds we inhabit? This course examines the influence of media on contemporary society. It focuses on identity formation and the different ways that scholars have approached the relationship between media and our taken-for-granted norms, practices, and beliefs. Readings draw from a wide range of disciplines and intellectual traditions, including cultural studies, critical media theory, critical race studies, feminist studies and communication. However, the fundamental approach is anthropological. Our aim is to understand how everyday media practices relate to larger issues of personal, social and cultural identity. To this end, the class moves back and forth between theory and ethnography so that students develop both a sense of key questions in the field and an idea about how to answer them. **CC: LCC**

ANT 260 - Tourists and Tourism

Course Units: 1

(Not offered this Academic Year) This course examines the practice of tourism as a way of knowing the world and constituting the self. It also explores the role of tourism in the lives of those who act as hosts to tourists. Topics include the role of tourism in the essentialization and commodification of culture, the emergence, organization, and effects of mass tourism, the cultural dynamics surrounding several kinds of niche tourism, and the possibility of socially and ecologically responsible tourism development. **CC: LCC**

ANT 265 - The Museum: Theory & Practice

Course Units: 1

(Same as HST 265) **(Spring; Foroughi)** This course is designed to introduce students to the work of museums through an internship at the Schenectady Museum and accompanying seminar. Articles from anthropology and history (including art history) expose you to the range of practical (e.g., exhibit design, collections policy, planning educational programs) and theoretical issues scholars study (e.g., intellectual property, commodifying culture, whose voice and history should be heard). The internship at the Schenectady Museum gives hands-on experience with museum work and the day-to-day issues museum staff confront. Several fieldtrips introduce different types of museums.

ANT 270 - Political Anthropology

Course Units: 1

(Not offered this Academic Year) The course introduces anthropological approaches to the study of politics. We will examine influential theories of power, democracy and the state and apply them to understanding particular cases in various areas of the world. Topics covered will include: ethnographies of local politics, democratic elections, ethnographies of bureaucracy and other state institutions, ethnographic accounts of the political implications of development practice, and ethnographies in and of the "world system." We end by exploring the implications of globalization for studying politics and the state. **CC: LCC**

ANT 272 - Psychological Anthropology

Course Units: 1

(Not offered this Academic Year) This course examines the influence of culture and society on individual psychology. Readings and class discussions examine the history of the way anthropologists have thought about the relationship between culture and personality. Issues examined will include: Do cultures produce and favor distinctive personality types? How is mental illness shaped by cultural beliefs and social practices? Are there distinctive "culture bound syndromes" and, if so, what produces them? Do cultures provide tools to help individuals adjust to crises? Do some cultures do this better than others? Are emotions fundamentally the same across cultures or does emotional experience vary significantly with culture? Is there a culture of psychiatry in the US? How do our cultural assumptions and our pharmaceutical industries shape our views of personality and mental illness? Cases will be drawn from Oceania, Asia, North America, and the Middle East. **CC: LCC**

ANT 274 - Music and Culture

Course Units: 1

(Same as AMU 220) **(Not offered this Academic Year)** This seminar explores the relationship between music and culture through live performance, discussion, video and audio, and workshops in a variety of world music areas. Students will also consider how one conducts research on performing arts, culminating in a focused project on music-making in the community. Students thus will encounter diverse peoples and their musical practices in cross-cultural comparison while also exploring research methodology through their own work. **Prerequisite(s):** AMU 101, AMU 120/ANT 148, or permission of the instructor. **CC: LCC**

ANT 280 - Contemporary India

Course Units: 1

(Not offered this Academic Year) The second-fastest growing major economy in the world, India is also a country with hundreds of millions of people living in extreme poverty. Arguably the most successful democracy in the postcolonial world, Indian politics is also pervaded by corruption and violence. The course will examine recent political developments in India such as the rise of Hindu nationalism, the spread of lower-caste politics, and economic liberalization. We focus on the challenges that India faces in the twenty-first century, including land and water scarcities, the already

visible effects of global warming, and growing inequalities between regions and social groups. This will add complexity and balance to the now widespread image of India as a rising economic superpower within an emergent "Asian Century." **CC: LCC**

ANT 283 - Peoples and Cultures of Latin America

Course Units: 1

(Winter; Samet) Examines the peoples and cultures of Latin America in historical and contemporary perspectives. Uses case studies, accompanying articles, and a range of media. Themes include: colonialism, identity politics, expressive culture, religion, gender, race, ethnicity, nationalism, and political economy. **CC: LCC**

ANT 285T - Peoples and Cultures of the Pacific

Course Units: 1

(Not offered this Academic Year) An overview of the cultures of Polynesia (including Fiji, Tonga and Samoa), focusing particularly on kinship, religious beliefs, economic systems, and the impact of colonization and missionization. Offered on the Fiji Term Abroad. **CC: LCC**

ANT 295H - Anthropology Honors Independent Project 1

Course Units: 0

(Tutorial for Union Scholars Sophomores; permission of instructor required)

ANT 296H - Anthropology Honors Independent Project 2

Course Units: 1

(Tutorial for Union Scholars Sophomores; permission of instructor required) **Prerequisite(s):** ANT 295H

ANT 363 - Qualitative Research Methods

Course Units: 1

(Spring; Brison) An introduction to qualitative research methods in anthropology. The course examines the ways anthropologists collect data through participant observation, non-directive interviewing, questionnaires, examining case studies, and doing symbolic and behavioral analyses. We examine the strengths and weaknesses of these methods and compare them to methods of other social sciences to illuminate the anthropological approach to understanding society and culture. Students learn how to formulate research questions and a research project, apply the best methods to a particular research design, and write a proposal. **Prerequisite(s):** ANT 110

ANT 390 - Thinking about Culture

Course Units: 1

(Winter; Samet) A broad overview of the history of American and European anthropological approaches to studying individuals and societies. Students examine the strengths and weaknesses of contemporary and historical paradigms through critical reading and analysis papers.

Prerequisite(s): ANT 110 **CC: LCC**

ANT 490 - Anthropology Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Tutorial for individual students. **Prerequisite(s):** A minimum GPA of 3.2.

ANT 490T - Anthropology Independent Study Abroad

Course Units: 1

(Fall; Staff) Tutorial for individual students.

ANT 491 - Anthropology Independent Study 2

Course Units: 1

ANT 492 - Anthropology Independent Study 3

Course Units: 1

ANT 498 - Anthropology Senior Thesis 1

Course Units: 0

ANT 499 - Anthropology Senior Thesis 2

Course Units: 2

Arabic

ARB 100 - Basic Arabic 1

Course Units: 1

(Fall; Staff) Basic skills for students who begin with no knowledge of Arabic. **CC:** HUM

ARB 101 - Basic Arabic 2

Course Units: 1

(Winter; Staff) A continuation of ARB 100. **Prerequisite(s):** ARB 100 or permission of instructor. **CC:** LCCA, HUM

ARB 102 - Basic Arabic 3

Course Units: 1

(Spring; Staff) A continuation of ARB 101. **Prerequisite(s):** ARB 101 or permission of instructor. **CC:** LCCA, HUM

ARB 200 - Intermediate Arabic 1

Course Units: 1

(Not offered this Academic Year) Review and continued development of all skills in Arabic. **Prerequisite(s):** ARB 102 or permission of the instructor. **CC:** LCCA

Astronomy

AST 050 - The Solar System

Course Units: 1

(Spring; Staff) An introductory but detailed discussion of the solar system with special emphasis on the application of physics and the measurement of fundamental properties. Topics include the contents of the solar system (earth, moon, sun, planets, asteroids, comets), formation of the solar system, evolutionary processes (cratering, volcanism, tidal effects), extrasolar planetary systems, and possibilities of life on other planets. Labs will be performed in which students learn how to find and observe the planets and measure fundamental properties. No background in mathematics or physics required. **Corequisite(s):** AST 050L **CC:** SCLB

AST 051 - Introduction to Astronomy

Course Units: 1

(Fall; Staff) A descriptive review of current knowledge in astronomy, including methods of measurement and the applications of physics to astronomy. Topics include stars (structure, formation, and evolution), galaxies, and the universe. Evening laboratory sessions in which students learn how to use cameras and telescopes. No background in mathematics or physics required. **Corequisite(s):** AST 051L **CC:** SCLB

AST 052 - Relativity, Black Holes, and Quasars

Course Units: 1

(Winter; Staff) A descriptive introduction to Einstein's theories of Special and General Relativity, with applications to the astrophysical phenomena of black holes and quasars. No background in mathematics or physics required. **CC:** SET

AST 058 - Astrobiology: Life in the Universe

Course Units: 1

(Same as BIO 058) **(Spring; Staff)** Does life exist elsewhere in the universe, or are we alone? The emerging science of astrobiology attempts to answer this fundamental question using an interdisciplinary approach rooted in biology and astronomy. This course will examine the current state of our scientific knowledge concerning the possibility of life elsewhere in the universe. Topics include: the nature and origin of life on Earth, the

possibility of life on Mars and elsewhere in the Solar System, the search for extrasolar planets, the habitability of planets, and the search for extraterrestrial intelligence. **CC:** SET

AST 100 - Introduction to Astrophysics

Course Units: 1

(Fall; Staff) An introduction to the field of astrophysics, with an emphasis on a scientific understanding of stars and the universe. Topics include stars (structure, formation, and evolution), galaxies (the Milky Way, galaxy types, quasars, and active galaxies), dark matter, and the Big Bang model of the universe. One hour mathematics/computational lab each week. **Prerequisite(s):** PHY 110 or PHY 120 or IMP 112 or IMP 120

AST 105 - Introduction to Planetary Science

Course Units: 1

(Spring; Staff) An introduction to the field of planetary science, with an emphasis on a scientific understanding of the Solar System. Topics include information and evolution of the Solar System; physical processes in the Solar System; planetary geology and atmospheres; properties of planets, satellites, asteroids, and comets in the Solar System; extra solar planets. One hour session mathematics/computational each week. **Prerequisite(s):** PHY 110 or PHY 120 or IMP 112 or IMP 120.

AST 200 - Stellar Structure and Evolution

Course Units: 1

(Winter; Staff) An examination of the physical principles governing the structure and evolution of stars. Topics include radiation laws, and the determination of stellar temperature, luminosity, and composition; radiative transfer and the interior structure of stars; nuclear fusion and nucleosynthesis; star clusters and stellar evolution; and stellar remnants (white dwarfs, neutron stars, pulsars, and black holes). **Prerequisite(s):** PHY 111 or PHY 121 or IMP 113 or IMP 121.

AST 210 - Galaxies

Course Units: 1

(Not offered this Academic Year) A survey of the physical properties, dynamics, and distribution of galaxies. Topics include the content, formation, and evolution of the Milky Way and other galaxies; the large-scale distribution of galaxies; interactions between galaxies; dark matter; active galactic nuclei; and quasars. **Prerequisite(s):** PHY 111 or PHY 121 or IMP-113 or IMP 121.

AST 220 - Cosmology and General Relativity

Course Units: 1

(Not offered this Academic Year) A detailed study of the universe. Topics include an introduction to general relativity; the shape, size, age, and future of the universe; models of the primordial universe, including the Big Bang Theory and the Inflation Theory; the origin of the elements; dark matter; the cosmic background radiation; and the formation of galaxies. **Prerequisite(s):** PHY 111 or PHY 121 or IMP-113 or IMP 121, and MTH 115. PHY 122 is recommended.

AST 230 - Observational Astronomy

Course Units: 1

(Not offered this Academic Year) A laboratory-based course dealing with modern astronomical techniques. The course work will involve primarily nighttime observations with a 20-inch telescope and computer analysis of the data. Techniques covered include CCD observations, sky subtraction, spectroscopy, and photometry. Student projects may include determination of the distances and ages of star clusters; measurements of the variability of stars and of quasars; measurements of the masses of Jupiter, binary star systems, and galaxies; and determination of orbits of asteroids.

Prerequisite(s): PHY 111 or PHY 121 or IMP-113 or IMP 121 or permission of the instructor (with some telescope experience).

AST 240 - Radio Astronomy

Course Units: 1

(Fall; Staff) A laboratory-based course in the observing methods and the astrophysics learned from astronomical studies at radio wavelengths. Topics include the operation of a radio telescope; important emission mechanisms; star formation regions; interstellar gas; interstellar molecular clouds; radio galaxies; and the cosmic microwave background. Student projects will involve observations with Union's 2-meter radio telescope and with the 37-meter radio telescope at the Haystack Observatory in Westford, Massachusetts. **Prerequisite(s):** PHY 111 or PHY 121 or IMP 113 or IMP 121; Recommended: MTH 115.

Theater

ATH 050 - (010) Rehearsal and Production

Course Units: 0

(same as ADA 050) Students are invited to participate in theater or dance productions in a variety of capacities, both on-stage and off-stage. Required for Theater Majors and Minors. To gain transcript recognition for participation in these activities, students must register for the theater practicum with the registrar and achieve a passing grade from the faculty supervisor. Requests for practicum transcript recognition must be filed with the registrar during the term in which the practicum is undertaken. During the senior year, students may request up to two full practicum credits towards graduation. Such requests are made to the registrar during the senior year transcript audit (or its equivalent for those who plan to graduate early). Each full theater practicum credit is accumulated from three previous passing grades (any combination of theater and dance practicum). No more than two such graduation credits are available, whatever the discipline (theater or dance). Students are advised to select full practicum credits in whichever area best suits their academic program.

ATH 100 - Public Speaking

Course Units: 1

(Fall; Culbert) A practical introduction to speechmaking. Through varied and increasingly complex speech assignments, students learn to integrate standard skills in public communication: speech concept and content, the organization and support of ideas, audience analysis and involvement, plus physical presentation techniques including personal style and the mastery of multimedia presentational technology. **CC:** HUM

ATH 102 - Introduction to Theater

Course Units: 1

(Spring; Steckler) The concepts and practices of theater as an artistic collaboration, a profession and a communal event is the focus of this introductory course. This is an explorative overview of theater, including a study of the professions relating to the creative process: playwriting, acting, directing and design. A variety of forms and styles of theater will be reviewed and discussed through the reading and analysis of three significant plays in the dramatic lexicon. We will study the process of theater production and the demands of theater as a business. You will gain an ability to critically view theater productions. **CC:** HUM

ATH 104 - Introduction to Study of Literature: Drama

Course Units: 1

(same as EGL 102) **(Spring; Jenkins)** Confusion about identity is a theme that we encounter time and again in the history of drama. Not only do plays acted on the stage abound in examples of characters who switch places or are mistaken for each other, they also provide a forum for individual characters to question their relationship with the people and culture that surround them. Even as plays stage the most private of feelings in a public setting, they also suggest that human interactions frequently involve playing a role. In this course, we will ask how different representations of disguise help to articulate the themes with which drama is so concerned. Throughout our examination of mix ups, imposters, and identity crises in plays that range from ancient times to the present day, we will pay attention to both the conventions of drama and the changing social place of the theater. While the theatrical devices we will study might seem like simple formulas, what is fascinating about drama is the way in which the conventional building blocks of plays can be combined, innovated, and reworked in endless permutations of comedy and tragedy. The syllabus will include a wide variety of works by authors such as Euripides, William Shakespeare, Henrik Ibsen, Eugène Ionesco, Lorraine Hansberry, Arthur Miller, August Wilson, and Yasmina Reza. One of the most important aspects of the course will be the development of your ability to express your insights about the plays we read in your own written work. There will be frequent informal written assignments designed to help you build up to the longer papers. **CC:** HUL, WAC

ATH 105 - Special Topics in Theater

Course Units: 1

Topics chosen from a variety of performance theory design and technical areas according to faculty and student interests. Topics may include, but are not limited to, performance art, movement theatre, puppetry, lighting/sound design and costume construction/design. **CC:** HUM

ATH 108 - Special Topics in Theater: Stage Make-up

Course Units: 1

(Spring; Belz) Study of basic techniques and materials used to create theatrical stage makeup. We will cover general facial modification, historic and vintage styles, character specific needs, creature/fantasy inspired, and trauma makeup. We will also explore the use of wigs and facial hair, as well as an introduction to prosthetic appliances. **CC:** HUM

ATH 110 - Stage Craft 1

Course Units: 1

(Fall, Spring; Bovard) This course seeks to introduce students to the language and practice of technical theater. It covers the basics of tools, hardware, theatrical construction, safety practices, lighting, painting and the physical space. Additional weekly lab hours are required for the hands-on experience of building the department production and are scheduled once the term begins at the mutual convenience of student and instructor. **CC:** HUM **Note:** Required for Theatre Majors and Minors.

ATH 112 - Acting 1

Course Units: 1

(Fall; Culbert, Winter; Finlay) Designed to engage the aspiring actor in developing performance power, technique, and discipline, including self-discovery, in-depth character exploration, and textual analysis. Understanding what goes into actions, objectives, and given circumstances will be part of the process of beginning monologue and scene work. Appreciation of theater as a profession through learning how to prepare and see other performances. It will require an open heart and mind in order to have the opportunity to take risks, challenge oneself, and be creative. **CC:** HUM **Note:** Required for Theatre Majors and Minors.

ATH 113 - Introduction to Stage Design

Course Units: 1

(Winter; Steckler) This studio course introduces the work and practices of the theatrical scenic designer. Through studying the historical traditions and styles of theater as well as the innovative practices of contemporary designers students will read and interpret several plays and create original designs in sketches, renderings and scale models. Projects and exercises will emphasize "design ideas" about space, place, pictorial representation and the expressive use of materials. There will be on-going, in-class studio exercises that deal with craft practices and skill acquisition - using the architects' scale, drawing techniques, handling knives, joining board with adhesives, watercolor painting, textures with acrylic mediums, etc. Each project presentation will be accompanied by a paper describing the research and design process. **CC: HUM Note:** Satisfies design requirement for Theatre Majors and Minors.

ATH 117 - Fundamentals of Stage Lighting Design

Course Units: 1

(Winter; Bovard) This course seeks to introduce students to the world of stage lighting design and technology. Initial emphasis will be on electrical theory, photometrics and the wide variety of fixtures and control boards in use in the modern theater. The class will then progress to basic lighting theory and analysis of lighting techniques. In the final weeks, the class will actively participate in the design, hang, focus and programming of the lighting for a departmental production. **CC: HUM Note:** Satisfies design requirements for Theatre Majors and Minors.

ATH 118 - Costume Technology

Course Units: 1

(Fall; Belz) This course studies the basics of garment construction and costume shop procedures primarily as they relate to the theatrical world. The focus is on practical application of construction techniques, and will include introduction to and use of hand and machine sewing as well as use of self-made and commercial patterns to create wearable garments. **CC: HUM**

ATH 119 - CAD Drafting for Theater

Course Units: 1

(Not offered this Academic Year) Drafting for the Theater, is an introduction to the terminology, tools, techniques and software used in technical and design planning for stage scenery and lighting. It is primarily a lecture-style course but also includes collaborative time to work on projects in a group and share tips and tricks for more efficient drafting. Upon successful completion of this class, students will have a solid foundation in VectorWorks, know how to convey information graphically, know how to read shop drawings, and how to find graphical solutions to geometric and trigonometric problems. **CC: HUM**

ATH 120 - History of Theater

Course Units: 1

(Offered in 2017-2018) An investigation of the development of Western theater from its roots in Greek tragedy to the contemporary with special focus on the works of Sophocles, Plautus, Medieval Theater, the Commedia dell'arte, Elizabethan theater, Moliere, Restoration, and 19th century American theater. This class concentrates on the nature of theater-in-performance including the physical development of theater spaces, staging concepts, and the artist-audience relationship. **CC: LCC, HUM Note:** Required for Theatre Majors and Minors.

ATH 121 - Puppet Theater Design and Performance

Course Units: 1

(Not offered this Academic Year) This studio course introduces the design, craft and performance of puppets, animated objects and toy theaters. We will study traditional practices of the genre around the world as well as contemporary and innovative expressions. Students will design, construct, and perform several shows throughout the term in collaborative and individual projects emphasizing the elements of character, space, place, story, text, theme, voice, movement, and technique. Quizzes, research presentations and final papers. There will be a final public performance of original student work. **CC: HUM Note:** Satisfies design requirement for Theatre Majors and Minors.

ATH 122 - Introduction to Costume Design

Course Units: 1

(Not offered this Academic Year) An exploration into the principles and practice of stage costume design including an historical survey of clothes and fashion. The course will be geared toward practical application of design theory and collaboration in conjunction with directors and other designers. **CC: HUM Note:** Satisfies design requirement for Theatre Majors and Minors.

ATH 123 - History of Fashion & Dress

Course Units: 1

(Winter; Belz) A study of the evolution of Western fashions from ancient to modern times with a focus on clothing as a reflection of self-expression and relationship to one's society. The class will explore the history of dress through visual examples, practical examination of historical costume items, and individual research into specific fashion topics. **CC: HUM Note:** Can satisfy Theater History requirement for Theater Majors and Minors upon application.

ATH 125 - Improvisation 1

Course Units: 1

(Winter; Culbert) This class allows the individual and the group to explore through intuitive creative ways a physical, emotional and spontaneous form of approaching theater. This course prepares the performer for advanced training techniques by focusing attention on freeing the body to communicate. Emphasis will be placed on spatial awareness and control, physical characterization and developing performing skills in gestural relationships, kinesthetic response, tempo and character dynamics. Theater games and a variety of improvisation methodologies will be used in the practice of performance discipline, risk taking and collaboration on stage. **CC: HUM**

ATH 128 - Stage Combat

Course Units: 1

(Spring; Finlay) An exploration of physical violence on the stage from the classical to the contemporary. The basic techniques of unarmed Stage Combat will be introduced as well the use of the Medieval Quarterstaff and Elizabethan Rapier. Students at the conclusion of the course will be expected to be able choreograph a safely executed fight for the stage from an existing play. **CC: HUM**

ATH 140 - American Musical Theater and Dance

Course Units: 1

(Same as ADA 140) **(Fall; Moutillet)** This course is an introduction to the American Musical from Vaudeville and Minstrel Shows to today's contemporary Broadway shows. Through lectures, video viewing and workshops students will learn an historical background focusing on the work of lyricists, composers, choreographers, directors and producers. This unique American entertainment art form reflects American diversity and culture, changing times, values and trends. **Prerequisite(s):** No prerequisite. **CC: LCC, HUM**

ATH 150 - Staging Exploration in Theater and Dance

Course Units: 1

(Same as ADA 150) **(Not offered this Academic Year)** This course is based on the close examination of a particular period of theme of multidisciplinary artistic production that will offer students an immersion into important developments in performative expressions. This course explores dynamic movements in the artistic avant-garde, its historical background, and its principal creators in theater, dance and associated performing arts, through discussions, lectures, studio work, and collaborative creation. The resulting collaboration will be produced and performed at Yulman Theater. **Prerequisite(s):** No prerequisite. **CC:** HUM

ATH 151 - Directing 1

Course Units: 1

(Fall; Finlay) Students explore the process of bringing the script and the director's concept to the stage by working with actors through casting, script analysis, rehearsal, and performance. Previous acting experience (in class or in production) required. **CC:** HUM

ATH 226 - Stage Craft 2

Course Units: 1

(Fall, Spring; Bovard) Intermediate level course in the technical aspects of theatrical production. Building on the production information from ATH 110, this course takes a more in-depth exploration of the nuances of stagecraft. In addition, students will take on the role of a production supervisor and be responsible for managing a group of theatre technicians during their lab hours and an approved final construction project, coordinated with the students areas of production exploration. **Prerequisite(s):** ATH 110 or permission of the instructor. **CC:** HUM

ATH 230 - Movement for Actors

Course Units: 1

(Not offered this Academic Year) Development of the actor's body as an expressive instrument. Yoga/centering exercises, acrobatics and circus techniques are explored to achieve a flexible, free, strong and restfully alert body on stage. Contemporary and period character development through movement. **CC:** HUM

ATH 231 - Voice for the Stage

Course Units: 1

(Spring; Culbert) This is a studio performance course in vocal technique for the stage or other performance media. Class work will include daily physical and vocal limbering designed to develop a free and natural speaking voice. Extensive exercises for the breath, resonance and articulation will be given to develop an awareness and appropriate use of the voice. In class presentations of scripted material, extracts from dramatic literature and readings of stories or poetry put into practice the techniques of this performance course. Instruction in dialect work for the stage will be included. Examinations will include presentations of memorized text following a vocal workout program in the Linklater method. **CC:** HUM

ATH 235 - Physical Theater

Course Units: 1

(Not offered this Academic Year) This course emphasizes the development of the actor's body as an expressive instrument. Primarily focus is on the actor's physical presence, actions over language, and use of gestures. Actors/dancers will be trained in techniques that focus on the building of

strength, flexibility, improvisation targeting relationships and interplay between performers, and visual elements to create scenic imagery. Workshops pursue a wide range of styles, approaches and aesthetics including dance-theater, movement theater, mask, use of live camera to project performers' actions and interactions with props and scenery. We review European, Japanese and American styles of physical expression to broaden theatrical actions. The course will culminate in a collaborative creation produced and performed at The Yulman Theater in the Winter Dance Concert.

Prerequisite(s): No prerequisite. **CC:** HUM

ATH 240 - Theater Criticism

Course Units: 1

(Not offered this Academic Year) This is an intensive and practical course on reading and writing dramatic criticism. A look at the concepts and practices of theater criticism in American Theater begins with a discussion of major theories of Western drama, from Aristotle to Artaud. Through the reading and discussion of contemporary examples of dramatic criticism and directed studies in techniques of journalistic writing students will gain an understanding of the nature and function of a theater review and an ability to critically view theater productions. Writing will include research essays, response papers and critical reviews of play scripts as well as performances on campus and at professional theaters. **CC:** LCC, HUM

ATH 295H - Theater Honors Independent Project 1

Course Units: 1

For the sophomore scholar student who has demonstrated the ability to work independently, this two-term project may be proposed to a sponsoring faculty member. It is expected that this student-initiated project is designed to allow the student to gain experience through independent research, study or practical studies that could not otherwise be gained in the curriculum. Projects must be proposed at least a term in advance. By permission of sponsoring faculty only.

ATH 296H - Theater Honors Independent Project 2

Course Units: 1

For the sophomore scholar student who has demonstrated the ability to work independently, this two-term project may be proposed to a sponsoring faculty member. It is expected that this student-initiated project is designed to allow the student to gain experience through independent research, study or practical studies that could not otherwise be gained in the curriculum. Projects must be proposed at least a term in advance. By permission of sponsoring faculty only.

ATH 320 - Script to Performance

Course Units: 1

(Winter; Staff) This playwriting course will focus on the creation and development of an original script, starting with the inception of an idea as it forms in the mind of the playwright and culminating in performance. Students will study basic techniques of structure, dialogue, character-development, story-telling and creative voice. As a playwriting lab, students will workshop, critique and help develop each other's craft through creative writing exercises and assignments. Each student will write an original play that will be performed during a staged reading in the final week of the term. **CC:** HUM

ATH 325 - Acting Shakespeare

Course Units: 1

(Offered in 2017-2018) The demands of Shakespeare in performance in this class will include active work on scansion, verse structure, rhetoric, language imagery, as well as text analysis and character analysis in a professional discipline of role preparation and rehearsal process for individual (monologue) and partnered (scene) work. It is assumed that the student taking this course is prepared and willing to challenge him/herself in order to

become an expressive, creative and informed Shakespearean actor. A variety of contemporary methods of actor training will be reviewed and used as a process of performance preparation. **Prerequisite(s):** ATH 112 or permission of the instructor. **CC:** LCC, HUM

ATH 342 - Acting 2

Course Units: 1

(Offered in 2017-2018) Students review skills learned in earlier acting classes with a higher degree of emphasis on performance. Professional workshops in acting technique are offered such as Meisner, Chekhov, or Grotowski techniques. Focus is on in-depth textual analysis - discovering in the inner workings of a play, of scenes and monologues and the making of character choices. Students will gain an understanding the work of a professional actor, and the discipline of the theater business. **Prerequisite(s):** ATH 112 or permission of the instructor. **CC:** HUM, HUL

ATH 361 - Advanced Directing

Course Units: 1

(Not offered this Academic Year) An advanced course in techniques of working with script, actor, and designer in realizing a theatrical event on stage. Final project to be directed for public performance. **Prerequisite(s):** ATH 151 **CC:** HUM, HUL

ATH 366 - Acting Styles

Course Units: 1

(Offered in 2017-2018) This class is about how an actor can transform poetic and heightened language and make it seem natural. It is designed for the serious student as a continuation of their acting training and to provide a means to understanding classical and highly stylized theater. The class will include intensive sessions covering a varied range of acting styles across the history of theater. Close analysis of specific theater texts including Greek Theater, Shakespeare, French Comedy, and Absurdism, among others. We will be examining both traditional and unconventional approaches to presenting performances. Being prepared, doing work outside of class, seeing other performances, keeping a rehearsal journal, and turning in a written critical analysis will be required. **Prerequisite(s):** ATH 342 or permission of the instructor. **CC:** LCC, HUM, HUL

ATH 370 - Theatre or Dance Internship

Course Units: 1

(same as ADA 370) As a professional work/study experience, students can elect to pursue a specific area of interest in a one-term internship with a professional theatre or dance company. The precise form of this project will vary with the student and area of focus within the department, but may include production, performance, management, or administrative work in the field or other projects approved by the faculty. Appropriate credit is granted upon completion of the internship. This course will be taken Pass/Fail. An appropriate Departmental faculty member will be assigned to oversee the internship. Students planning on applying for ATH-370 Theatre Internship or ADA- 370 Dance Internship approval will be expected to complete a Departmental form which must be submitted to the Chair ideally no later than the fifth week of the term prior to the internship term. Appropriate advisement and guidance will be available to the student. **Prerequisite(s):** Sophomore standing and approval of Departmental Chair.

ATH 490 - Theatre Independent Study 1

Course Units: 1

For the junior or senior student who has demonstrated the ability to work independently, this one term project may be proposed to a sponsoring faculty member. It is expected that this student-initiated project is designed to allow the student to gain experience through independent research, study or practical studies that could not otherwise be gained in the curriculum. Projects must be proposed at least a term in advance. By permission of sponsoring faculty only.

ATH 491 - Theatre Independent Study 2

Course Units: 1

For the junior or senior student who has demonstrated the ability to work independently, this one term project may be proposed to a sponsoring faculty member. It is expected that this student-initiated project is designed to allow the student to gain experience through independent research, study or practical studies that could not otherwise be gained in the curriculum. Projects must be proposed at least a term in advance. By permission of sponsoring faculty only.

ATH 492 - Theatre Independent Study 3

Course Units: 1

For the junior or senior student who has demonstrated the ability to work independently, this one term project may be proposed to a sponsoring faculty member. It is expected that this student-initiated project is designed to allow the student to gain experience through independent research, study or practical studies that could not otherwise be gained in the curriculum. Projects must be proposed at least a term in advance. By permission of sponsoring faculty only.

ATH 493 - Theatre Independent Study 4

Course Units: 1

For the junior or senior student who has demonstrated the ability to work independently, this one term project may be proposed to a sponsoring faculty member. It is expected that this student-initiated project is designed to allow the student to gain experience through independent research, study or practical studies that could not otherwise be gained in the curriculum. Projects must be proposed at least a term in advance. By permission of sponsoring faculty only.

ATH 494 - Stage Management: Theatre Independent Study

Course Units: 1

For the junior or senior student who has demonstrated the ability to work independently, this one term project may be proposed to a sponsoring faculty member. This course may be repeated up to five times, as independent or interrelated studies. It is expected that this student-initiated project is designed to allow the student to gain experience through independent research, study or practical studies that could not otherwise be gained in the curriculum. Projects must be proposed at least a term in advance. By permission of sponsoring faculty only. **Note:** Instructor Permission Required

ATH 497 - Theater One Term Senior Project

Course Units: 1

As a requirement of the major, students propose this one-term project as a "capstone" study in an area of concentration in theater studies. This project is designed in consultation with the faculty Coordinator of Senior Projects and must be proposed at least a term in advance. Projects may include research, practical production experience or independent projects in theater. By permission of the faculty. **CC:** WS

ATH 498 - Theater Honors Two Term Senior Project 1

Course Units: 0

Students seeking to graduate with honors may elect to propose a two-term senior project as a "capstone" study in an area of concentration in theater

studies. This project is designed in consultation with the faculty Coordinator of Senior Projects and must be proposed at least a term in advance. Projects may include research, practical production experience or independent projects in theater. By permission of the faculty. **CC: WS**

ATH 499 - Theater Honors Two Term Senior Project 2

Course Units: 2

Students seeking to graduate with honors may elect to propose a two-term senior project as a "capstone" study in an area of concentration in theater studies. This project is designed in consultation with the faculty Coordinator of Senior Projects and must be proposed at least a term in advance. Projects may include research, practical production experience or independent projects in theater. By permission of the faculty. **CC: WS**

TAB 341T - London Theatre Mini-Term

Course Units: 1

(Fall odd years; Belz/Culbert) This is an intensive three-week experience in visiting, viewing and critiquing current theater and/or dance productions in London with a consideration of the perspectives of the playwright, director/choreographer, designers, performers and audience. The course centers around the productions viewed in looking at the artistic process and performance event and students will develop a visceral response to and appreciation of theater and dance in performance. Students will gain an understanding of the nature and function of performance as an art form and a profession through viewing and responding to theater/dance in production. Students will gain an ability to critically view theater productions through writings and/or discussions that will include research, responses to productions and readings of critical reviews of plays and other material provided on our NEXUS course site. Special events such as back stage tours and guest artist workshops are scheduled as required events of this course. Optional cultural tours, museum visits and excursions will be available and noted daily on the NEXUS course site. **CC: HUM, HUL**

Studio Arts

AVA 010 - Ceramics 1

Course Units: 0

(Winter; Staff) An introduction to clay, including hand-building, wheel-throwing, glazing and firing techniques. The studio is available for practice and completion of assignments.

AVA 020 - Ceramics 2

Course Units: 0

(Winter; Staff) Students will learn more advanced forming and decorating techniques. In addition to studio assignments, a short research presentation will be required.

AVA 030 - Ceramics 3

Course Units: 0

(Not offered this Academic Year) In addition to classroom assignments students will learn kiln firing and glaze preparation

AVA 100 - Design Fundamentals 1

Course Units: 1

(Fall; Wimer) Introduction to the basic design elements of line, shape, texture, value and color and the organizing principles of composition, unity/harmony, focus, direction, rhythm and contrast, space, intent/content. Problem-solving exercises, studio projects, slide talks, class critiques. **CC: HUM**

AVA 110 - Drawing 1

Course Units: 1

(Fall, Winter; Nemett, Spring; Staff) Drawing problems that explore different ways of responding to and recording perception, using a variety of drawing media. Work in and outside class; daily critiques. **CC: HUM**

AVA 120 - Photography 1 - Aesthetics, Film, Chemistry & Printing

Course Units: 1

(Fall, Winter, Spring; Benjamin) A course in black and white silver halide film and gelatin silver printing. Students learn the basics of the art's aesthetics, the camera, processing, printing, and evaluation/assessment of photographic prints. Three separate projects lead students through making their own photographic prints in various themes and genres of contemporary fine art photography. Students study important works in photography that relate to each project and have critiques of their work. A 35mm film camera with a light meter and adjustable focus is required. Limited enrollment, by permission of instructor. **CC: HUM**

AVA 130 - Sculpture 1

Course Units: 1

(Fall, Winter; Duncan) A beginning course that introduces basic sculptural vocabularies and techniques, with an emphasis on the individual student's development. Each project is linked to particular materials, methods and approaches to making sculpture. These include modeling in clay, making life molds and plaster casts, wood construction, and stone carving. Informal slide talks cover important developments in twentieth-century sculpture. We'll take a field trip to New York City, Mass MOCA or Storm King Art Center to see contemporary work up close. Regular work in and outside of class is required. No previous experience necessary. **CC: HUM**

AVA 140 - Three Dimensional Design 1

Course Units: 1

(Fall, Spring; Duncan) An introduction to the essential elements of form, space, structure and materials, with an emphasis on individual creative solutions. Class projects and discussions involve the nature and design of useful or functional objects, architectural form and space, and designing in an existing urban context. Course material moves from abstract design concepts to hands-on interaction with materials and application of principles to real-world situations. Projects for each student include conceiving and constructing a unique chair, and designing and building a proposal model for an imaginary "monument" on campus. We'll use various materials including clay, wood, plaster, and mixed media. Work in and outside class is required; slide talks, field trips to museums or other resources, and class critiques are part of the class. No previous experience necessary **CC: HUM**

AVA 150 - Printmaking: Relief

Course Units: 1

(Spring; Staff) Introductory course in relief printing (linocut, collograph, monotype, and woodcut). Introduction to materials and process of printmaking. Outside work required and critiques. **CC: HUM**

AVA 151 - Printmaking: Etching

Course Units: 1

(Winter; Wimer) Introduction to intaglio printing. Includes dry point, etching with hard and soft grounds, aquatint, lift ground, white ground. Outside work required and critiques. **CC:** HUM

AVA 160 - Digital Art

Course Units: 1

(Fall; Orellana) This introductory course focuses on the fundamentals of using the computer as an art tool in the production of two-dimensional content. Topics covered include essentials of digital imaging, digital printing, and posting information to the Internet. Class lectures and hands-on studio will incorporate technique demonstrations, discussions, technical exploration, aesthetic inquiry and historical information relevant to computer multimedia, hypermedia and telecommunications. Students are encouraged to pursue areas of interest and explore new ideas throughout the course. Outside work required. No previous experience necessary. **CC:** HUM **Note:** Course website: <http://cs.union.edu/ava160/>

AVA 200 - Design Fundamentals 2

Course Units: 1

(Not offered this Academic Year) A continuation of two-dimensional design investigation with a focus on color. Weekly assignments, problem-solving exercises, studio projects; slide talks; critiques. **Prerequisite(s):** AVA 100 or AVA 110 (recommended), or portfolio review and permission of the instructor. **CC:** HUM

AVA 210 - Drawing 2

Course Units: 1

(Winter; Wimer) Observational drawing focusing on the human figure. Live models. Materials explored include various papers, graphite, charcoal and ink washes. Outside work required, critiques. **Prerequisite(s):** AVA 110 (recommended) or permission of the instructor. **CC:** HUM

AVA 220 - Photography 2 - Intermediate Photography

Course Units: 1

(Winter; Benjamin) This class experience is two-fold. The first half involves advanced black and white film/chemistry/printing that encourages a refinement of technique and increased sophistication of aesthetics and ideas. The second half involves color digital photography, learning the basics of Photoshop® editing software as used by photographers. Students do "Language of Photography" projects and make printed portfolios.

Prerequisite(s): AVA 120; limited enrollment, by permission of the instructor. **CC:** HUM

AVA 230 - Sculpture 2

Course Units: 1

(Winter, Spring; Duncan) A complementary experience to Sculpture I or Three-Dimensional Design I. Includes welded steel, more advanced techniques in wood, and other media. Specific class projects aim to develop fluency with materials and concepts. Individual work expected and encouraged. **Prerequisite(s):** AVA 130, AVA 140, or permission of the instructor. **CC:** HUM

AVA 240 - Three-Dimensional Design 2

Course Units: 1

(Not offered this Academic Year) A continuation of Three- Dimensional Design I, with emphasis on design and construction of chairs. The chair as structure; necessity; aesthetic object. Function, decoration, metaphor. Relationship of design to the human body. Each class member will construct three functioning chairs. **Prerequisite(s):** AVA 130 or AVA 140, or permission of the instructor. **CC:** HUM

AVA 260 - Painting: Oil

Course Units: 1

(Fall, Spring; Nemet) An introduction to oil painting technique, color, and pictorial composition. Initial development of an individual visual vocabulary. Outside work is required; weekly critiques. **Prerequisite(s):** A college-level introductory studio art course, two-dimensional or three-dimensional media, or portfolio review and permission of the instructor **CC:** HUM

AVA 261 - Painting: Watercolor

Course Units: 1

(Not offered this Academic Year) Painting that explores aqueous painting media, emphasizing watercolor techniques. Discussions centering on issues of composition, content, and expression. **Prerequisite(s):** Same as AVA 260. Recommended: AVA 100 or AVA 110. Outside work is required. **CC:** HUM

AVA 262 - Real and Recorded Time - 4D Art

Course Units: 1

(Spring; Orellana) This course will serve as an introduction to the basic concepts of four-dimensional art or time-based artwork, using a variety of processes and media. Students explore concepts in animation techniques, video and audio production, editing, interactivity, installation, and documentation. Class lectures and hands-on studio time will incorporate technique demonstrations, screenings, readings, discussions, technical exploration, aesthetic inquiry and historical information relevant to the course. Outside work is required. **Prerequisite(s):** Any Studio Art course or permission of instructor. **CC:** HUM **Note:** Course website: <http://cs.union.edu/ava262/>

AVA 270 - The Processed Pixel

Course Units: 1

(Same as CSC 112) **(Winter; Orellana)** Utilizing basic aspects of computer programming, this course will explore how artists can experiment with computer code to communicate a variety of ideas and content. By means of the programming environment Processing, students will investigate issues in animation, computational design, physical computing, data visualization, interactivity, and other relevant topics. Class lectures and hands-on studio time will incorporate technique demonstrations, discussions, technical exploration, aesthetic inquiry and historical information relevant to the course. Outside work required. **Prerequisite(s):** Any Studio Art course or permission of instructor. **CC:** SET, HUM **Note:** Course website: <http://cs.union.edu/ava270/>.

AVA 280 - Design Aesthetics

Course Units: 1

(Not offered this Academic Year) Focusing primarily on design, this course will cover multimedia arts within the realm of the Internet. Students will explore the Internet as a medium for art and communication, while utilizing the artistic and design possibilities of Dreamweaver, Flash, and Adobe Photoshop. Class lectures and hands-on studio time will incorporate technique demonstrations, discussions, technical exploration, aesthetic

inquiry and historical information relevant to the course. Outside work required. **Prerequisite(s):** AVA 160 or permission of instructor. **CC:** HUM
Note: Course website: <http://cs.union.edu/ava280/>

AVA 282 - Digital Aesthetics

Course Units: 1

(Winter; Orellana) Through this intensive Digital Art course, students will learn how to navigate the complex and rich world of computer aided graphic design. Using Adobe Illustrator, Adobe After Effect, InDesign and several input and output techniques, students will gain experience in a variety of industry standard topics. These will include logo design, branding, information architecture, package design, webpage aesthetics, kinetic typography and the history of computer aided graphic design. **CC:** HUM

AVA 295H - Visual Arts Honors Independent Project 1

Course Units: 1

AVA 296H - Visual Arts Honors Independent Project 2

Course Units: 1

AVA 320 - Photography 3 - Color Digital Photography

Course Units: 1

(Spring; Benjamin) This class is a "Portfolio Project" where each student conceptualizes a project to work on for the whole term resulting in a finished photography portfolio of at least 20 prints and 40 artist's proofs. Students will also do research projects about a group of photographers whose work might inform their own. **Prerequisite(s):** Photography II or permission of instructor; limited enrollment. Digital camera required. **CC:** HUM

AVA 330 - Sculpture 3

Course Units: 1

(Spring; Duncan) Advanced exploration of techniques, materials, and concepts of sculpture. Emphasis on development of individual student's work. **Prerequisite(s):** AVA 230, or permission of the instructor. **CC:** HUM

AVA 345 - The Illustrated Organism

Course Units: 1

(Same as BIO 345) **(Spring; Theodosiou, Nemett)** This studio course is the cross-section of common themes found in fine arts and biology, using art as a way of exploring science. The biological question of how evolution influences the relationship between structure and function will be addressed by exploring the use of color, light and structural logic with the goal of creating a world of your own. The course will culminate in an exhibition of artwork with corresponding texts by the student artists describing the connection between the art and science. Taught jointly by biology and visual arts. Apply through participating departments. **CC:** HUM, SCLB

AVA 350 - Advanced Printmaking

Course Units: 1

(Fall; Wimer) Investigation of advanced printmaking techniques, including lithography, woodcut and collagraph. Outside work required, critiques. **Prerequisite(s):** AVA 150-AVA 151 or permission of instructor. **CC:** HUM

AVA 360 - Advanced Painting

Course Units: 1

(Winter; Nemett) Emphasis on refining individual direction with respect to ideas of composition, content, and media. Stylistic development is stressed. Outside work required, critiques. **Prerequisite(s):** AVA 260, AVA 261; Recommended: AVA 210 and AVA 130 or AVA 140. **CC:** HUM

AVA 363 - 3D Computer Modeling

Course Units: 1

(Not offered this Academic Year) This course will introduce students into the world of three-dimensional computer graphics. Through this hands-on-course, students will learn how to use 3D software to realize ideas in sculpture, virtual environments, 3D modeling, installation, and rapid prototyping. Class lectures and hands-on studio time will incorporate technique demonstrations, discussions, technical exploration, aesthetic inquiry and historical information relevant to the course. Software covered: Cinema 4D, Poser, and Adobe After Effects. Outside work required.

Prerequisite(s): AVA 160 or AVA 320 or permission of instructor. **CC:** HUM **Note:** Course website: <http://cs.union.edu/ava363/>

AVA 370 - Physical Computing

Course Units: 1

(Spring; Orellana) This studio art course will explore the creation of robotic art, interactive art, kinetic sculpture, sound works, light art, and performance environments. Using the Arduino micro-controller and basic electronic techniques, the course will include lectures, hands-on studio time, technique demonstrations, discussions, technical exploration, aesthetic inquiry and historical information relevant to the course. Outside work required. **Prerequisite(s):** Any Visual Arts course or permission of instructor. **CC:** HUM **Note:** Course website: <http://cs.union.edu/ava370/>

AVA 400 - Special Projects in Photography

Course Units: 1

(Spring; Benjamin) Students accepted to this class will propose special project ideas to work on for the term. This is a self-initiated experience working closely with the professor throughout. Work may be in in any photographic media or combined with other disciplines or contexts. Students will also research the aesthetics and ideas of relevant historical and contemporary photographers. Digital or film camera required. **Prerequisite(s):** AVA 320 or permission of instructor. **CC:** HUM

AVA 405 - Special Projects in Painting

Course Units: 1

(Fall; Nemett) Continued study of painting at the advanced level, incorporating exploration of techniques, materials, and expanded concepts. Matters of scale and the evolution of individual direction are emphasized through group and individual critiques. **Prerequisite(s):** AVA 260, AVA 261, or permission of the instructor. Special exclusions: may not be taken simultaneously with AVA 497, AVA 498, or AVA 499. **CC:** HUM

AVA 410 - Drawing Independent Study 1

Course Units: 1

AVA 411 - Drawing Independent Study 2

Course Units: 1

AVA 412 - Drawing Independent Study 3

Course Units: 1

AVA 413 - Drawing Independent Study 4

Course Units: 1

AVA 414 - Drawing Independent Study 5

Course Units: 1

AVA 415 - Drawing Independent Study 6

Course Units: 1

AVA 416 - Drawing Independent Study 7

Course Units: 1

AVA 417 - Drawing Independent Study 8

Course Units: 1

AVA 418 - Drawing Independent Study 9

Course Units: 1

AVA 419 - Drawing Independent Study 10

Course Units: 1

AVA 420 - Photography Independent Study 1

Course Units: 1

Students who have a demonstrated ability to work independently and who propose a specific project may do an independent course of study in photography (either black & white or digital color). A journal, written assignments, weekly meetings and final portfolio are required. Students must submit a written proposal well in advance of pre-registration to be considered. **Prerequisite(s):** At least three photography courses at Union or permission of the instructor.

AVA 421 - Photography Independent Study 2

Course Units: 1

AVA 422 - Photography Independent Study 3

Course Units: 1

AVA 423 - Photography Independent Study 4

Course Units: 1

AVA 424 - Photography Independent Study 5

Course Units: 1

AVA 425 - Photography Independent Study 6

Course Units: 1

AVA 426 - Photography Independent Study 7

Course Units: 1

AVA 427 - Photography Independent Study 8

Course Units: 1

AVA 428 - Photography Independent Study 9

Course Units: 1

AVA 429 - Photography Independent Study 10

Course Units: 1

AVA 430 - Sculpture Independent Study 1

Course Units: 1

AVA 431 - Sculpture Independent Study 2

Course Units: 1

AVA 432 - Sculpture Independent Study 3

Course Units: 1

AVA 433 - Sculpture Independent Study 4

Course Units: 1

AVA 434 - Sculpture Independent Study 5

Course Units: 1

AVA 435 - Sculpture Independent Study 6

Course Units: 1

AVA 436 - Sculpture Independent Study 7

Course Units: 1

AVA 437 - Sculpture Independent Study 8

Course Units: 1

AVA 438 - Sculpture Independent Study 9

Course Units: 1

AVA 439 - Sculpture Independent Study 10

Course Units: 1

AVA 450 - Printmaking Independent Study 1

Course Units: 1

AVA 451 - Printmaking Independent Study 2

Course Units: 1

AVA 452 - Printmaking Independent Study 3

Course Units: 1

AVA 453 - Printmaking Independent Study 4

Course Units: 1

AVA 454 - Printmaking Independent Study 5

Course Units: 1

AVA 455 - Printmaking Independent Study 6

Course Units: 1

AVA 456 - Printmaking Independent Study 7

Course Units: 1

AVA 457 - Printmaking Independent Study 8

Course Units: 1

AVA 458 - Printmaking Independent Study 9

Course Units: 1

AVA 459 - Printmaking Independent Study 10

Course Units: 1

AVA 460 - Painting Independent Study 1

Course Units: 1

AVA 461 - Painting Independent Study 2

Course Units: 1

AVA 462 - Painting Independent Study 3

Course Units: 1

AVA 463 - Painting Independent Study 4

Course Units: 1

AVA 464 - Painting Independent Study 5

Course Units: 1

AVA 465 - Painting Independent Study 6

Course Units: 1

AVA 466 - Painting Independent Study 7

Course Units: 1

AVA 467 - Painting Independent Study 8

Course Units: 1

AVA 468 - Painting Independent Study 9

Course Units: 1

AVA 469 - Painting Independent Study 10

Course Units: 1

AVA 470 - Studio Internship 1

Course Units: 1

A student who has largely fulfilled the requirements for a concentration in studio visual arts may apply to the department to pursue an internship with a studio visual arts related professional business, art center, gallery or artist's studio. This is a student-initiated experience where the student proposes the internship, seeks faculty sponsorship, and obtains the chair's approval. An internship application is required to be completed by the student and approved by the department prior to preregistration for the term of the intern opportunity.

AVA 471 - Studio Internship 2

Course Units: 1

A student who has largely fulfilled the requirements for a concentration in studio visual arts may apply to the department to pursue an internship with a studio visual arts related professional business, art center, gallery or artist's studio. This is a student-initiated experience where the student proposes the internship, seeks faculty sponsorship, and obtains the chair's approval. An internship application is required to be completed by the student and approved by the department prior to preregistration for the term of the intern opportunity.

AVA 480 - Digital Art Independent Study

Course Units: 1

AVA 497 - Studio Senior Project

Course Units: 1

A one-term project requiring sponsorship by a studio faculty member. A project carried out in the student's area of studio concentration with WAC:WS credit possible with completion of an additional written research paper. **CC:** WS

AVA 498 - Visual Arts Senior Thesis 1

Course Units: 0

A two-term studio project requiring faculty sponsorship. (See preceding information on Departmental Honors and WS requirement.)

AVA 499 - Visual Arts Senior Thesis 2

Course Units: 2

A two-term studio project requiring faculty sponsorship. (See preceding information on Departmental Honors and WS requirement.)

Biochemistry

BCH 335 - Survey of Biochemistry

Course Units: 1

(Same as BIO 335 and CHM 335) (**Spring; Paulick**) A survey of topics in biochemistry including the structure, conformation, and properties of the major classes of biomolecules (proteins, nucleic acids, lipids, and carbohydrates); enzyme mechanisms, kinetics, and regulation; metabolic transformations; and bioenergetics and metabolic control. Emphasis will be on the fundamentals of biochemistry and our current understanding in the field. **Prerequisite(s):** BIO 225 and CHM 231; CHM 232 is recommended. **Note:** Not open to students who have completed either BCH 380 or BCH 382.

BCH 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates

Course Units: 1

(Same as BIO 380) (**Fall; Cohen**) An in-depth investigation into some of the macromolecules which are essential to life's processes. The course focuses on non-protein molecules and their unique chemical properties. **Prerequisite(s):** BIO 225 and CHM 232 or permission of the instructor. **Corequisite(s):** BCH 380L **Lecture/Lab Hours** Three lab hours each week. **Note:** Not open to students who have completed BCH 335.

BCH 382 - Biochemistry: Structure and Catalysis

Course Units: 1

(Same as BIO 382 and CHM 382) (**Winter; Fox, Anderson**) Structure and function of proteins/enzymes including purification, mechanism, kinetics, regulation, metabolism, and a detailed analysis of several classic protein systems. **Prerequisite(s):** CHM 232 **Corequisite(s):** BCH 382L **Lecture/Lab Hours** Four lab hours each week. **Note:** Not open to students who have completed BCH 335.

BCH 491 - Biochemistry Research 1

Course Units: 1

(Fall, Winter, Spring; Staff) Requires a thesis based on original scientific research under the direction of a member of the faculty. May be used to satisfy the departmental component for honors in biochemistry and/or to satisfy WS requirements. Expectations include a minimum of twelve hours per week of lab work and attendance at chemistry or biology weekly seminar, in addition to other requirements to be determined by individual research advisors. **Prerequisite(s):** Permission of the instructor and third-term junior standing; or permission of the department chair.

BCH 492 - Biochemistry Research 2

Course Units: 1

(Fall, Winter, Spring; Staff) Requires a thesis based on original scientific research under the direction of a member of the faculty. May be used to satisfy the departmental component for honors in biochemistry and/or to satisfy WS requirements. Expectations include a minimum of twelve hours per week of lab work and attendance at chemistry or biology weekly seminar, in addition to other requirements to be determined by individual research advisors. **Prerequisite(s):** Permission of the instructor and third-term junior standing; or permission of the department chair.

BCH 493 - Biochemistry Research 3

Course Units: 1

(Fall, Winter, Spring; Staff) Requires a thesis based on original scientific research under the direction of a member of the faculty. May be used to satisfy the departmental component for honors in biochemistry and/or to satisfy WS requirements. Expectations include a minimum of twelve hours per week of lab work and attendance at chemistry or biology weekly seminar, in addition to other requirements to be determined by individual research advisors. **Prerequisite(s):** Permission of the instructor and third-term junior standing; or permission of the department chair.

Biological Sciences

BIO 050 - Topics in Contemporary Biology

Course Units: 1

(Winter; Willing) Recent developments in biology are pertinent to human health and to concerns of the nature of life and of human social values. This course will focus on human genetics, human genetic diseases, the genetic component of other diseases, the genetics of cancer, and the immune system. **Corequisite(s):** BIO 050L **CC: SCLB Lecture/Lab Hours** One lab every other week.

BIO 055 - Evolution of Animal Behavior

Course Units: 1

(Winter; Fleishman) Humans have long been fascinated by the complex behavioral interactions of other animals. Non-human animals communicate, fight, mate, and try to stay alive in a complex and dangerous world. The course will provide an introduction to the scientific study of animal behavior, with an emphasis on the processes by which complex and diverse behaviors evolve. In lab, students will observe and quantify behavior of living animals in order to test hypotheses about the function and mechanisms underlying different behaviors. **Corequisite(s):** BIO 055L **CC: SCLB Lecture/Lab Hours** One lab every other week. **Note:** Not open to science majors.

BIO 058 - Astrobiology

Course Units: 1

(same as AST 058) **(Spring; Horton, Koopman)** Does life exist elsewhere in the universe or are we alone? The emerging science of astrobiology attempts to answer this fundamental question using an interdisciplinary approach rooted in both biology and astronomy. This course will examine the current state of our scientific knowledge concerning the possibility of life elsewhere in the universe. Topics include the nature and origin of life on Earth, the possibility of life on Mars and elsewhere in the solar system, the search for extra solar planets, the habitability of planets, and the search for extraterrestrial intelligence. **CC: SET Note:** No lab.

BIO 065 - Food and Health in the 21st Century

Course Units: 1

(Spring; Willing) An introduction to multiple aspects of food: basic nutrition; role of our dietary choices on health; modern and traditional food production systems; environmental issues in farming (fossil fuel use, climate change, and pollution); sustainability of our modern food supply system; and causes and remedies of hunger in the world. **CC: SET Note:** No lab.

BIO 077 - Technology of Biology

Course Units: 1

(Not offered this Academic Year) Advances in technology have been utilized by scientists and physicians for many centuries. Today, with the rapid developments in molecular biology, the technology often outpaces the understanding and acceptance of the public. This course will look at technological advances relating to biology from both a historical and modern perspective, with an emphasis on how molecular biology has revolutionized our lives. Medical, environmental, and industrial topics will be included. **CC: SET Note:** Not open to students that have already completed BIO 110 (102) or BIO 112 (101). No lab.

BIO 094 - Understanding Cancer

Course Units: 1

(Winter; Cohen) Everyone has been touched at some point in their lives by cancer. This course aims to provide insight into the fundamental concepts involved in the life cycle of a cell, how cancer is related to those processes, and how those fundamental processes have led to advances in cancer treatment. **CC: SET Note:** Not open to students who have already completed BIO 110 (102) or BIO 112 (101). No lab.

BIO 110 - (102) Heredity, Evolution, and Ecology

Course Units: 1

(Fall, Winter, Spring; Staff) Examines the diversity of living things, including the molecular and evolutionary origins of diversity, factors maintaining diverse ecosystems, and global threats to biodiversity. Topics include an overview of the genetic basis of inheritance, evolution and natural selection at the population level, the process of speciation and the resulting diversity of animal and plant life, ecological interactions between species that influence community diversity, and elements of human-caused global change that imperil biodiversity such as global climate change. No lab. Students will attend one concepts laboratory per week to more deeply explore concepts and introduce material in preparation for subsequent Biology courses. **Corequisite(s):** BIO 110X **CC: SET Note:** This course does NOT provide SCLB credit.

BIO 112 - (101) Physiology of Cells and Organisms

Course Units: 1

(Fall, Winter, Spring; Staff) Examines structure and function in both plant and animal systems from the level of biomolecules, cells, tissues, organs,

and organisms. Topics include metabolism and feedback control, plant water and carbon relations, cardiovascular and neural function, and the physiology of movement. **Prerequisite(s):** BIO 110 (102) or permission of the instructor. **Corequisite(s):** BIO 112L **CC:** SCLB **Lecture/Lab Hours** One lab per week.

BIO 201 - Food Ecology

Course Units: 1

(Same as ENS 201) **(Fall; Willing)** Sophomores and juniors have priority. This course will examine the environmental issues related to producing food; it will include food derived through agriculture and from domesticated or wild animals (dairy, beef, chicken, pork, or fish). We will compare production methods in the technologically advanced West with those in more traditional systems, both past and present. We will look at how and why food production was transformed from an energy-harvesting endeavor into an enormous user of fossil fuel. We will look at how and why food production causes environmental problems, such as: loss of soil fertility, reductions in fresh water supplies, and the pollution of groundwater, rivers, and oceans. We will explore whether current methods of food production are sustainable and adequate for a growing population; we will discuss new ideas that could help ensure food production, while also reducing pollution and use of fossil fuel. **Prerequisite(s):** BIO 110 (102) or declared ENS major. **CC:** SET

BIO 208 - Paleontology

Course Units: 1

(Same as GEO 208) See GEO 208

BIO 210 - Behavioral Neuroscience

Course Units: 1

(Same as PSY 210) See PSY 210. **Corequisite(s):** BIO 210L **CC:** SET

BIO 211 - Brain and Behavior

Course Units: 1

(Same as PSY 410) See PSY 410.

BIO 225 - Molecular Biology of the Cell

Course Units: 1

(Fall, Spring; Staff) Major topics include the nature, organization, and functions of the genetic material, DNA replication, gene expression, protein synthesis, the relationships between important macromolecular constituents within the cell, regulation of the cell cycle and cell proliferation, cell signaling, and foundations of cell differentiation and development. **Prerequisite(s):** BIO 110 (102) and BIO 112 (101) or permission of instructor. **Corequisite(s):** BIO 225L **Lecture/Lab Hours** One lab per week. **Note:** CHM 101 is strongly recommended prior to taking this course.

BIO 231 - Cell-Tissue-Material Interaction

Course Units: 1

(same as BNG 331) See BNG 331.

BIO 235 - (305) Biogeochemistry

Course Units: 1

(Same as GEO 305) See GEO 305 **Corequisite(s):** BIO 305L

BIO 242 - Neurobiology

Course Units: 1

(Crossed with PSY 212) (**Winter, Spring; Chu-LaGraff, Olberg**) This course focuses on fundamental concepts of neurobiology using studies from the *Drosophila* and mammalian model systems. Topics covered will include neural development, synaptic connectivity, neural plasticity, neuronal cell properties, sensory systems, and control of movement. **Prerequisite(s):** BIO 110 and BIO 112

BIO 243 - Bioinformatics: Information Technology in the Life Sciences

Course Units: 1

(Same as CSC 243) (**Not offered this Academic Year**) The disciplines of biology and information technology are intersecting with increasing frequency, most notably in the emerging field of bioinformatics. Bioinformatics has been fueled by the advent of large-scale genome sequencing projects, which has generated enormous sets of "mineable" data representing an invaluable resource for biologists. Biology and computer science students in the course will gain a working knowledge of the others' discipline and will then collaborate together in class on bioinformatics projects. Topics include pairwise and multiple sequence alignments, phylogenetic trees, gene expression analysis, and personalized medicine. **Prerequisite(s):** BIO 225 or one course from CSC 103, CSC 104, CSC 105, CSC 106, CSC 107, CSC 109.

BIO 250 - Vertebrate Natural History

Course Units: 1

(**Not offered this Academic Year**) This lab-integrated course explores the biology of vertebrate animals with emphasis on understanding the diversity, life history, taxonomy, and unique adaptations of local vertebrate species (exclusive of fish). The laboratory focuses on developing scientifically sound skills in observation and identification of amphibians, reptiles, mammals, and birds. There will be frequent field trips to observe vertebrates in their natural habitats. Additional meetings will be required for regional field excursions, and for morning bird watching. Students must be available for one evening and one morning bird watching trip. **Prerequisite(s):** BIO 110 and or permission of the instructor. **Corequisite(s):** BIO 250L **Note:** Preference will be given to second year students.

BIO 264 - Epigenetics, Development, and Diseases

Course Units: 1

(**Not offered this Academic Year**) This course will focus on the epigenetic phenomena (e.g., RNA interference and genomic imprinting) on development, embryonic stem cells, animal cloning, and heritable human diseases. Epigenetic patterns are changes in gene expression that do not involve changes in DNA sequences. **Prerequisite(s):** BIO 225 or permission of the instructor. **Note:** Preference will be given to second year students.

BIO 291 - Biology Research Practicum 1

Course Units: 0

(**Fall, Winter, Spring; Staff**) The Biology Research Practicum is designed to allow students to engage in research in the biological sciences early in

their undergraduate careers. Students will work under the direction of a member of the biology faculty, often collaborating with seniors who are completing their research. Expectations include a minimum of four hours per week of lab work and attendance at Biology Department seminars and/or weekly lab meetings. This course requires advance permission of the individual research advisor, who may have additional requirements. To receive Pass/Fail credit equivalent to one course, the student must earn three terms of passing grades for the practicum experience. **Note:** Not open to students currently enrolled in a sophomore scholars projects in the Biology Department or in BIO 490, BIO 491, BIO 492, BIO 493, BIO 494, BIO 495, BIO 496, BIO 497, BIO 498, BIO 499. Does not count as a major elective.

BIO 292 - Biology Research Practicum 2

Course Units: 0

(Fall, Winter, Spring; Staff) The Biology Research Practicum is designed to allow students to engage in research in the biological sciences early in their undergraduate careers. Students will work under the direction of a member of the biology faculty, often collaborating with seniors who are completing their research. Expectations include a minimum of four hours per week of lab work and attendance at Biology Department seminars and/or weekly lab meetings. This course requires advance permission of the individual research advisor, who may have additional requirements. To receive Pass/Fail credit equivalent to one course, the student must earn three terms of passing grades for the practicum experience. **Note:** Not open to students currently enrolled in a sophomore scholars projects in the Biology Department or in BIO 490, BIO 491, BIO 492, BIO 493, BIO 494, BIO 495, BIO 496, BIO 497, BIO 498, BIO 499. Does not count as a major elective.

BIO 293 - Biology Research Practicum 3

Course Units: 1

(Fall, Winter, Spring; Staff) The Biology Research Practicum is designed to allow students to engage in research in the biological sciences early in their undergraduate careers. Students will work under the direction of a member of the biology faculty, often collaborating with seniors who are completing their research. Expectations include a minimum of four hours per week of lab work and attendance at Biology Department seminars and/or weekly lab meetings. This course requires advance permission of the individual research advisor, who may have additional requirements. To receive Pass/Fail credit equivalent to one course, the student must earn three terms of passing grades for the practicum experience. **Note:** Not open to students currently enrolled in a sophomore scholars projects in the Biology Department or in BIO 490, BIO 491, BIO 492, BIO 493, BIO 494, BIO 495, BIO 496, BIO 497, BIO 498, BIO 499. Does not count as a major elective.

BIO 295H - Biology Honors Independent Project 1

Course Units: 0

(Fall, Winter, Spring; Staff) Two-term sophomore independent study project on a biological topic, under the direction of a biology faculty member. Open to students in the Union Scholars Program. Students receive a Pass/Fail grade for the first term and a letter grade and one course credit upon completion of the second term of the project. **Note:** Requirements are arranged with the faculty mentor. Does not count as a major elective.

BIO 296H - Biology Honors Independent Project 2

Course Units: 1

(Fall, Winter, Spring; Staff) Two-term sophomore independent study project on a biological topic, under the direction of a biology faculty member. Open to students in the Union Scholars Program. Students receive a Pass/Fail grade for the first term and a letter grade and one course credit upon completion of the second term of the project. **Note:** Requirements are arranged with the faculty mentor. Does not count as a major elective.

BIO 314 - Ornithology

Course Units: 1

(Not offered this Academic Year) Birds are excellent subjects to study all levels of biological organization, from biochemistry and genetics through physiology, ecology, and evolution. This course emphasizes the evolution, morphology, physiology, ecology, and conservation biology of avifauna. A conservation management perspective on birds will highlight proactive measures to maintain and restore bird populations. **Prerequisite(s):** BIO 110 (102) or permission of the instructor. **Corequisite(s):** BIO 314L **Lecture/Lab Hours** One lab per week.

BIO 315 - Biology of Plants

Course Units: 1

(Not offered this Academic Year) Students will learn about the major characteristics and innovations of land plants and evaluate the functional and adaptive significance of variants in their form, physiology and life history. **Prerequisite(s):** BIO 112 (101) or permission of the instructor.

Corequisite(s): BIO 315L **Lecture/Lab Hours** One lab per week.

BIO 317 - Entomology

Course Units: 1

(Not offered this Academic Year) Entomology examines the evolution and diversity of the most important and successful animal group, the insects. This course explores all aspects of insect biology (ecology, evolution, anatomy, physiology, behavior, neurobiology, and endocrinology).

Prerequisite(s): BIO 110 (102) and BIO 112 (101) **Corequisite(s):** BIO 317L **Lecture/Lab Hours** One lab per week. **Note:** Students will be expected to attend one laboratory per week and mandatory field trips for collecting insects in diverse habitats.

BIO 320 - Ecology

Course Units: 1

(Spring; LoGiudice) Organisms and their environment, population and community ecology, and the structure and integration of ecosystems will be discussed along with a focus on animal community ecology. **Prerequisite(s):** BIO 110 (102) or permission of the instructor. **Corequisite(s):** BIO 320L **Lecture/Lab Hours** One lab per week. **Note:** Frequent field trips requiring scheduling outside of normal class time.

BIO 321 - Herpetology: Biology of Amphibians and Reptiles

Course Units: 1

(Spring; Pytel) An introduction to the study of amphibians and reptiles, both extremely diverse groups. Topics will include structural and functional characteristics, reproductive adaptations, and evolutionary relationships both within the Amphibia and Reptilia groups and among other vertebrate groups. Special emphasis will be given to local fauna. **Prerequisite(s):** BIO 110 (102) and BIO 112 (101) or permission of the instructor. **Note:** Students must be available for one evening and one Saturday field trip.

BIO 322 - Conservation Biology

Course Units: 1

(Fall; Rice) A case-study approach where students will apply ecological understanding to the management of natural ecosystems. Topics include genetics and population biology of rare species, fire ecology and management, landscape ecology, and global climate change **Prerequisite(s):** BIO 110 (102) and BIO 112 (101) or permission of instructor. **Corequisite(s):** BIO 322L **Lecture/Lab Hours** One lab per week.

BIO 324 - Plant Ecology

Course Units: 1

(Fall; Corbin) Examines the factors that affect the distribution and abundance of plant species. We will also relate current ecological research to such environmental issues as climate change, exotic species invasions, and the impacts of land use. **Prerequisite(s):** BIO 110 (102) or permission of the instructor. **Corequisite(s):** BIO 324L **Lecture/Lab Hours** One lab per week. **Note:** One Friday to Saturday overnight trip to a field station in the Adirondack Park.

BIO 325 - Animal Behavior

Course Units: 1

(Same as PSY 311) **(Spring; Fleishman)** An introduction to the study of animal behavior. The mechanisms and evolutionary processes underlying animal behavior under natural conditions will be examined. **Prerequisite(s):** BIO 110 (102) or BIO 112 (101) or permission of the instructor. **Corequisite(s):** BIO 325L **Lecture/Lab Hours** One lab per week.

BIO 329 - Advanced Topics in Ecology

Course Units: 1

(Not offered this Academic Year) An in-depth examination of current areas of research in ecology. Course assumes experience in a course with an ecological focus. **Prerequisite(s):** One of the following: BIO 315 , BIO 320 , BIO 322 , BIO 324 , or BIO 350T.

BIO 330 - Comparative Animal Physiology

Course Units: 1

(Winter; Kirkton) A study of internal physiological systems (e.g., respiration, circulation, and muscle systems). Physiological function in a wide variety of animal groups with a strong emphasis on the interaction of organisms with their environment. **Prerequisite(s):** BIO 110 (102) and BIO 112 (101) **Corequisite(s):** BIO 330L **Lecture/Lab Hours** One lab every week.

BIO 332 - Comparative Vertebrate Anatomy

Course Units: 1

(Not offered this Academic Year) Comparative analysis of vertebrate structure with emphasis on evolution and function. **Prerequisite(s):** BIO 110 (102) and BIO 112 (101). **Corequisite(s):** BIO 332L **Lecture/Lab Hours** One lab per week.

BIO 335 - Survey of Biochemistry

Course Units: 1

(Same as CHM 335 and BCH 335) **(Spring; Cohen)** A survey of topics in biochemistry including buffers, protein structure, lipid structure, carbohydrate structure, enzyme mechanism, and enzyme kinetics. The pathways by which biomolecules are synthesized and degraded will be investigated. Specifically we will look at carbohydrate, lipid, and nitrogen metabolism. Medical applications will be emphasized throughout the course. **Prerequisite(s):** BIO 225 and CHM 231 **Note:** No lab. Not open to students who have completed either BIO 380 or BIO 382.

BIO 345 - The Illustrated Organism

Course Units: 1

(Same as AVA 345) **(Spring; Theodosiou, Nemett)** This studio course is the cross-section of common themes found in fine arts and biology, using

art as a way of exploring science. The biological question of how evolution influences the relationship between structure and function will be addressed by exploring the use of color, light and structural logic with the goal of creating a world of your own. The course will culminate in an exhibition of artwork with corresponding texts by the student artists describing the connection between the art and science. Taught jointly by biology and visual arts. Apply through participating departments. **CC:** HUM, SCLB

BIO 350 - Evolutionary Biology

Course Units: 1

(Fall; Yukilevich) Major concepts and mechanisms of biological evolution, including history of life, population genetics, molecular evolution, Darwinian medicine, and an emphasis on the processes of speciation. **Prerequisite(s):** BIO 110 (102) and BIO 112 (101) or permission of the instructor. **Prereq/Corequisite(s):** BIO 350L **Note:** One lab per week.

BIO 352 - Microbiology

Course Units: 1

(Winter; Salvo) An overview of microbiology with emphasis on bacteria and viruses. Lectures will focus on the structural and functional characteristics of prokaryotes, the diversity, growth, and control of bacteria, and the structure and infectious cycle of DNA and RNA viruses, with special attention to those organisms that cause disease in humans. Particularly recommended for students planning careers in medicine and other health-related professions. **Prerequisite(s):** BIO 225 **Corequisite(s):** BIO 352L **Lecture/Lab Hours** One lab per week. **Note:** Requires 2-3 hours of independent lab work per week.

BIO 354 - Developmental Biology

Course Units: 1

(Winter; Theodosiou) Principles of embryonic development with emphasis on experimental design. Topics include cell fate specification, morphogenesis, gene expression and regulation, and organogenesis explored within the context of model systems. Laboratory work emphasizes experimental design and use of living embryos. **Prerequisite(s):** BIO 225 **Corequisite(s):** BIO 354L **Lecture/Lab Hours** One lab per week.

BIO 355 - Immunology

Course Units: 1

(Spring; Lauzon) The cellular and molecular basis of immunological specificity, regulatory and effector mechanisms of the mammalian immune response, and the importance of the innate immune system in the initiation and development of adaptive immunity. Laboratory exercises include basic techniques and concepts emphasizing morphological identification of leukocytes, phagocytosis, agglutination, enzyme-linked immunosorbent assay (ELISA), mouse immunization and antibody titer determination, immune cytolysis, immunofluorescence, and western blotting. **Prerequisite(s):** BIO 225 **Corequisite(s):** BIO 355L **Lecture/Lab Hours** One lab per week.

BIO 362 - Experimental Neurobiology

Course Units: 1

(Same as PSY 312) **(Fall; Olberg)** Function of neurons, nervous system organization, sensory and motor systems, and neural plasticity. Emphasis is placed on the experiments that have led to our current understanding. **Prerequisite(s):** BIO 225 or permission of the instructor. **Corequisite(s):** BIO 362L **Lecture/Lab Hours** One lab per week.

BIO 363 - Cellular Neurosciences

Course Units: 1

(Winter; Chu-LaGraff) Lecture will focus on molecular, cellular, and biochemical principles governing neuronal development, wiring, and plasticity. Emphasis will be placed on development of the nervous system and neural stem cells. **Prerequisite(s):** BIO 225 or permission of the instructor. **Corequisite(s):** BIO 363L **Lecture/Lab Hours** One lab per week.

BIO 365 - Neural Circuits and Behavior

Course Units: 1

(Same as PSY 315) **(Winter; Olberg)** A seminar course, focusing on recent findings in neuroethology, the neural basis of natural behavior. We consider how sensory information is obtained and used to control behavior in both vertebrates and invertebrates. **Prerequisite(s):** BIO 112 (101) and one of the following: BIO 210, BIO 242, BIO 330, BIO 362, or BIO 363, or permission of the instructor. **Note:** No lab.

BIO 368 - Advanced Molecular Biology

Course Units: 1

(Not offered this Academic Year) Many of the advances made in the understanding of gene expression and gene regulation have been based on work done in microbial systems. This course will look at the molecular mechanisms involved in gene expression and regulation, as well as how bacterial systems have become advanced tools for the study of these processes. Combined lecture and lab course meets twice/week for 3 hours. Laboratory will emphasize the use of molecular techniques to evaluate environmental microbial populations. **Prerequisite(s):** BIO 225 and CHM 231 or permission of the instructor. **Note:** One Saturday field trip required.

BIO 370 - General Endocrinology

Course Units: 1

(Winter; Cohen) Basic principles of endocrine and neuroendocrine regulation in animals, concentrating on vertebrate metabolism, development, and reproduction. **Prerequisite(s):** BIO 225 **Note:** No lab.

BIO 375 - Exercise Physiology

Course Units: 1

(Not offered this Academic Year) This course examines how single and repeated bouts of exercise affect the structure and function of tissues, organs, and systems. This course examines the evolutionary diversity of animal locomotion by investigating how physical properties of both the organisms and their environment affect the biochemistry, anatomy, and physiology of muscle function and movement. in mammals and other animals. This class also utilizes mechanical and engineering principles to understand and explain locomotory biomechanics of animal locomotion mechanisms of animals. **Prerequisite(s):** BIO 112 (101) and PHY 110 or PHY 120 **Note:** No lab.

BIO 378 - Cancer Cell Biology

Course Units: 1

(Fall; Danowski) This course investigates the molecular basis of cancer by comparing normal cells to cancer cells with respect to growth control mechanisms, signal transduction, and cell-cell and cell-environment interactions. A large percent of the content of the course comes from recent research papers which students read and present to the class. Laboratory exercises include primary tissue culture, immunofluorescence microscopy, immunodetection, and a final research project. **Prerequisite(s):** BIO 225 **Corequisite(s):** BIO 378L **Lecture/Lab Hours** One lab per week.

BIO 380 - Biochemistry: Membranes, Nucleic Acids, and Carbohydrates

Course Units: 1

(Same as BCH 380) **(Fall; Cohen)** An in-depth investigation into some of the macromolecules that are essential to life's processes. The course focuses on non-protein molecules and their unique chemical properties. **Prerequisite(s):** BIO 225 and CHM 232, or permission of the instructor. **Corequisite(s):** BIO 380L **Lecture/Lab Hours** One lab per week. **Note:** Not open to students who have completed BIO 335.

BIO 382 - Biochemistry: Structure & Catalysis

Course Units: 1

(Same as CHM 382 and BCH 382) See CHM 382 or BCH 382 **Corequisite(s):** BIO 382L

BIO 384 - Genetics and Molecular Biology

Course Units: 1

(Winter; Horton) The use of both classical genetics and molecular biology as experimental tools is currently being applied to an extremely diverse array of questions in biology. This course will expose the student to many of the commonly-used techniques in the "toolkit" of the geneticist/molecular biologist. Emphasis will be on recent advances in our understanding of topics of current interest such as development, cellular response to environmental stimuli, tumor formation, human genetic disease, and apoptosis, amongst others. Laboratory will emphasize the use of modern molecular biological techniques and will involve group projects of the students' choice. **Prerequisite(s):** BIO 225 and CHM 102 **Corequisite(s):** BIO 384L **Lecture/Lab Hours** One lab per week.

BIO 487 - Senior Writing Seminar: Topics in Ecological and Evolutionary Biology

Course Units: 1

(Winter; Yukilevich) One of these three courses is required by, and limited to, seniors who are not satisfying their WS requirement through either an independent research project or thesis. Each seminar will provide a forum in which a biological topic of current interest and importance is explored in depth. Students will gain experience in giving oral presentations and critically evaluating the written work of both established scientists and fellow students. A paper is required to fulfill the WS requirement. Enrollment is optional for interdepartmental Biology/Other majors. **CC:** WS

BIO 488 - Senior Writing Seminar: Topics in Organismal and Physiological Biology

Course Units: 1

(Fall; Theodosiou) One of these three courses is required by, and limited to, seniors who are not satisfying their WS requirement through either an independent research project or thesis. Each seminar will provide a forum in which a biological topic of current interest and importance is explored in depth. Students will gain experience in giving oral presentations and critically evaluating the written work of both established scientists and fellow students. A paper is required to fulfill the WS requirement. Enrollment is optional for interdepartmental Biology/Other majors. **CC:** WS

BIO 489 - Senior Writing Seminar: Topics in Cellular and Molecular Biology

Course Units: 1

(Winter; Danowski) One of these three courses is required by, and limited to, seniors who are not satisfying their WS requirement through either an independent research project or thesis. Each seminar will provide a forum in which a biological topic of current interest and importance is explored in

depth. Students will gain experience in giving oral presentations and critically evaluating the written work of both established scientists and fellow students. A paper is required to fulfill the WS requirement. Enrollment is optional for interdepartmental Biology/Other majors. **CC: WS**

BIO 490 - Biology Research 1

Course Units: 1

(Fall, Winter, Spring; Staff) Independent research in consultation with a member of the biology staff. Research students are required to attend departmental seminars. **Prerequisite(s):** permission of the chair and the instructor.

BIO 491 - Biology Research 2

Course Units: 1

(Fall, Winter, Spring; Staff) Independent research in consultation with a member of the biology staff. Research students are required to attend departmental seminars. **Prerequisite(s):** permission of the chair and the instructor.

BIO 492 - Biology Research 3

Course Units: 1

(Fall, Winter, Spring; Staff) Independent research in consultation with a member of the biology staff. Research students are required to attend departmental seminars. **Prerequisite(s):** permission of the chair and the instructor.

BIO 493 - Biology Research 4

Course Units: 1

(Fall, Winter, Spring; Staff) Independent research in consultation with a member of the biology staff. Research students are required to attend departmental seminars. **Prerequisite(s):** permission of the chair and the instructor.

BIO 494 - Biology Research 5

Course Units: 1

(Fall, Winter, Spring; Staff) Independent research in consultation with a member of the biology staff. Research students are required to attend departmental seminars. **Prerequisite(s):** permission of the chair and the instructor.

BIO 495 - Biology Research 6

Course Units: 1

(Fall, Winter, Spring; Staff) Independent research in consultation with a member of the biology staff. Research students are required to attend departmental seminars. **Prerequisite(s):** permission of the chair and the instructor.

BIO 496 - Biology Research 7

Course Units: 1

(Fall, Winter, Spring; Staff) Independent research in consultation with a member of the biology staff. Research students are required to attend departmental seminars. **Prerequisite(s):** permission of the chair and the instructor.

BIO 497 - Biology Honors Research 1

Course Units: 1

(Fall, Winter, Spring; Staff) A sequence that requires a thesis based on original scientific research. May be used to satisfy WS requirement and departmental component for honors in biology, or for WS requirement alone. Research students are required to attend departmental seminars.

Prerequisite(s): permission of the instructor. **CC:** WS

BIO 498 - Biology Honors Research 2

Course Units: 1

(Fall, Winter, Spring; Staff) A sequence that requires a thesis based on original scientific research. May be used to satisfy WS requirement and departmental component for honors in biology, or for WS requirement alone. Research students are required to attend departmental seminars.

Prerequisite(s): permission of the instructor **CC:** WS

BIO 499 - Biology Honors Research 3

Course Units: 1

(Fall, Winter, Spring; Staff) A sequence that requires a thesis based on original scientific research. May be used to satisfy WS requirement and departmental component for honors in biology, or for WS requirement alone. Research students are required to attend departmental seminars.

Prerequisite(s): permission of the instructor. **CC:** WS

Bioengineering

BNG 101 - Graphics and Image Processing for Biomedical Systems

Course Units: 1

(Fall; Cotter, Khetan) Students will learn how to create objects, assemblies, and engineering drawings using SolidWorks, a solid modeling software. Students will also be introduced to the fundamentals of image acquisition and processing in biomedical systems and the use of block diagrams to construct more complex processing systems. **Corequisite(s):** BNG 101L **CC:** SET **Lecture/Lab Hours** There is a weekly laboratory.

BNG 201 - Biomechanics 1

Course Units: 1

(Winter; Mafi) A basic biomechanics course concerned with two- and three-dimensional force systems, equilibrium and distributed forces. These topics will be studied in the context of the musculoskeletal system. This course also introduces strength and elastic deflection of biological tissues due to loads applied axially, in torsion, in bending, and in shear. Shear and bending moment diagrams, friction, and area moments of inertia will be introduced. **Prerequisite(s):** MTH 110 or equivalent and PHY 120 **Corequisite(s):** BNG 201L **Lecture/Lab Hours** There is a weekly laboratory.

BNG 202 - Biomechanics 2

Course Units: 1

(Spring; Currey) Kinematics and kinetics of particles and rigid bodies in planar motion with applications to human motion analysis. The course includes Newtonian and energy approaches to problem solutions. **Prerequisite(s):** BNG 201 **Corequisite(s):** BNG 202L **Lecture/Lab Hours** There is a weekly laboratory.

BNG 281 - Bioengineering Practicum 1

Course Units: 0

(Fall, Winter, Spring; Staff) Under the supervision of a Bioengineering faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one free elective course, a student must receive a passing grade in three terms of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and one of the Bioengineering program co-directors is required.

BNG 282 - Bioengineering Practicum 2

Course Units: 0

(Fall, Winter, Spring; Staff) Under the supervision of a Bioengineering faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one free elective course, a student must receive a passing grade in three terms of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and one of the Bioengineering program co-directors is required.

BNG 283 - Bioengineering Practicum 3

Course Units: 1

(Fall, Winter, Spring; Staff) Under the supervision of a Bioengineering faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one free elective course, a student must receive a passing grade in three terms of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and one of the Bioengineering program co-directors is required.

BNG 311 - Advanced Mechanics

Course Units: 1

(Fall; Currey) Advanced biomechanics topics in stress analysis, deflection and stiffness, failure analysis, fracture mechanics, fatigue. **Prerequisite(s):** BNG 201 **Corequisite(s):** BNG 311L **Lecture/Lab Hours** There is a weekly laboratory.

BNG 331 - Cell-Tissue-Material Interaction

Course Units: 1

(Same as BIO 231) **(Spring; Khetan)** This course studies interactions between living cells, tissues and implant biomaterials, with a focus on molecular and cellular level phenomena in the initiation and generation of tissue and systemic responses. **Prerequisite(s):** BIO 112

BNG 338 - Mechanobiology

Course Units: 1

(Spring; Currey) This course will focus on the mechanical regulation of biological systems. The topics covered include principles and concepts of mechanobiology; embryogenesis and histogenesis of tissues with a focus on the skeletal system; physical forces at the cellular, tissue, and organ level; mechanical regulation of cellular behavior, tissue growth and organ development. **Prerequisite(s):** BNG 201 or equivalent.

BNG 344 - Biomechanics of Human Motion

Course Units: 1

(Not offered this Academic Year) Study of the dynamics of human motion through a series of modules comprised of lecture and laboratory activities. The modules will include: musculoskeletal modeling with inertial effects, determination of mass moments of inertia of body segments, principle mass moments of inertia, instrumentation used in kinematics and kinetics analyses, numerical differentiation and integration and terrestrial locomotion. **Prerequisite(s):** BNG 202 or equivalent.

BNG 345 - Orthopedic Biomechanics

Course Units: 1

(Fall; Currey) This course will examine issues in the field of Orthopaedic Biomechanics. We will explore the current state of knee, dental, spinal, and other orthopaedic implants. We will also look at treatments available for fracture healing. **Prerequisite(s):** BNG 202 or equivalent.

BNG 386 - Introduction to Biomedical Instrumentation

Course Units: 1

(Same as ECE 386) **(Winter; Buma)** Introduction to the theory and application of instruments in medicine. Measurements of the major systems in the body are covered. A weekly laboratory provides an opportunity to perform measurements and use biomedical instruments. **Prerequisite(s):** ECE 240 **Corequisite(s):** BNG 386L

BNG 397 - Biometric Signal Processing

Course Units: 1

(Same as ECE 377) **(Not offered this Academic Year)** This course details how signal processing is applied to create biometric systems, which are technologies that measure and analyze human body characteristics. These systems are widely used today in security and forensic applications. The course will reinforce many of the fundamental concepts that students have learned in their introductory DSP course and will cover both 1D (voice) and 2D (face and fingerprint) biometrics. **Prerequisite(s):** ECE 241 and CSC 10x **Corequisite(s):** BNG 397L **Lecture/Lab Hours** There is a weekly laboratory.

BNG 487 - Medical Imaging Systems

Course Units: 1

(Same as ECE 487) **(Not offered this Academic Year)** The basic physics, instrumentation, system design, and image reconstruction algorithms are covered for the following imaging modalities: ultrasound, radiography, x-ray computed tomography (CT), magnetic resonance imaging (MRI), planar scintigraphy, and positron emission tomography (PET). **Prerequisite(s):** ECE 241

BNG 490 - Bioengineering Independent Study 1

Course Units:

(Fall, Winter, Spring; Staff)

BNG 491 - Bioengineering Independent Study 2

Course Units:

(Fall, Winter, Spring; Staff)

BNG 492 - Bioengineering Independent Study 3

Course Units:

(Fall, Winter, Spring; Staff)

BNG 495 - Bioengineering Capstone Design

Course Units: 1

(Winter; Cotter, Khetan) A capstone design experience in which students work in teams on bioengineering design problems. Each team will use design methodologies and techniques to produce a complete and detailed design for a designated bioengineering client. **Prerequisite(s):** BNG 202 or ECE 241. **CC:** WS

BNG 497 - Bioengineering Senior Project 1

Course Units: 1

Capstone research or design project, performed either independently or as a team, under the supervision of one or more faculty participating in the Bioengineering program.

BNG 498 - Bioengineering Senior Project 2

Course Units: 1

Capstone research or design project, performed either independently or as a team, under the supervision of one or more faculty participating in the Bioengineering program. **Prerequisite(s):** BNG 497 **CC:** WAC

Chemistry

CHM 050 - Topics in Chemical Analysis - Forensic Chemistry

Course Units: 1

(Not offered this Academic Year) Introduction to the analytical approaches used by forensic chemists. These methods of analysis, including the use of research-grade instrumentation, will be applied in the laboratory to simulated "crime scene" evidence. **CC:** SCLB **Note:** Not open to students who have completed CHM 101 or CHM 110H, or have AP credit in chemistry.

CHM 060 - Meals to Molecules

Course Units: 1

(Not offered this Academic Year) What is a healthy diet? This course will discuss human nutrition from a molecular perspective. Readings from the textbook and laboratory exercises will familiarize the student with the components of foods and how these components are used by the human body. In addition, the course will examine the benefits and pitfalls of supplementation of the diet with vitamins, etc., and discuss how to interpret health claims. **Corequisite(s):** CHM 050L **CC:** SCLB **Note:** Not open to students who have completed CHM 101 or CHM 110H, or have AP credit in chemistry.

CHM 080 - Culinary Chemistry

Course Units: 1

(Fall, Spring; Hagerman, Tyler) This culinary-themed course is an introduction to the chemistry involved in food preparation and cooking. The course will include lecture and a laboratory experience with inquiry-based exercises in both the traditional chemical laboratory setting and a typical kitchen setting. Topics include the chemical make-up of the food we eat, the relationship between structure and flavor, and how chefs exert exquisite control over chemical reactions to create the flavor and texture of a gourmet meal. **CC:** SCLB **Note:** Not open to students who have completed CHM 101 or CHM 110H, or have AP credit in chemistry.

CHM 090 - The Art & Science of Painting

Course Units: 1

(Same as AAH 205) **(Not offered this Academic Year)** A historical and chemical grounding in the topic of painting and its impact on society, with focus on the 14th to 17th centuries. Topics include inorganic and organic pigments and binders used in the late medieval workshop, fresco, the tempera tradition, and oil painting in the Renaissance (properties of oil, mixing with pigments, glazing, drying). Students will work with primary sources and the secondary literature, and engage in laboratory experimentation. **CC:** SET, HUM

CHM 101 - Introductory Chemistry 1

Course Units: 1

(Fall, Winter, Spring; Staff) Chemistry 101 is an introductory course that focuses on atomic and molecular structure, chemical bonding, stoichiometry, aqueous chemical reactions, and the properties of gases, liquids, solids and solutions. **CC:** SCLB **Lecture/Lab Hours** Three lab hours each week. **Note:** Not open to students who have scored 4 or 5 on the AP Chemistry Exam or who have completed CHM 110H. All students who wish to enroll in an introductory chemistry course must take a placement examination to determine the appropriate course. See Course Selection guidelines for more information on placement.

CHM 102 - Introductory Chemistry 2

Course Units: 1

(Winter, Spring; Staff) A continuation of CHM 101, focusing on thermodynamics, chemical kinetics, chemical equilibrium, acids and bases, electrochemistry, and an introduction to organic chemistry. **Prerequisite(s):** CHM 101 or placement via the placement exam. **Corequisite(s):** CHM 101L **CC:** SCLB **Lecture/Lab Hours** Three lab hours each week. **Note:** Not open to students who have taken CHM 110H.

CHM 110H - Honors Introductory Chemistry

Course Units: 1

(Fall, Winter; Anderson, Lou) A laboratory-intensive course that will deal with the main topics of CHM 101 and CHM 102 and is meant to replace those courses for students who have strong backgrounds in introductory chemistry. Students who have scored 4 or 5 on the AP chemistry exam will be automatically placed into CHM 110H; see Course Selection guidelines for more information on placement. **Note:** Students who have scored 4 or 5 on the AP chemistry exam or who successfully complete CHM 110H will also receive AP credit for CHM 101.

CHM 224 - Frontiers of Nanotechnology and Nanomaterials

Course Units: 1

(Same as ESC 224) **(Winter; Staff)** An overview of nanotechnology and nanomaterials including interdisciplinary perspectives from engineering, materials science, chemistry, physics, and biology with emphases in sensors and actuators, nanoelectronics, alternative energy, nanocomposites, polymers, biomaterials and drug delivery. **Prerequisite(s):** PHY 111 or PHY 121 or IMP 113; MTH 115; and CHM 101 or CHM 110H; or permission of instructor.

CHM 231 - Organic Chemistry 1

Course Units: 1

(Fall, Winter; Staff) A mechanistic approach to the chemistry of carbon compounds organized around the reactions of functional groups. We cover alkanes, cycloalkanes, alcohols, alkyl halides (nucleophilic substitution and elimination), alkenes (addition and elimination), alkynes, spectroscopy (IR and NMR) and computer molecular modeling. **Prerequisite(s):** CHM 102 or CHM 110H **Lecture/Lab Hours** Four lab hours each week.

CHM 232 - Organic Chemistry 2

Course Units: 1

(Winter, Spring; Staff) A continuation of CHM 231 including an emphasis on synthesis, and the chemistry of conjugated and aromatic compounds, carbonyl compounds, and an introduction to important classes of biomolecules. **Prerequisite(s):** CHM 231 **Corequisite(s):** CHM 231L **Lecture/Lab Hours** Four lab hours each week.

CHM 240 - Analytical Chemistry

Course Units: 1

(Spring; Carroll, Lou) A course that focuses on the quantitative analysis of samples. Classroom and laboratory emphasis on statistical treatment of data, classical and instrumental methods of chemical analysis, and chemical equilibrium. **Prerequisite(s):** CHM 231 **Corequisite(s):** CHM 240L **Lecture/Lab Hours** Six lab hours each week.

CHM 245 - Environmental Chemistry

Course Units: 1

(Not offered this Academic Year) A course focused on the role of chemical principles such as chemical equilibrium, kinetics and chemical structure in understanding natural environmental cycles and the impacts of human activity on those cycles. Topics covered include: aquatic chemistry and water pollution, atmospheric chemistry and air pollution, energy and climate change, and toxic organic chemicals in the environment.

Prerequisite(s): CHM 231 **Note:** Class will meet four hours per week. There is no lab, but we will spend some class time on short field trips and conducting lab activities.

CHM 260 - Inorganic Chemistry

Course Units: 1

(Fall; Tyler) Foundations of inorganic chemistry with key focus on structure and symmetry, bonding, acid/base properties, reactivity, and physical characterization of inorganic compounds. Laboratory emphasis will focus on the synthesis and characterization of inorganic compounds and investigation of their physical properties. **Prerequisite(s):** CHM 231 or permission of the instructor. **Corequisite(s):** CHM 260L **Lecture/Lab Hours** Four lab hours each week.

CHM 291 - Chemistry Research Practicum 1

Course Units: 0

(Fall, Winter, Spring; Staff) This course is designed for students who want to gain research experience in chemistry or biochemistry under the direction of a member of the chemistry faculty. Expectations include a minimum of four hours per week of lab work, in addition to other requirements to be determined by individual research advisors. To receive Pass/Fail credit equivalent to one course, the student must earn 3 terms (normally in a row) of passing grades for the practicum experience. **Note:** Not open to students currently enrolled in CHM 491, CHM 492, CHM 493 or in a sophomore scholars project in the Chemistry Department.

CHM 292 - Chemistry Research Practicum 2

Course Units: 0

(Fall, Winter, Spring; Staff) This course is designed for students who want to gain research experience in chemistry or biochemistry under the direction of a member of the chemistry faculty. Expectations include a minimum of four hours per week of lab work, in addition to other requirements to be determined by individual research advisors. To receive Pass/Fail credit equivalent to one course, the student must earn 3 terms (normally in a row) of passing grades for the practicum experience. **Note:** Not open to students currently enrolled in CHM 491, CHM 492, CHM 493 or in a sophomore scholars project in the Chemistry Department.

CHM 293 - Chemistry Research Practicum 3

Course Units: 1

(Fall, Winter, Spring; Staff) This course is designed for students who want to gain research experience in chemistry or biochemistry under the direction of a member of the chemistry faculty. Expectations include a minimum of four hours per week of lab work, in addition to other requirements to be determined by individual research advisors. To receive Pass/Fail credit equivalent to one course, the student must earn 3 terms (normally in a row) of passing grades for the practicum experience. **Note:** Not open to students currently enrolled in CHM 491, CHM 492, CHM 493 or in a sophomore scholars project in the Chemistry Department.

CHM 295H - Chemistry Honors Independent Project 1

Course Units: 0

(Fall, Winter, Spring; Staff) Two-term sophomore independent study project on a chemistry- or biochemistry-related project under the direction of a member of the chemistry faculty, for students in the Union Scholars Program. Expectations include a minimum of six hours per week of lab work, in addition to other requirements to be determined by individual research advisors. Student receives a Pass/Fail grade in the first term of the project, and a letter grade and one course credit upon completion of the second term of the project. **Note:** Not open to students currently enrolled in CHM 491, CHM 492, or CHM 493.

CHM 296H - Chemistry Honors Independent Project 2

Course Units: 1

(Fall, Winter, Spring; Staff) Two-term sophomore independent study project on a chemistry- or biochemistry-related project under the direction of a member of the chemistry faculty, for students in the Union Scholars Program. Expectations include a minimum of six hours per week of lab work, in addition to other requirements to be determined by individual research advisors. Student receives a Pass/Fail grade in the first term of the project, and a letter grade and one course credit upon completion of the second term of the project. **Note:** Not open to students currently enrolled in CHM 491, CHM 492, or CHM 493.

CHM 330 - Medicinal Chemistry

Course Units: 1

(Spring; Kehlbeck) This course focuses on medicinal chemistry and the underlying principles of organic chemistry. Topics to be covered might include drug discovery, lead modification, drug-receptor interactions, structure-activity relationships (SAR), pro-drugs and biomimetics. Physicochemical properties and synthetic approaches to drug families will be especially emphasized. **Prerequisite(s):** CHM 232

CHM 332 - Synthetic Methods

Course Units: 1

(Not offered this Academic Year) This course focuses on developing the common laboratory techniques used in modern synthetic organic chemistry and the underlying principles of organic chemistry covered. Topics to be covered will be in the form of three synthetic projects. **Prerequisite(s):** CHM 232 **Lecture/Lab Hours** Six lab hours each week plus additional instrumentation time outsided of lab.

CHM 335 - Survey of Biochemistry

Course Units: 1

(Same as BIO 335 and BCH 335) **(Spring; Paulick)** (see BCH 335)

CHM 340 - Chemical Instrumentation

Course Units: 1

(Fall; MacManus-Spencer, McGarrah) Theory and practice of modern methods of analysis with emphasis on spectroscopic, chromatographic, electrochemical, and surface science techniques, as well as electronic measurements. **Prerequisite(s):** CHM 231, CHM 240, and one course in physics or permission of the instructor. **Corequisite(s):** CHM 340L **Lecture/Lab Hours** Four lab hours each week.

CHM 351 - Kinetics and Thermodynamics

Course Units: 1

(Winter; Huisman) Properties of gases; chemical kinetics; fundamentals of thermodynamics including heats of reactions and phase and chemical equilibria. **Prerequisite(s):** CHM 240, PHY 110 or PHY 120 and MTH 115 **Corequisite(s):** CHM 351L **Lecture/Lab Hours** Four lab hours each week.

CHM 352 - Quantum Chemistry

Course Units: 1

(**Spring; Anderson**) Fundamentals of quantum mechanics and its application to chemical bonding and spectroscopy. **Prerequisite(s):** CHM 351 and PHY 111 or PHY 121 **Corequisite(s):** CHM 352L **Lecture/Lab Hours** Four lab hours each week.

CHM 354 - Chemical Applications of Group Theory

Course Units: 1

(**Not offered this Academic Year**) A course on the role of molecular symmetry in chemistry. Topics include symmetry point groups, bonding in organic, inorganic, and organometallic compounds, orbital symmetry control of chemical reactions, and spectroscopy. **Prerequisite(s):** CHM 232 and CHM 352, MTH 115, and PHY 111 or PHY 121. CHM 352 may be taken concurrently.

CHM 360 - Advanced Inorganic Chemistry: Materials & Catalysis

Course Units: 1

(**Winter; Hagerman**) Structure/property relationships in solids, organometallics, homogeneous and heterogeneous catalysis, materials chemistry and inorganic nanomaterials. **Prerequisite(s):** CHM 260 and CHM 351 or permission of the instructor.

CHM 382 - Biochemistry: Structure and Catalysis

Course Units: 1

(Same as BCH 382 and BIO 382) (**Winter; Fox, Anderson**) Structure and function of proteins/enzymes including purification, mechanism, kinetics, regulation, metabolism and a detailed analysis of several classic protein systems. **Prerequisite(s):** CHM 232 **Corequisite(s):** CHM 382L **Lecture/Lab Hours** Four lab hours each week. **Note:** Not open to students who have completed CHM 335, BIO 335 or BCH 335.

CHM 491 - Chemical Research 1

Course Units: 1

(**Fall, Winter, Spring; Staff**) Chemical research under the direction of a member of the faculty. Thesis required. Expectations include a minimum of twelve hours per week of lab work, in addition to other requirements to be determined by individual research advisors. **Prerequisite(s):** CHM 232, CHM 240 (CHM 340 and CHM 351 are recommended), third-term junior standing, and/or permission of the department chair. **CC:** WS

CHM 492 - Chemical Research 2

Course Units: 1

(**Fall, Winter, Spring; Staff**) Chemical research under the direction of a member of the faculty. Thesis required. Expectations include a minimum of twelve hours per week of lab work, in addition to other requirements to be determined by individual research advisors. **Prerequisite(s):** CHM 232, CHM 240 (CHM 340 and CHM 351 are recommended), third-term junior standing, and/or permission of the department chair. **CC:** WS

CHM 493 - Chemical Research 3

Course Units: 1

(Fall, Winter, Spring; Staff) Chemical research under the direction of a member of the faculty. Thesis required. Expectations include a minimum of twelve hours per week of lab work, in addition to other requirements to be determined by individual research advisors. **Prerequisite(s):** CHM 232, CHM 240 (CHM 340 and CHM 351 are recommended), third-term junior standing, and/or permission of the department chair. **CC:** WS

Chinese

CHN 100 - Basic Chinese 1

Course Units: 1

(Fall; Staff) Basic skills for students who begin with no knowledge of Mandarin. **CC:** HUM

CHN 101 - Basic Chinese 2

Course Units: 1

(Winter; Staff) A continuation of CHN 100. **Prerequisite(s):** CHN 100 or permission of instructor. **CC:** LCCC, HUM

CHN 102 - Basic Chinese 3

Course Units: 1

(Spring; Staff) A continuation of CHN 101. **Prerequisite(s):** CHN 101 or permission of instructor. **CC:** LCCC, HUM

CHN 103 - Chinese for the Term Abroad

Course Units: 1

(Not offered this Academic Year) An introduction to Chinese language, combining Basic Chinese I and culture components. Open to students going on the term abroad or those with general interest in learning Chinese. Students who took CHN 100-CHN 102 sequence cannot take this course. **CC:** LCCC

CHN 200 - Intermediate Chinese 1

Course Units: 1

(Fall; Staff) Review, and continued development of all skills in Mandarin. **CC:** LCCC

CHN 201 - Intermediate Chinese 2

Course Units: 1

(Winter; Staff) Continuation of CHN 200. **Prerequisite(s):** CHN 200 or permission of instructor. **CC:** LCCC

CHN 202 - Intermediate Chinese 3

Course Units: 1

(Spring; Staff) Continuation of CHN 201. **Prerequisite(s):** CHN 201 or permission of instructor. **CC:** LCCC

CHN 204T - Chinese Language Studied Abroad

Course Units: 1

(Fall, Staff) See International Programs. **CC:** LCC **Note:** Fall term in China.

CHN 205T - Chinese Language Studied Abroad

Course Units: 1

(Fall; Staff) See International Programs. **Note:** Fall term in China.

CHN 250T - Chinese Language Studied Independently Abroad 1

Course Units: 1

CC: LCC

CHN 251T - Chinese Language Studied Independently Abroad 2

Course Units: 1

CC: LCC

CHN 300 - Advanced Intermediate Chinese 1

Course Units: 1

(Not offered this Academic Year) Continued formal study of the Chinese language. **Prerequisite(s):** CHN 202 or equivalent. **CC:** LCCC, HUM

CHN 301 - Advanced Intermediate Chinese 2

Course Units: 1

(Not offered this Academic Year) A continuation of CHN 300. **Prerequisite(s):** CHN 300 or permission of instructor. **CC:** LCCC, HUM

CHN 302 - Advanced Intermediate Chinese 3

Course Units: 1

(Not offered this Academic Year) A continuation of CHN 301. **Prerequisite(s):** CHN 301 or permission of instructor. **CC:** LCCC, HUM

CHN 320T - Chinese Civilization

Course Units: 1

(Fall; Staff) CC: LCCC

CHN 400 - The Changing Face of China

Course Units: 1

(Not offered this Academic Year) This course is designed for students who have completed three years of Chinese at the college level or the equivalent. More advanced authentic texts of diverse topics will be introduced to students that cover the sociopolitical, economic, and cultural dimensions of a drastically changing China sitting in the whirlwind of commercialization and globalization. Students will gain insight into contemporary China and develop a higher level of Chinese proficiency through class discussions, written compositions, TV news clips and film analyses. Class will be conducted entirely in Chinese. **Prerequisite(s):** CHN 302 or equivalent. **CC:** LCCC, HUM **Note:** Enrollment with the consent of the instructor.

CHN 401 - Media China

Course Units: 1

(Not offered this Academic Year) The course is designed for students who have completed three years of Chinese at the college level or the equivalent. Through analysis of more advanced and up-to-date authentic materials from China's mass media, students will not only develop a higher level of Chinese proficiency through class discussions, written compositions, research presentations, but also gain insight into contemporary China, as well as develop strong media literacy skills. Class will be conducted entirely in Chinese. **Prerequisite(s):** CHN 302 or equivalent. **CC:** LCCC, HUM **Note:** Enrollment with consent of the instructor.

CHN 489 - Chinese Senior Project

Course Units: 1

This project serves as a required, capstone course in the Chinese major. The project is designed in consultation with the faculty coordinator of senior projects. By permission of the faculty. **Prerequisite(s):** Intermediate-High to Advanced-Low proficiency or permission of the faculty coordinator. **CC:** LCCC

MLT 200 - Modern Chinese Literature

Course Units: 1

(Winter; Staff) An introduction to Chinese literature in the 20th Century. The publishing industry, and especially literature, played an influential role in shaping China's modern development. Students will study the origins of the New Culture movement's "new literature," analyze "revolutionary romanticism" and art for the masses, as well as examine contemporary works of popular fiction. The course relates China's literary and cultural trends within the local and global dimensions of modernity. All works in English. **CC:** HUL, LCC

MLT 201 - Chinese Cinema

Course Units: 1

(Not offered this Academic Year) From the glitzy production studios of 1930's Shanghai to the contemporary hinterlands of China, the backstreets of Hong Kong, and the towns of Taiwan, this course examines the development and transformation of Chinese cinema. It explores questions of aesthetics, Chinese identity, transnationalism, and representation. All films subtitled. **CC:** HUM, LCC

MLT 202 - Gender and Sexuality in Modern China

Course Units: 1

(Same as GSW 202) **(Not offered this Academic Year)** The course examines gender and sexuality in 20th-century China as a gateway to understanding the political, cultural, and economic realities of China today. We consider the figure of the "New Woman" during China's civil war and World War II, the androgynous ideal after the founding of the People's Republic, the "Successful Man" during China's economic reform, and the articulations of "Comrades" as part of local, national, and international conversations. Readings in English. All films subtitled. **CC: HUL, LCC**

MLT 203 - Asian American Film and Performance

Course Units: 1

(Also GSW 268) **(Not offered this Academic Year)** An examination of topics in Asian American studies through film and performance by and about Asian Americans. Class material draws from independent filmmakers, theatrical and artistic performances, as well as theoretical and critical texts on culture and diversity, gender, the diaspora, and ethnicity. **CC: HUM, LCC**

MLT 204 - Literary Traditions in East Asia

Course Units: 1

(Not offered this Academic Year) Literary developments in East Asia, looking closely at the aesthetic and philosophic foundations of its varied literature through poetic genres, story forms, oral storytelling, travel literature, and drama. **CC: HUL, LCC**

MLT 205 - Perspectives in Modern East Asian Literature

Course Units: 1

(Not offered this Academic Year) The literary and artistic developments in East Asia since the mid-19th century. The course considers questions of tradition, culture, modernity, globalism, and technology by examining cultural artifacts - novels, short stories, plays, paintings, architecture, music, and film. **CC: HUL, LCC**

MLT 209 - The New Wall of China

Course Units: 1

(same as ENS 222) **(Spring; Staff)** An interdisciplinary overview of dams and development, with specific attention to the socio-cultural, historical, economic, and environmental attributes of a region in China whose geo-political landscape has been dramatically impacted by the construction of the Three Gorges Dam. In providing a context to the dam's construction, students will be introduced to the intricate connections between all the above factors and engineering, technology, and the environment. **CC: LCC, SET**

Classics

CLS 110 - Ancient Egypt: History and Religion

Course Units: 1

(Winter; Bedford) This course offers an overview of the history of ancient Egypt from the rise of the state under the first pharaohs (3200 BC) to its incorporation into the Hellenistic and Roman empires. Attention is given to political and social organization, foreign relations, and religion based on a study of relevant ancient texts (in translation) and archaeological evidence. **CC: LCC, HUM**

CLS 111 - Ancient Iraq: History and Religion

Course Units: 1

(Not offered this Academic Year) Ancient Iraq is often termed 'the cradle of civilization' since it is here that agriculture, urbanism, and writing first occurred. This course examines the early history of Iraq (ancient Mesopotamia) from the development of agriculture and permanent settlements through to the establishment of the first cities and states, down to about 1600 BCE. The class examines the social and economic contexts in which early Mesopotamian culture emerged, and it also gives attention to religious and religion-political ideas **CC: LCC, HUM**

CLS 121 - The History of Greece to the Death of Alexander the Great

Course Units: 1

(Fall; Toher) Investigation of the circumstances that led to history's first democracy, the buildings on the Acropolis and the development of Greek literature from Homer to Sophocles and Plato; the invention of the "Western way" of war; the evolution of the Greek poleis and the confrontation with the emerging nation-state of Macedonia; the epochal wars of the Greek states with Persia and the disastrous conflict of Athens and Sparta in the Peloponnesian War; and Alexander's conquest of the "world" from the Mediterranean Sea to the rivers of India in a little over ten years. Readings include Homer's *Odyssey*, selected lives of Plutarch, and Thucydides. **CC: LCC, HUM**

CLS 125 - History of Rome

Course Units: 1

(Not offered this Academic Year) The history of Rome, its rise from earliest times through the Republic and its decline under the Empire to disaster in A.D. 410. **CC: HUM**

CLS 126 - The Rise of the Roman Republic

Course Units: 1

(Winter; Toher) The rise of Rome from its foundation (traditionally 753 BC) to the assassination of Caesar in 44 BC and the rise of his adopted son Octavian. How did a remote backwater of the Mediterranean rise to imperial power? Why did its constitutional machinery collapse? Was military dictatorship unavoidable? **CC: LCC, HUM**

CLS 129 - History of the Roman Empire

Course Units: 1

(Spring; Mueller) The Roman Empire from the rise of Octavian (later called Augustus) to decline, conversion, and final collapse circa AD 476. Augustus established Roman rule on the basis of his legions, a monarchy cloaked as republican government, and religious innovations that included formal worship of the emperor as a god on Earth. This system endured for centuries, but faced increasingly violent threats both from outside (Germanic tribes, Persians, Parthians) and from within (revolts, rebellions, Christians). How did Rome manage to endure as long as it did and why did Rome fail? **CC: HUL, HUM, LCC**

CLS 132 - Religion in the Pagan World

Course Units: 1

(Fall; Mueller) An examination of particular cults and the performance of cult in ancient Greek and Roman societies, and consideration of the relationship of the individual and the state to deity in the pre-Christian world. Emphasis on ancient sources. **CC:** LCC, HUM

CLS 134 - Classical Art and Architecture

Course Units: 1

(Same as AAH 110) **(Spring; Matthews)** An introductory survey of the arts of Greece and Rome, including painting, sculpture, architecture, and decorative arts. Emphasis will be placed upon learning art historical and archaeological terminology and methods, the place of art and architecture in ancient society and culture, and contacts with other cultures, in addition to becoming familiar with the most important monuments, artists, and patrons. **CC:** LCC, HUM

CLS 135 - In Search of the Past: Greek and Roman Historiography

Course Units: 1

(Not offered this Academic Year) An introduction to the origins, purpose, and methodology of the writing of history in the classical world. **CC:** HUL, LCC, HUM

CLS 137 - Greek and Roman Biography

Course Units: 1

(Not offered this Academic Year) A study of the origin and development of the genre of biography from the fourth century B.C. to the second century A.D., with extensive readings (all in English) of Nepos, Suetonius, and Plutarch. **CC:** HUL, LCC, HUM

CLS 139 - City of Rome

Course Units: 1

(Not offered this Academic Year) This course examines the city of Rome, addressing sites in their historical and cultural contexts. The focus is the ancient city, but we also examine the city at various periods in history, including World War II and the present day. We consider how and why a city gets built, what it means to live in a city, and who we can "read a city." Topics covered include venues of spectatorship, religious sites, the city of the emperors, water systems and roads, the political city, and travel and tourism. All readings are in English. **CC:** LCC, HUM

CLS 141T - Classical Greek Archaeology

Course Units: 1

(Fall; Staff) An introduction to the study of archaeology with field trips to various sites in and near Athens. Four hours per week. Offered only as part of the Term Abroad in Greece. **CC:** LCC

CLS 142 - Special Topics in Classics

Course Units: 1

(Not offered this Academic Year) CC: HUM

CLS 143 - Classical Mythology

Course Units: 1

(Not offered this Academic Year) Greek and Roman myths, with emphasis on the ancient sources. All readings will be in English. CC: LCC, HUL, HUM

CLS 146 - Sex and Gender in Classical Antiquity

Course Units: 1

(Not offered this Academic Year) The representations and realities of sexuality and gender in classical Greece and Rome. Primary focus on how ancient writers formulated the categories of "feminine" and "masculine" in discussions of ethics, nationality, education, politics, and science. This will enable students to think critically about some of the central literary works in the Western tradition through the socially charged categories of gender. Attention will also be directed to how literary representations compare with the actual social experience of ancient women, insofar as we may reconstruct it through the reading of literary, archaeological, and artistic evidence in social, familial, legal, and religious contexts. CC: LCC, HUM

CLS 151 - The Ancient World in Film and Literature

Course Units: 1

(Spring; Raucci) Greco-Roman antiquity has been a favorite topic of Hollywood for years. This fascination continues today, with the recent appearance of major blockbusters as well as TV productions. Why do the Greeks and Romans appeal to a modern audience? This course will consider ancient texts in translation alongside their modern film representations. Our goal will not be to consider where the films went "wrong." Instead, we will question how these films recast and reinterpret classical texts to reflect modern interests. This course will include an "entrepreneurship module." We will question what is entrepreneurship and if Hollywood's commodification of the ancient world is entrepreneurial. CC: LCC, HUL

CLS 153 - The Environment in the Ancient World

Course Units: 1

(Fall; Commito) Students will discover how ancient Mediterranean societies interacted with the natural world, as revealed by history, art and literature, and archaeology. Some of the questions we will investigate include: how did the Mediterranean environment affect and determine everyday life, both in cities and in rural areas? How did ancient societies manage their food supply? What was their view of nature? How did they react to ecological crisis? And, finally, how can we use their outlook on and treatment of the environment to inform our own approach? CC: HUM, LCC

CLS 154 - Poetry and the Cosmos

Course Units: 1

(Not offered this Academic Year) An examination of Greek and Roman poets' attempts to understand the origin and development of the universe, and of human beings' place in it. Readings (all in English) will include Hesiod, the pre-Socratic philosophers, and Lucretius. CC: HUL, LCC, HUM

CLS 157 - Entrepreneurship in the Ancient World

Course Units: 1

(Not offered this Academic Year) "Entrepreneurship" (or seizing upon and exploiting opportunity) is a mindset that has existed at various times and places. Through a variety of ancient sources, including legal, historical, and literary works, students will use the ancient world as a laboratory in which to observe and to assess what may or may not have constituted opportunity in the past and to examine strategies employed (as well as opportunities missed) for taking advantage of available resources in a variety of situations: economic, political, and religious. **CC: HUM**

CLS 158 - The Ancient "Other": Greeks, Romans, and Barbarians

Course Units: 1

(Not offered this Academic Year) Investigates the concept of the barbarian in ancient Greek and Roman culture, how the image of the barbarian was "constructed" by the Greeks and Romans and in turn defined their identity. The course will look at depictions both literary and visual of the peoples living on the edges of the Greco-Roman world and discuss the ways in which the barbarian came to invert, reflect, and criticize the Greeks and Romans themselves. Readings in English translation from historians, geographers, poets, philosophers, ancient novelists, and medical writers.

CC: LCC, HUM

CLS 160 - The Individual in Ancient Society

Course Units: 1

(Not offered this Academic Year) A study of the evolving concept of the individual in antiquity and the changing relationship of the individual and the family, state, and nature. Readings in English of major ancient authors. **CC: HUL, LCC**

CLS 161 - The Heroic Journey: Survey of Ancient Epic

Course Units: 1

(Not offered this Academic Year) An examination of four great epics of classical antiquity: Homer's Iliad and Odyssey, Virgil's Aeneid, and Ovid's Metamorphoses. All readings in English. **CC: HUL, LCC, HUM**

CLS 162 - Greek and Roman Tragedy in Translation

Course Units: 1

(Not offered this Academic Year) Readings in classical Greek tragedy and the tragedies of Seneca and selections from other Roman works. **CC: HUL, LCC, HUM**

CLS 163 - Greek and Roman Comedy in Translation

Course Units: 1

(Winter; Toher) Readings from the Greek comedies of Aristophanes and Menander, the Roman comedies of Plautus and Terence. **CC: HUL, LCC, HUM**

CLS 168 - Ancient Novel

Course Units: 1

(Not offered this Academic Year) A survey of the novel and its development in antiquity. Readings include a selection of complete and fragmentary

Greek romances by Chariton, Xenophon of Ephesus, Achilles Tatius, Longus, Heliodorus, and Lucian. The Roman comic novels will be Petronius's *Satyricon* and Apuleius's *Metamorphoses*. All readings in English. **CC:** HUL, LCC, HUM

CLS 178 - Ancient World Mythology

Course Units: 1

(Not offered this Academic Year) The myths of Greece, Rome, and the Ancient Near East, Egypt, Sumer, Babylonia, India, et al. reveal surprising similarities and startling differences. A comparative approach illuminates the peculiar characteristics of the various traditions. No culture exists in isolation. These societies were all subject to manifold political (and sometimes even violent) "multicultural" pressures. Rome itself, whose poet Ovid composed the "Bible" of the Western mythological tradition, stood at the head of a vast amalgam of peoples from the cold forests of Northern Europe across the god-infested lands of Greece to the ancient sands of Egypt and beyond. Everywhere we look we will find the interactions and conflicts of differing peoples, traditions, gods. We will listen to their sacred stories, their myths, and, through active comparison and investigation, strive to gain a general overview of the facts, a general understanding of their differing religious conceptions, and perhaps, we may hope, a glimpse into their ancient wisdom. The course will cover broad mythical themes: creation, gods, the underworld, and heroes. Other topics will include the nature of sacrifice and ritual, ancestor-worship, the afterlife, divine kingship, the role of myth in political propaganda, the role of politics and religion in myth, gender issues, and related themes. Given the vast range of the material, our journey will of necessity be selective. Lectures will range, for example, from general presentations of one cultural system to detailed examination of one particular type of god across several cultures. Although much of the focus will be on the ancient myths of Greece, Rome, Egypt, the Near East, and India, we will examine some (relatively) more recent myths from Africa and the Americas as well. **CC:** LCC, HUM

CLS 186 - Roman Law and Society

Course Units: 1

(Winter; Gazzarri) A survey of Roman law with special attention to constitutional history in the context of the conceptual development of civil law. Basic concepts of Rome's civil law include "person" (who qualified and under what conditions?), "property" (at the end of the day, what else was there?), "succession" (i.e., who inherited property when the owner died?), "contract" (the fine print has been important for a long time!), and "delict" (wrong-doing, damages, and remedies or, failing that, punishments). We will look, in other words, at the Roman constitution and its intersections with basic civil rights and the procedures for conducting one's affairs legally. Crimes and their punishments will hold our interest too, as will the influence of Roman legal thinking on European and American jurisprudence. **CC:** LCC, HUM

CLS 190 - Science and Technology in the Ancient World

Course Units: 1

(Spring; Gazzarri) This course is an introduction to the scientific and technological developments during the Greek and Roman periods. Students will deepen their understanding of the scientific method, acquire skills in its application in the evaluation of evidence, and learn about the impact of science and technology on ancient civilization. The time periods covered in this class will stretch from Bronze Age of Greece to the Late Roman Empire. This course will discuss a broad range of scientific and technological topics. Students will learn about this crucial aspect of antiquity predominantly through the reading of original sources in translation. Because of the diverse nature of the topics, the authors will range greatly, including such authors as Hesiod, Pliny the Elder, and Frontinus. Students will be expected to draw conclusions from the primary source material as well as connect the ancient texts to other scholarly readings. The secondary reading will be drawn from a variety of academic disciplines, including classics and history of science. Ultimately, students will gain a better understanding of the role that ancient technological and scientific developments have had in their own world. **CC:** HUM

CLS 192 - Ancient Medicine

Course Units: 1

(Fall; Singy) This course explores the Greek and Roman roots of Western medicine. How did the Hippocratic writers, Galen, and other physicians understand and treat the ailments of patients? And what did it mean, in the first place, to be a physician or a patient two millennia ago. **CC:** HUM

CLS 230 - Judaism and the Origins of Christianity

Course Units: 1

(same as REL 230) **(Not offered this Academic Year)** We know that Jesus of Nazareth was Jewish, so how is it that Christianity and Judaism became separate religions? This course attempts to answer this question by investigating the nature of the relationship between earliest Christianity and Rabbinic Judaism, drawing out their shared roots in the religion and literature of ancient Israel, and exploring the diverse expressions of second temple Judaism among which the two religious traditions emerged. It also explores their distinctive religious teachings and scriptural interpretations with a particular interest in understanding how and why Christianity and Judaism, despite their commonalities, parted ways and became independent religions. **CC: LCC, HUM**

CLS 242 - The Philosophy of Aristotle

Course Units: 1

(Same as PHL 242) **(Winter; Scheiter)** Students explore the philosophical ideas of Aristotle, perhaps the most celebrated and influential thinker in the history of philosophy. Particular attention will be paid to Aristotle's theory of being, which addresses the organic structure of both living things (plants and animals) and entities whose complex articulation is similarly "organic" (human political communities, works of art and other human artifacts). Readings will be from a variety of Aristotle's writings and may include Physics, Metaphysics, On the Soul, On the Parts of Animals, Politics, Poetics, and Aristotle's writings on logic, ethics, and rhetoric. **CC: HUM**

CLS 250 - Death in the West

Course Units: 1

(Not offered this Academic Year) An introduction to the "history of death" that has emerged from the fields of anthropology, archaeology, sociology, and history in the last 25 years. Through readings that present the death rituals of such different societies as eighth century B.C. Greece, the South Pacific islands, medieval Europe, and modern America, the course will examine the problems associated with composing a coherent account of how and why cultures respond to the threat that death presents to the social order, why that response can change over time, and the problems involved in a "history of death" and how this relates to the areas and methods of "traditional" history. **CC: LCC, HUM**

CLS 295H - Classics Honors Independent Project 1

Course Units: 0

CLS 296H - Classics Honors Independent Project 2

Course Units: 1

CLS 320 - Early Christian Thought

Course Units: 1

(Not offered this Academic Year) Christianity emerged in the context of late antique Greco-Roman culture with its roots in ancient Judaism. It drew on both of these in developing distinctive teachings regarding Christ, God, salvation, the church, ethics, and society. This course examines how over the period 50-450 CE debates around these topics led to the articulation of the normative Christian tradition. **CC: HUM**

CLS 361 - Seminar in Classical Studies

Course Units: 1

(Not offered this Academic Year) CC: HUM

CLS 490 - Classics Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study for qualified students. Periodic reports on a period of Greek or Roman history or a problem in Greco-Roman civilization. **Prerequisite(s):** Permission of the chair.

CLS 491 - Classics Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study for qualified students. Periodic reports on a period of Greek or Roman history or a problem in Greco-Roman civilization. **Prereq/Corequisite(s):** Permission of the chair.

CLS 492 - Classics Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study for qualified students. Periodic reports on a period of Greek or Roman history or a problem in Greco-Roman civilization. **Prerequisite(s):** Permission of the chair.

CLS 497 - Classics Senior Project

Course Units: 1

One-term senior project. CC: WS

CLS 498 - Classics Senior Thesis 1

Course Units: 0

(Fall-Winter or Winter-Spring; Staff) Independent reading and thesis in a subject in the field of Greek or Roman history or Greco-Roman civilization. **Prerequisite(s):** Permission of the chair.

CLS 499 - Classics Senior Thesis 2

Course Units: 2

(Fall-Winter or Winter-Spring; Staff) Independent reading and thesis in a subject in the field of Greek or Roman history or Greco-Roman civilization.

Computer Science

CSC 055 - Working with the Web

Course Units: 1

(Not offered this Academic Year) Design, writing, and publishing of WWW pages; creation of graphical images; study of the underlying Web technologies such as communication protocols, digital encoding and compression; programming of Web pages. **CC:** SET

CSC 080 - History of Computing

Course Units: 1

(Same as HST 292) **(Not offered this Academic Year)** A survey of tools for computation, from number systems and the abacus to contemporary digital computers. The course focuses on the development of modern electronic computers from ENIAC to the present. Study of hardware, software, and the societal effects of computing. **CC:** SET

CSC 103 - Taming Big Data: Introduction to Computer Science

Course Units: 1

(Fall; Webb) Introduction to the field of computer science with the theme of natural and social science applications. Introduces students to algorithms, basic data structures, and programming techniques. Includes development of programs and use of existing applications and tools for computational applications including simulation, data analysis, visualization, and other computational experiments. Includes a laboratory. **CC:** QMR, SET **Note:** A grade of C- or better is required in order to take any course that requires an introductory course as prerequisite. Once one has passed an introductory course with a C- or better, no other introductory course may be taken for credit.

CSC 104 - Robots Rule! Introduction to Computer Science

Course Units: 1

(Spring; Webb) Introduction to the field of computer science with a robotics theme. Introduces students to algorithms, basic data structures, and programming techniques. Students will build and program robots, exploring mobility, navigation, sensing, and inter-robot communication. Additional class topics include: history of robotics, social and ethical issues, emotionally intelligent behavior and other current topics in robotics. Includes a laboratory. **CC:** QMR, SET **Note:** A grade of C- or better is required in order to take any course that requires an introductory course as prerequisite. Once one has passed an introductory course with a C- or better, no other introductory course may be taken for credit.

CSC 105 - Game Development: Introduction to Computer Science

Course Units: 1

(Fall; Anderson) Introduction to the field of computer science with a computer games theme. Introduces students to algorithms, basic data structures, and programming techniques. Computer game development is used as an example application area and students implement their own games throughout the course. Includes a laboratory. **CC:** QMR, SET **Note:** A grade of C- or better is required in order to take any course that requires an introductory course as prerequisite. Once one has passed an introductory course with a C- or better, no other introductory course may be taken for credit.

CSC 106 - Can Computers Think? Introduction to Computer Science

Course Units: 1

(Winter; Striegnitz, Spring; Anderson) Introduction to the field of computer science with an artificial intelligence theme. Introduces algorithms,

basic data structures, programming techniques, and basic methods from artificial intelligence. Includes discussion of questions in the philosophy of artificial intelligence. Includes a laboratory. **CC:** QMR, **SET Note:** A grade of C- or better is required in order to take any course that requires an introductory course as prerequisite. Once one has passed an introductory course with a C- or better, no other introductory course may be taken for credit.

CSC 107 - Creative Computing: Introduction to Computer Science

Course Units: 1

(Winter; Webb) Introduction to the field of computer science with a media computation theme. Introduces students to algorithms, basic data structures, and programming techniques. Media computation is used as an application area, focusing on image manipulation, sound splicing, animations, HTML generation and automated reading of web pages. Includes a laboratory. **CC:** QMR, **SET Note:** A grade of C- or better is required in order to take any course that requires an introductory course as prerequisite. Once one has passed an introductory course with a C- or better, no other introductory course may be taken for credit.

CSC 109 - Computer Programming for Engineers: Introduction to Computer Science

Course Units: 1

(Fall; Webb, Winter; Anderson, Spring; Barr) Introduction to the field of computer science with an engineering applications theme. Topics include math and logical operations, data types, matrices, conditions and decisions, looping, subroutines, numerical methods, and plotting. **CC:** QMR, **SET Note:** A grade of C- or better is required in order to take any course that requires an introductory course as prerequisite. Once one has passed an introductory course with a C- or better, no other introductory course may be taken for credit.

CSC 112 - The Processed Pixel

Course Units: 1

(Same as AVA 270) **CC:** SET, HUM **Note:** This course **does not count** as an Introduction to Computer Science the way CSC 103 through CSC 109 do.

CSC 118 - Introduction to Computer and Logic Design

Course Units: 1

(Same as ECE 118) **Corequisite(s):** CSC 118L **CC:** SET **Note:** This course **does not count** as an Introduction to Computer Science the way CSC 103 through CSC 109 do.

CSC 120 - Programming on Purpose

Course Units: 1

(Winter; Spring; Staff) An introduction to software design principles aimed at making software more efficient, robust, readable, maintainable, and reusable. An introduction to object-oriented programming and design, including classes, objects, methods, and sub-typing. **Prerequisite(s):** CSC 103 , CSC 104 , CSC 105 , CSC 106 , CSC 107 , or CSC 109. **CC:** SET **Note:** A grade of C- or better is required to continue with any course that requires CSC-120 as a pre-requisite.

CSC 150 - Data Structures W/Lab

Course Units: 1

(Fall, Winter, Spring; Striegnitz) Basic concepts of data organization and abstraction, software design, stacks, queues, trees, and their implementation with linked structures. Programming in Java. **Prerequisite(s):** C- or higher in one course from CSC 103 to CSC 109. **Corequisite(s):** CSC 150L **Note:** A grade of C- or better is required in order to continue with any course that requires CSC-150 as a prerequisite.

CSC 151 - Data Structures

Course Units: 1

(Not offered this Academic Year) Basic concepts of data organization and abstraction, software design, stacks, queues, trees, and their implementation with linked structures. Programming in Java **Prerequisite(s):** MTH 197 and C- or higher in CSC 120 . Please note: MTH 199 can be used as a substitute for MTH 197. **Note:** A grade of C- or better is required in order to continue with any course that requires CSC-151 as a prerequisite.

CSC 206 - Natural Language Processing

Course Units: 1

This course studies computational techniques for processing human languages. It will introduce data structures and algorithms for various natural language processing tasks and applications, presenting statistically motivated as well as linguistically and psycholinguistically motivated methods. **Prerequisite(s):** C- or higher in one course from CSC 103 to CSC 109.

CSC 234 - Data Visualization

Course Units: 1

(Winter; Barr) Data has a story which has to be told! Data visualization is all around us, in print and in electronic media. Some of it is accurate and effective, while some is extremely unclear, confusing, or misleading. In this course we will study various approaches to information visualization and associated data analysis techniques. How do we take a lot of data, or very complex data, and present it in ways that allow it to communicate information clearly and effectively? The course will explore applications from science, medicine, social science, and humanities. **Prerequisite(s):** C- or higher in one course from CSC 103 to CSC 109.

CSC 235 - Modeling & Simulation

Course Units: 1

This course will study modeling and simulation as they occur in and apply to a number of different disciplines. It will cover system dynamics models which address major systems that change with time, and cellular automaton simulations that look more narrowly at individuals affecting individuals. Other topics will include rate of change, errors, simulation techniques, empirical modeling, and an introduction to high performance computing. **Prerequisite(s):** C- or higher in one course from CSC 103 to CSC 109.

CSC 236 - Computer Network Protocols

Course Units: 1

(Same as ECE 336)

CSC 237 - Data Communications and Networks

Course Units: 1
(Same as ECE 337)

CSC 240 - Web Programming

Course Units: 1

(Fall; Striegnitz) This course addresses the standards in programming applications for the Web. It covers the client-side technologies HTML, CSS, and JavaScript as well as server-side technologies PHP and MySQL. **Prerequisite(s):** C- or higher in one course from CSC 103 to CSC 109.

CSC 243 - Bioinformatics: Information Technology in the Life Sciences

Course Units: 1

(Same as BIO 243) **(Spring; Horton, Fernandes)** Biology and computer science students will gain a working knowledge of the basic principles of the others' discipline, and will collaborate together on bioinformatics projects. Topics include pairwise and multiple sequence alignments, phylogenetic trees, gene expression analysis, and protein structure prediction. Additional topics will be presented by invited speakers.

Prerequisite(s): BIO 225 or C- or higher in one course from CSC 103 to CSC 109.

CSC 245 - The Computer Science of Computer Games

Course Units: 1

(Not offered this Academic Year) This course surveys the field of computer science from the perspective of computer games. Topics explored include: rendering of graphics to a screen, implementation of realistic simulation, use of artificial intelligence in games, handling user input, game physics, collaborative development. Final course project is a complete computer game. **Prerequisite(s):** C- or higher in one course from CSC 103 to CSC 109.

CSC 250 - Algorithm Design and Analysis

Course Units: 1

(Spring; Anderson) Fundamental algorithms used in a variety of applications. Includes algorithms on list processing, string processing, geometric algorithms, and graph algorithms. **Prerequisite(s):** (1) C- or higher in CSC 151 or (2) MTH 197 and a C- or higher in CSC 150 or (3) permission of the instructor. MTH 199 can be substituted for MTH 197. **Note:** A grade of C- or better is required in order to continue with any course that requires CSC-250 as a prerequisite.

CSC 260 - Large-Scale Software Development

Course Units: 1

(Winter; Barr) Strategies for the systematic design, implementation, and testing of large software systems. Design notations, tools, and techniques. Design patterns and implementation idioms. Implementation, debugging, and testing. Includes team and individual software development projects. **Prerequisite(s):** C- or higher in CSC 150 or CSC 151 **Prereq/Corequisite(s):** Pre- or co-requisite: MTH 197 . MTH 199 can be substituted for MTH 197.

CSC 270 - Computer Organization

Course Units: 1

(Winter; Rieffel) The architecture and operation of the digital computer. CPU design, input/output, computer arithmetic, assembly language.

Prerequisite(s): C- or higher in CSC 150. **Corequisite(s):** CSC 270L **Lecture/Lab Hours** Includes a laboratory.

CSC 280 - User Interfaces

Course Units: 1

(Not offered this Academic Year) Introduction to the field of human-computer interaction (HCI) through the study of user interfaces. Theory and application of what makes an interface usable. Design principles, empirical studies, and statistical analyses will be employed in team-based projects. Students will make extensive use of equipment for recording and analyzing participants in both laboratory and field settings **Prerequisite(s):** C- or higher in either CSC 120 or CSC 150.

CSC 281 - Computer Science Practicum 1

Course Units: 0

(Fall, Winter, Spring; Staff) Under the supervision of a CSC faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one elective course, a student must receive a passing grade in three terms (normally in a row) of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and the department chair.

CSC 282 - Computer Science Practicum 2

Course Units: 0

(Fall, Winter, Spring; Staff) Under the supervision of a CSC faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one elective course, a student must receive a passing grade in three terms (normally in a row) of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and the department chair.

CSC 283 - Computer Science Practicum 3

Course Units: 1

(Fall, Winter, Spring; Staff) Under the supervision of a CSC faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one elective course, a student must receive a passing grade in three terms (normally in a row) of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and the department chair.

CSC 290 - Computer Science Independent Study 1

Course Units: 1

Independent work on a CS topic of interest under the supervision of a CS faculty member. This course should be used for work that the supervising faculty member deems equivalent to a 100-level or 200-level course. For higher level course equivalences, use CSC 490. **Prerequisite(s):** Permission of the instructor.

CSC 291 - Computer Science Independent Study 2

Course Units: 1

Independent work on a CS topic of interest under the supervision of a CS faculty member. This course should be used for work that the supervising

faculty member deems equivalent to a 100-level or 200-level course. For higher level course equivalences, use CSC 490. **Prerequisite(s):** Permission of the instructor.

CSC 292 - Computer Science Independent Study 3

Course Units: 1

Independent work on a CS topic of interest under the supervision of a CS faculty member. This course should be used for work that the supervising faculty member deems equivalent to a 100-level or 200-level course. For higher level course equivalences, use CSC 490. **Prerequisite(s):** Permission of the instructor.

CSC 318 - Digital Design

Course Units: 1

(Same as ECE 318) **Corequisite(s):** CSC 318L

CSC 320 - Artificial Intelligence

Course Units: 1

(Fall; Strieginitz) Fundamental concepts used in creating "intelligent" computer systems; semantic representation, logical deduction, natural language processing, and game playing; expert systems, knowledge-based systems, and elementary robotics. **Prerequisite(s):** C- or higher in either CSC 150 or CSC 250 or permission of the instructor. Recommended: CSC 250

CSC 321 - Data Mining and Machine Learning

Course Units: 1

(Not offered this Academic Year) Introduces Data Mining, where previously unknown and potentially useful information is automatically extracted from data sources, using regularities or patterns of implicit information. Such patterns can be used to make predictions over future data, and be used to explain and understand the nature of that data. Machine Learning is one mechanism by which data mining is achieved. It is used to discover and extract information from raw data. This course will cover tools and techniques of machine learning that are used in practical data mining.

Prerequisite(s): C- or higher in either CSC 150 or CSC 151

CSC 325 - Robotics

Course Units: 1

(Not offered this Academic Year) The course will cover basic algorithms necessary for motor control. Building on these methods we will discuss higher level navigation for mobile robots, as well as the sensing necessary for localization of the robot in its environment. Finally we will also examine the challenges of motion planning for jointed robots with many degrees of freedom. **Prerequisite(s):** C- or higher in either CSC 151 or CSC 250 or permission of the instructor.

CSC 329 - Neural Networks

Course Units: 1

(Same as ECE 329)

CSC 333 - Introduction to Parallel Computing

Course Units: 1

(Not offered this Academic Year) Synchronization and communication in concurrent programs. Parallel computing with libraries for shared-memory programming and for cluster computing. Introduction to algorithms for parallel scientific computing. **Prerequisite(s):** C- or higher in CSC 250 or CSC 270

CSC 335 - Operating Systems

Course Units: 1

(Not offered this Academic Year) Selected topics in operating system development including process and thread management, concurrency, memory and file system management, resource allocation, job scheduling, and security. **Prerequisite(s):** C- or higher in CSC 270 **and** Junior standing.

CSC 340 - Introduction to Databases

Course Units: 1

(Not offered this Academic Year) Introduction to data models and database design. Coverage of network, hierarchical, and relational architectures with emphasis on the latter. Study of relational algebra, entity-relationship modeling, and data normalization. Study of fourth generation query languages including SQL. Introduction to centralized, distributed, federated, and mediated systems. **Prerequisite(s):** (1) C- or higher in CSC 151 **or** (2) MTH 197 and a C- or higher in CSC 150 . **Please note:** MTH 199 can be substituted for MTH 197.

CSC 350 - Theory of Computing

Course Units: 1

(Fall; Anderson) A discussion of the fundamental ideas and models underlying computing: properties of formal languages, finite automata, regular expressions, pushdown automata, context-free languages, Turing machines, and undecidability. **Prerequisite(s):** (1) C- or higher in CSC 151 **or** (2) MTH 197 and a C- or higher in CSC 150 . MTH 199 can be substituted for MTH 197.

CSC 352 - Embedded Microcontroller Systems and Robotics

Course Units: 1

Same as ECE 352 **Corequisite(s):** CSC 352L

CSC 354 - VLSI System Design

Course Units: 1

Same as ECE 354 **Corequisite(s):** CSC 354L

CSC 360 - Software Engineering

Course Units: 1

(Not offered this Academic Year) Strategies for the specification, design, production, testing, and support of computer programs; software development models; programming team structures; documentation; and maintenance. **Prerequisite(s):** C- or higher in CSC 260

CSC 370 - Programming Languages

Course Units: 1

(Not offered this Academic Year) An introduction to issues in programming language design and implementation. Major programming language paradigms: functional, logic, and object-oriented, and their use. **Prerequisite(s):** C- or higher in CSC 150 or CSC 151 and junior standing.

CSC 375 - Compiler Design

Course Units: 1

Principles and practices for the design and implementation of compilers and interpreters. Will cover the stages of the compilation and execution process: lexical analysis; parsing; symbol tables; type systems; scope; semantic analysis; intermediate representations; run-time environments and interpreters; code generation; program analysis and optimization; and garbage collection. Students will construct a full compiler for a simple object-oriented language. **Prerequisite(s):** C- or higher in CSC 151 or CSC 250. Recommended: CSC 260.

CSC 385 - Computer Graphics

Course Units: 1

(Winter; Cass) Implementation and use of algorithms for computer graphics. Rendering and representation of 3D objects. Lighting, shading and texture mapping surfaces of 3D objects. Programming interactive graphics applications. Constructing 3D models of real-world objects
Prerequisite(s): (1) C- or higher in CSC 151 or (2) MTH 197 and a C- or higher in CSC 150. **Note:** MTH 199 can substituted for MTH 197.

CSC 483 - Selected Topics in Computer Science

Course Units: 1

(Not offered this Academic Year)

CSC 490 - Computer Science Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) This course should be used for work that the supervising faculty member deems equivalent to a 300-level or 400-level course. For lower level course equivalences, use CSC 290 **Prerequisite(s):** Permission of department chair.

CSC 491 - Computer Science Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) This course should be used for work that the supervising faculty member deems equivalent to a 300-level or 400-level course. For lower level course equivalences, use CSC 290. **Prerequisite(s):** Permission of department chair.

CSC 492 - Computer Science Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) This course should be used for work that the supervising faculty member deems equivalent to a 300-level or 400-level course. For lower level course equivalences, use CSC 290 . **Prerequisite(s):** Permission of department chair.

CSC 497 - Computer Science Capstone Seminar

Course Units: 0.5

(Spring; Cass) Development of the skills necessary for independent research: Reading scholarly works, designing experiments and empirically evaluating their results. Development of a comprehensive senior capstone project proposal. Investigation of professional ethics, skills and responsibilities. **Note:** Normally taken in Spring of the Junior year.

CSC 498 - Computer Science Capstone Project 1

Course Units: 0.75

(Fall, Winter, Spring; Staff) Design, implementation, and evaluation of the capstone project. **Prerequisite(s):** CSC 497 **Note:** Normally taken during the Senior year.

CSC 499 - Computer Science Capstone Project 2

Course Units: 0.75

(Fall, Winter, Spring; Staff) Design, implementation, and evaluation of the capstone project. **Prerequisite(s):** CSC 498 **CC: WS Note:** Normally taken during the Senior year.

Electrical Engineering

ECE 011 - Practicum: Electrical and Computer Engineering

Course Units: 0

(Fall, Winter, Spring; Staff) Hands-on exercises, lectures, field trips and guest speakers will demonstrate practical applications of ECE and how these applications are related to the core curriculum. Each offering of the course will differ and include topics such as audio engineering, speech acoustics, energy and the environment, power systems, digital signal processing, global communications, nanotechnology, microscopy (scanning electron microscopy, atomic force microscopy), optics, robotics, etc. This practicum will be of interest to students who would like more information about career paths that are possible with an Electrical and Computer Engineering degree. Students must pass three terms of the practicum in order to receive one course credit. **Note:** The course is graded pass/fail.

ECE 101 - The Joy of Electronics

Course Units: 1

(Winter, Spring; Staff) Introduction to the tools, skills, and principles of electrical and computer engineering. Emphasis is placed on developing an intuitive understanding while learning quantitative methods to design, test, and analyze electronics. Test and measurement tools include

oscilloscopes, multimeters, and function generators. Circuit construction techniques include breadboarding and soldering as well as computer software to simulate circuits. Principles such as power, frequency, and modulation are taught through analog and digital electronics projects. Hands-on projects include an audio amplifier, crystal radio receiver, digital clock, and a microcontroller-operated robotic arm. **Prerequisite(s):** None.

ECE 118 - Introduction to Computer and Logic Design

Course Units: 1

(Same as CSC 118) **(Fall; Hedrick)** Fundamental material in the area of digital logic circuit analysis and synthesis, and computer organization. The components of digital computers are studied at the gate level, the function level, and the machine organization level. Weekly team-based laboratory exercises and a course portfolio are required. **Corequisite(s):** ECE 118L **CC:** SET

ECE 218 - Embedded Microcontroller Projects

Course Units: 1

Focuses on the design and implementation of microcontroller systems. Topics include microcontroller architecture, interfacing, programming for control applications, multitasking, and tools used in embedded system design. The course includes a weekly project-based laboratory.

Prerequisite(s): ECE 118

ECE 222 - Introduction to Circuits and Electronics

Course Units: 1

(Winter, Spring; Staff) Electrical quantities, circuit principles, analysis and response of basic circuits, semiconductor physics, diodes, transistors, and operational amplifiers. **Prerequisite(s):** PHY 121 or IMP 113 **Corequisite(s):** ECE 222L **Lecture/Lab Hours** Includes a weekly lab. **Note:** Not open to Electrical or Computer Engineering, or Bioengineering majors, or to students who have taken ECE 225.

ECE 225 - Electric Circuits

Course Units: 1

(Fall, Winter; Dosiek) Basic electrical circuit concepts and devices such as Ohm's law, Kirchhoff's laws, Thevenin and Norton equivalents, operational amplifiers, analysis methods, capacitors, inductors, ideal transformers, phasors, AC steady state analysis, complex power, frequency response and filters. **Prerequisite(s):** MTH 102 or MTH 112 or MTH 113 or IMP 112 **Corequisite(s):** ECE 225L **Lecture/Lab Hours** Includes a weekly lab.

ECE 240 - Circuits and Systems

Course Units: 1

(Winter, Spring; Staff) Transient analysis of RLC circuits; modeling of circuits using differential equations; system models and properties; Laplace transforms applied to circuit and system design and analysis; system functions; complex frequency; poles and zeros; stability; frequency response; filter design. **Prerequisite(s):** ECE 225 **Corequisite(s):** ECE 240L **Prereq/Corequisite(s):** MTH 130 or MTH 234 **Lecture/Lab Hours** Includes a weekly lab.

ECE 241 - Discrete Systems

Course Units: 1

(Fall, Spring; Catravas) Discrete signals and systems; classification and properties of systems; difference equations; Z-transform; Fourier series, Fourier transforms, the DFT and FFT; filters and filter design; A/D and D/A converters; applications to audio signal processing. **Prerequisite(s):** ECE 240 **Corequisite(s):** ECE 241L **Lecture/Lab Hours** Includes a weekly lab.

ECE 248 - Introduction to Semiconductor Devices and Circuits

Course Units: 1

(Spring; Buma) Semiconductors: theory of operation of diodes and transistors; circuit models; basic electronic circuits and amplifiers: transfer characteristics and inverters. **Prerequisite(s):** ECE 225 **Corequisite(s):** ECE 248L **Lecture/Lab Hours** Includes a weekly lab.

ECE 281 - Electrical and Computer Engineering Practicum 1

Course Units: 0

(Fall, Winter, Spring; Staff) Under the supervision of an ECE faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one free elective course, a student must receive a passing grade in three terms of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and the department chair is required.

ECE 282 - Electrical and Computer Engineering Practicum 2

Course Units: 0

(Fall, Winter, Spring; Staff) Under the supervision of an ECE faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one free elective course, a student must receive a passing grade in three terms of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and the department chair is required.

ECE 283 - Electrical and Computer Engineering Practicum 3

Course Units: 1

(Fall, Winter, Spring; Staff) Under the supervision of an ECE faculty member, students may participate in undergraduate research or a design project. To receive pass/fail credit equivalent to one free elective course, a student must receive a passing grade in three terms of the practicum course. Up to two credits may be earned in this way. **Prerequisite(s):** Permission of the faculty supervisor and the department chair is required.

ECE 295H - Electrical and Computer Engineering Honors Independent Project 1

Course Units: 0

(Fall, Winter, Spring; Staff) Sophomore project in Electrical and Computer Engineering for students participating in a scholars program. **Prerequisite(s):** Permission of the instructor.

ECE 296H - Electrical and Computer Engineering Honors Independent Project 2

Course Units: 1

(Fall, Winter, Spring; Staff) Sophomore project in Electrical and Computer Engineering for students participating in a scholars program. **Prerequisite(s):** Permission of the instructor.

ECE 310 - Electronic Devices

Course Units: 1

(Not offered this Academic Year) Terminal characteristics and theory of electronic devices; band theory, photo and electronic effects, PN junctions; bipolar and field effect transistors, discrete and integrated electronics. **Prerequisite(s):** ECE 248

ECE 318 - Digital Design

Course Units: 1

(Same as CSC 318) **(Winter; Traver)** The design of digital hardware systems at the module level using modern approaches. Datapath and control unit design, hardware description languages, programmable device implementations. Laboratory exercises using electronic design automation tools and a design project are required. **Prerequisite(s):** ECE 118 **Corequisite(s):** ECE 318L

ECE 325 - Acoustics of Speech Communication

Course Units: 1

(Not offered this Academic Year) Acoustics, circuit theory, and signal processing applied to analysis of speech signals; Physiology of speech production; Articulatory phonetics; Acoustical and articulatory description of phonetic features and of prosodic aspects of speech; Perception of speech; Models of speech production and planning; Some applications to recognition and generation of speech by machine, and to the study of speech disorders. **Prerequisite(s):** ECE 241

ECE 329 - Neural Networks

Course Units: 1

(Same as CSC 329) **(Not offered this Academic Year)** Topics include the biological basis of artificial neural networks, neuron models and architectures, backpropagation, associative and competitive learning. Weekly computer laboratories and a final project required. **Prerequisite(s):** MTH 130 or MTH 234, CSC 150 for CS students.

ECE 333 - Transmission Line Circuits and Applications

Course Units: 1

(Not offered this Academic Year) Topics include sinusoidal sources, impedances, admittances, and basic circuit analysis; voltage and current as traveling waves; RLC circuit models and transmission line equations; characteristic impedance and propagation constant; reflection coefficient and power transfer; introduction of using matching circuits to reduce power loss; analysis and design of lumped-parameter (RLC) and distributed-parameter (transmission line) matching circuits; Smith Chart as an analysis/design tool. Includes a weekly studio session. **Prerequisite(s):** ECE 225 or equivalent. **Corequisite(s):** ECE 333L

ECE 336 - Computer Network Protocols

Course Units: 1

(Same as CSC 236) **(Not offered this Academic Year)** Design, analysis, and operation of communication protocols for computer networks; TCP/IP, addressing, switching, routing, congestion control, application protocols. **Prerequisite(s):** One of CSC 103 to CSC 109, or equivalent programming ability.

ECE 337 - Data Communications and Networks

Course Units: 1

(Same as CSC 237) **(Fall; Spinelli)** An introduction to the physical and data link layers of data communication networks, including error detection, and local area networks. **Prerequisite(s):** ECE 118 or one of CSC 103, CSC 104, CSC 105, CSC 106, CSC 107, CSC 109.

ECE 341 - Energy Conversion

Course Units: 1

(Not offered this Academic Year) Theory of electromechanical energy conversion; characteristics of transformers and DC induction; and synchronous machines. **Prerequisite(s):** ECE 225

ECE 342 - Power Electronics

Course Units: 1

(Not offered this Academic Year) Rectifying devices and rectifier circuits: device characteristics, waveforms, harmonic content filtering. Controlled rectifiers (thyristors, triacs): device characteristics, single phase and multiphase systems. Snubber circuits and diode limitations. DC-DC converters: design, application, topologies. Energy storage element selection and design: capacitors and inductors. **Prerequisite(s):** ECE 248, ECE 350

ECE 343 - Introduction to Electromagnetic Engineering

Course Units: 1

(Spring; Dosiek) Traveling waves: transmission lines; electrostatics; magnetostatics; applications to engineering problems; solutions by analytical and numerical techniques. **Prerequisite(s):** ECE 240, (MTH 117 and PHY 121) or IMP113 **Corequisite(s):** ECE 343L

ECE 344 - Electric Machines and Drives

Course Units: 1

(Not offered this Academic Year) Introduction to electric drives; understanding mechanical system requirements; DC motors and variable speed drives; current, speed, and position controllers; induction machine variable speed drives; space vectors; permanent magnet AC and brushless DC motors; efficiency considerations and applications to alternative energy systems. **Prerequisite(s):** ECE 240

ECE 347 - Image Processing

Course Units: 1

(Not offered this Academic Year) The course covers the basic operations performed on digital images. These include digitization, image enhancement and restoration, color image processing, and image compression using the discrete cosine transform and wavelets. **Prerequisite(s):** ECE 241

ECE 348 - Digital Circuits

Course Units: 1

(Not offered this Academic Year) Special circuitry of digital systems; transistors as switches, logic gate families (RTL, DTL, TTL, ECL, MOS, CMOS, etc.), digital ICs semiconductor memories. Design projects required. **Prerequisite(s):** ECE 118, ECE 248, or permission of the instructor. **Corequisite(s):** ECE 348L

ECE 350 - Communication Systems

Course Units: 1

(Spring; Hanson) Frequency domain analysis, signal space representations, and their application to wireless communications; quality measures; performance in the presence of noise. **Prerequisite(s):** ECE 241 **Corequisite(s):** ECE 350L **Lecture/Lab Hours** Includes a weekly laboratory.

ECE 351 - Probability and Digital Communications

Course Units: 1

(Fall; Spinelli) An introduction to probability with an emphasis on applications in digital communications. Digital signaling, coding, probability of error, matched filters, optimum receiver design, source entropy, channel capacity. **Prerequisite(s):** ECE 118, ECE 240

ECE 354 - VLSI System Design

Course Units: 1

(Same as CSC 354) **(Not offered this Academic Year)** Design of very large scale integrated systems including standard CMOS and more advanced and emerging technologies in nanoelectronics. Design from logic to physical levels and manufacturing processes. System-on-chip technologies and applications. **Prerequisite(s):** ECE 118 and (ECE 225 or ECE 222) **Corequisite(s):** ECE 354L

ECE 358 - Waves in Communication

Course Units: 1

(Not offered this Academic Year) Covers the basic concepts needed to develop electromagnetic devices in communication circuits/systems. Wave propagation and transmission, antenna concepts, design considerations, Friis transmission formula and radar equation, transmission line theory and guided waves. **Prerequisite(s):** PHY 121 or equivalent.

ECE 360 - Power System Analysis 1

Course Units: 1

(Not offered this Academic Year) Power and energy in single-phase and polyphase circuits; transformer characteristics; single-line and three-line diagrams; load flow; per-unit analysis; instrument transformers; power system fault duty and x/r ; switching and lightning transients; power factor correction; power quality standards. **Prerequisite(s):** ECE 225

ECE 361 - Power System Analysis 2

Course Units: 1

(Not offered this Academic Year) Wave-propagation in transmission lines; analysis of power networks, load-flow solutions, and control; three-phase faults and symmetrical components; power system protection; stability of power systems. **Prerequisite(s):** ECE 225 or ECE 360

ECE 363 - Analysis and Design of Electronic Circuits

Course Units: 1

(Fall; Buma) Multiple-stage amplifiers; Differential amplifiers; Frequency response of amplifiers; Feedback amplifier; Stability of electronic circuits; Analysis and design of operational amplifiers. **Prerequisite(s):** ECE 248 **Corequisite(s):** ECE 363L **Lecture/Lab Hours** Includes a weekly lab.

ECE 366 - Control Systems

Course Units: 1

(Winter; Staff) Modeling of control systems by block diagrams and flow graphs. Analysis of control systems response, error and stability, Root-Locus method, and frequency domain methods (Nyquist, Bode, and Nichols). **Prerequisite(s):** ECE 240 **Corequisite(s):** ECE 366L **Lecture/Lab Hours** Laboratory and design project.

ECE 368 - Introduction to Antenna Theory

Course Units: 1

(Not offered this Academic Year) This course will cover the basic concepts in antenna engineering. These include radiation and radiating systems, fundamental parameters of antennas, wire antennas, antenna arrays, aperture antennas, microstrip antennas, antenna synthesis, integral equation and the method of moments. **Prerequisite(s):** ECE 343 or equivalent.

ECE 370 - Engineering Acoustics

Course Units: 1

(Not offered this Academic Year) Course topics will include principles of acoustics, electromagnetics, circuit theory and signal processing applied to the analysis of musical instruments, experimental characterization techniques, digital instruments, MIDI. The symbiosis between music and the hard sciences will be surveyed. Attendance at some out-of-class events is required. Please contact the instructor in advance for a list of dates. **Prerequisite(s):** ECE 241 **Prereq/Corequisite(s):** ECE 343

ECE 377 - Biometrics

Course Units: 1

(Same as BNG 397) **(Spring; Cotter)** Signal processing applied to create technologies which measure and analyze human body characteristics such as voice, face, and fingerprint biometrics which may be used in security and forensic applications. The societal and ethical issues involved will be addressed. **Prerequisite(s):** ECE 241, CSC 10X

ECE 386 - Introduction to Biomedical Instrumentation

Course Units: 1

(Same as BNG 386) **(Winter; Buma)** Introduction to the theory and application of instruments in medicine. Measurements of the major systems in the body are covered. A weekly laboratory provides an opportunity to perform measurements and use biomedical instruments. **Prerequisite(s):** ECE 240 **Corequisite(s):** ECE 386L

ECE 420 - Introduction to State Space Analysis and Control

Course Units: 1

(Not offered this Academic Year) Formulations of state equations. State space representation of linear systems. Dynamic characteristics of linear systems. Eigenvalues and eigenvectors. Solution of state equations. Controllability and Observability. Pole placement. Linear observers.

Prerequisite(s): ECE 366

ECE 463 - Fundamentals of Wireless Electronics

Course Units: 1

(Not offered this Academic Year) Review of phasor analysis; inductance and coupling networks; resonance; complex power and power transfer; transmission line theory and applications; introduction to matching network design. Includes a weekly studio/lab session. **Prerequisite(s):** ECE 225 or equivalent **Corequisite(s):** ECE 463L

ECE 481 - Special Topics in Electrical and Computer Engineering

Course Units: 1

Topics chosen from the current literature according to faculty and student interest. Each of these special topics courses has variable content addressing specific current areas of interest to students. They will be offered whenever the need arises.

ECE 482 - Special Topics in Electrical and Computer Engineering

Course Units: 1

Topics chosen from the current literature according to faculty and student interest. Each of these special topics courses has variable content addressing specific current areas of interest to students. They will be offered whenever the need arises.

ECE 483 - Special Topics in Electrical and Computer Engineering

Course Units: 1

Topics chosen from the current literature according to faculty and student interest. Each of these special topics courses has variable content addressing specific current areas of interest to students. They will be offered whenever the need arises.

ECE 487 - Medical Imaging Systems

Course Units: 1

(Same as BNG 487) **(Winter; Buma)** The basic physics, instrumentation, system design, and image reconstruction algorithms are covered for the following imaging modalities: ultrasound, radiography, x-ray computed tomography (CT), magnetic resonance imaging (MRI), planar scintigraphy, and positron emission tomography (PET). **Prerequisite(s):** ECE 241

ECE 490 - Electrical and Computer Engineering Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff)

ECE 491 - Electrical and Computer Engineering Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff)

ECE 492 - Electrical and Computer Engineering Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff)

ECE 493 - Electrical and Computer Engineering Independent Study 4

Course Units: 1

(Fall, Winter, Spring; Staff)

ECE 494 - Electrical and Computer Engineering Independent Study 5

Course Units: 1

(Fall, Winter, Spring; Staff)

ECE 495 - Electrical and Computer Engineering Independent Study 6

Course Units: 1

(Fall, Winter, Spring; Staff)

ECE 496 - Electrical and Computer Engineering Independent Study 7

Course Units: 1

(Fall, Winter, Spring; Staff)

ECE 497 - Electrical and Computer Engineering Capstone Design Project 1

Course Units: 0.5

(Spring 1/2; Hanson) Topics in the seminar include professional and ethical responsibilities; the historical and societal context of electrical and computer engineering; contemporary issues, and the specification, analysis, design, implementation, and testing phases of a design project. Research papers, project reports, and oral presentations are required.

ECE 498 - Electrical and Computer Engineering Capstone Design Project 2

Course Units: 0.5

(Fall 1/2; Staff) The second term of the capstone design project. Students complete the design and begin the implementation of a system under the supervision of one or more faculty members. An oral presentation and design report are required.

ECE 499 - Electrical and Computer Engineering Capstone Design Project 3

Course Units: 1

(Winter 1; Staff) Students complete the implementation, testing, and evaluation of a system under the supervision of one or more faculty members. A final presentation and design report are required. **CC:** WS

Economics

ECO 101 - Introduction to Economics

Course Units: 1

(Fall, Winter, Spring; Staff) Basic microeconomic model of price determination; impact of market structure on price and output decisions by firms; role of the public sector in an economy; basic macroeconomic model of national income determination; impact of fiscal and monetary policies on employment levels, price stability, and economic growth; international economic relationships. **CC:** SOCS

ECO 122 - Judgment and Decision Making

Course Units: 1

(Crossed with PSY 222) **(Not offered this Academic Year)** An introduction to the scientific study of judgment and decision making, featuring perspectives from cognitive psychology and behavioral economics. Students will learn major theoretical concepts and empirical results from the literature, as well as how they apply to real-world issues. Students should also expect to improve their own ability to evaluate evidence and make rational, well-informed decisions in their own lives. **Prerequisite(s):** PSY 100 (for Psychology majors); BIO 210 or PSY 210 (for Neuroscience majors); ECO 101 (for Economics majors)

ECO 123 - Values, Norms, and Economic Justice

Course Units: 1

(Same as PHL 123) **(Not offered this Academic Year)** This class considers the goals economic policy might pursue and how different theories of the good lead to particular choices about desirable or undesirable economic policies. We consider mainstream economic thinking, which has roots in utilitarianism and liberalism, and alternative ideas such as libertarianism, Austrian economics, feminist, communitarian, and religious philosophy and economics. We apply these ideas to relevant policy issues, such as free trade, globalization, unemployment, income distribution, affirmative action, care of the environment, health care, and famine relief. **CC:** HUM **Note:** ECO-101 is not a prerequisite for ECO-123.

ECO 211 - Consumer Finance

Course Units: 1

(Not offered this Academic Year) This course examines how consumers make decisions about borrowing, saving, and managing risk. The goal of this course is to learn how to think critically about these decisions. We will learn concepts such as time value of money, risk, and consumption smoothing. We will examine the markets for credit (credit cards, student loans, mortgages), saving/ investment (mutual funds, retirement plans, annuities), insurance and financial advice. We will ask why these markets sometimes fail and how regulation can help. Finally, we will examine how

psychological biases influence consumers' financial decisions and how private and public sectors can help in achieving better outcomes.

Prerequisite(s): ECO 101 or permission of instructor.

ECO 225 - Economics of Sin

Course Units: 1

(Winter; Davis) Uses the tools of economic analysis to examine the markets for goods and services the sale of which is subject to public condemnation. Considers the impact and unintended consequences of economic policies toward these goods on market and social outcomes. Topics include the economics of transplantable organs, crime, addiction, intoxicants, marriage and sex. **Prerequisite(s):** ECO 101

ECO 226 - Financial Markets

Course Units: 1

(Spring; Lewis) Study of the historical evolution, economic functions, and efficiency of financial institutions and markets, with an emphasis on the United States. **Prerequisite(s):** ECO 101

ECO 228 - Environmental and Natural Resource Economics

Course Units: 1

(Winter; Kenney) Economic causes of environmental degradation and natural resource depletion; benefit-cost analyses of public policies for environmental protection and natural resource preservation; specific issues in energy and wilderness resource management, air and water pollution abatement, and solid waste management. **Prerequisite(s):** ECO 101 or permission of instructor.

ECO 230 - Mind of the Entrepreneur

Course Units: 1

(Winter; Fried) Examines three perspectives on the role of the entrepreneur in guiding resource allocation in a market economy. The traditional perspective focuses on resource allocation changing over time as the entrepreneur responds to opportunities for economic profit. The psychological perspective examines the personality characteristics of entrepreneurs. The non-traditional perspective explores the implications of the entrepreneur as a creator of demand as well as a supplier of new products. Includes the role of the social entrepreneur and some ethical issues. **Prerequisite(s):** ECO 101

ECO 231 - Urban Redevelopment

Course Units: 1

(Fall; Lewis) An examination of why the economic fortunes of cities rise and fall and what can be done to redevelop urban areas and improve their long-term vitality. Varied perspectives are considered and recent revitalization efforts in Schenectady, Saratoga Springs, and the Capital Region are analyzed. **Prerequisite(s):** ECO 101

ECO 233 - Public Policy and American Industry

Course Units: 1

(Not offered this Academic Year) The structure, conduct, and performance of American industry; oligopoly theory and the applied theory of the firm; government policy toward business including antitrust and regulation. **Prerequisite(s):** ECO 101

ECO 234 - Japanese-American Finance and Trade Relations

Course Units: 1

(Not offered this Academic Year) Are Japan and the U.S. financially separate but inseparable? This course covers the evolution, institutional structure, cultural context, and efficiency of these two financial systems with special emphasis on their interdependence via institutions, trade, and capital movements. **Prerequisite(s):** ECO 101 **CC:** LCC

ECO 236 - Comparative Economies

Course Units: 1

(Not offered this Academic Year) Why are some countries rich and others poor? Geography, economic systems, investment, culture and institutions will be explored as possible explanations. The channels through which these factors affect economic performance will be examined, and their importance will be assessed using relevant data. **Prerequisite(s):** ECO 101

ECO 237 - Women, Men, Work and Family

Course Units: 1

(Spring; Foster) A critical analysis of gender issues in economics; changing roles of men and women in labor markets; human capital theory; radical-feminist perspectives; earnings differentials and occupational segregation by gender; economics of family; public policy. **Prerequisite(s):** ECO 101

ECO 241 - Microeconomic Analysis

Course Units: 1

(Fall, Winter, Spring; Staff) Theory of consumer choice; principles of production and analysis of cost phenomena; pricing and output decisions in competitive and noncompetitive markets; theory of distribution; general equilibrium analysis; introduction to welfare economics. **Prerequisite(s):** ECO 101, MTH 101, MTH 110, or MTH 113 **Note:** A minimum grade of C in ECO-241 is required to register for ECO 498.

ECO 242 - Macroeconomic Theory and Policy

Course Units: 1

(Fall, Winter, Spring; Staff) Aggregate demand theory. Foundations of aggregate consumption, investment, money demand and money supply. Aggregate supply theory. Keynesian, monetarist, and rational expectations models. Economic growth theory. Unemployment, inflation and stabilization policy. **Prerequisite(s):** ECO 101, MTH 101, MTH 110, or MTH 113 **Note:** A minimum grade of C in ECO-242 is required to register for ECO 498.

ECO 243 - Introduction to Econometrics

Course Units: 1

(Fall, Winter, Spring; Staff) Descriptive statistics, probability, random variables and their distributions, sampling, statistical inference including confidence interval estimation, hypothesis testing, and regression analysis. Introduction to economic research using statistical methods to test theories. **Prerequisite(s):** ECO 101 **Note:** . A minimum grade of C in ECO-243 is required to register for ECO 498.

ECO 290 - Economics Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) For projects which do not require use of the material from ECO 241, ECO 242, ECO 243.

ECO 291 - Economics Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) For projects which do not require use of the material from ECO 241, ECO 242, ECO 243.

ECO 292 - Economics Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) For projects which do not require use of the material from ECO 241, ECO 242, ECO 243.

ECO 293 - Economics Independent Study 4

Course Units: 1

(Fall, Winter, Spring; Staff) For projects which do not require use of the material from ECO 241, ECO 242, ECO 243.

ECO 295H - Economics Honors Independent Project 1

Course Units: 0

(Fall, Winter, Spring; Staff)

ECO 296H - Economics Honors Independent Project 2

Course Units: 1

(Fall, Winter, Spring; Staff)

ECO 331 - E-Commerce Economics

Course Units: 1

(Not offered this Academic Year) This course applies economic concepts to analyze the new economy where sellers are able to transfer rights for use of goods and services to buyers through network-communication links. Theories of firm conduct and performance, efficiency and productivity, the role of information, intellectual property rights of digital products, ethical aspects and policy implications of E-commerce are discussed.

Prerequisite(s): ECO 241

ECO 332 - Economics of Technological Change

Course Units: 1

(Fall; Sener) The course will cover both macro and micro aspects of technological change. Topics include: Exogenous growth models, innovation-driven Schumpeterian growth models, creative destruction and the economy, competition and market structure, valuation of Research and Development (R&D) and patents, patent litigation and enforcement of Intellectual Property Rights (IPRs), innovation, technology diffusion in the global economy, and design of IPR regimes and R&D policies. **Prerequisite(s):** ECO 241 or ECO 242

ECO 334 - Introduction to Financial Analysis

Course Units: 1

(Fall, Winter; Kenney) Fundamental concepts of finance (time value of money, risk, and rates of return); analysis of financial statements; bond and stock valuation; capital budgeting; cost of capital, leverage, and optimal capital structure; long-term debt management; dividend policy; mergers and acquisitions; case study of the performance of an enterprise which seeks to maximize shareholder wealth. **Prerequisite(s):** At least one of ECO 241, ECO 242, or ECO 243.

ECO 335 - The Economics of Health

Course Units: 1

(Winter; Song) Examination of demand and supply for medical personnel; analysis of hospital cost, inflation, and health insurance. Discussion of issues in cost benefit analysis of public health and regulation of health care markets. **Prerequisite(s):** ECO 241 and ECO 243, or permission of the instructor.

ECO 338 - Quantitative Methods in Economics

Course Units: 1

(Fall; Holt) Application of mathematical models in economics. The use of matrix algebra, dynamic analysis, and optimization techniques in economic model building. Topics covered include theories of the consumer and of the firm, economic growth, international trade and finance, optimal timing, linear programming, and macroeconomic models. **Prerequisite(s):** ECO 241

ECO 339 - Public Finance

Course Units: 1

(Not offered this Academic Year) Analysis of public sector expenditure and tax policy; efficiency and equity consequences of government spending and taxation; the nature of the public sector in the U.S., especially Social Security, education and the personal income tax; intergovernmental fiscal relationships. **Prerequisite(s):** ECO 241

ECO 341 - Current Topics in Microeconomics

Course Units: 1

(Not offered this Academic Year) A variety of microeconomic models and their applications to economic problems. Topics selected from year to year, possible topics include game theory, general equilibrium models, time and uncertainty, information economics, structure and behavior of firms, and public choice. **Prerequisite(s):** ECO 241

ECO 344 - Economics of Education

Course Units: 1

(Not offered this Academic Year) The economics of the education industry and education policy, and the relationship between education and economic performance. Topics include human capital investment, the production of education, the returns to education, financing education (using public or private resources), and school choice and education outcomes (student achievement, completion rates, lifetime achievement).

Prerequisite(s): ECO 241 and ECO 243

ECO 350 - Experimental Economics

Course Units: 1

(Not offered this Academic Year) This course provides an introduction to experimental methods in economics. Economic theories previously studied will be tested and either confirmed or evidence will be discovered that the theories are incorrect. Those found to be incorrect are usually based on questionable assumptions. Students will also become familiar with state-of-the-art research methodology in experimental economics, and will participate in and conduct experiments in bargaining, auction markets, and other economic situations. **Prerequisite(s):** ECO 241 and ECO 243

ECO 352 - Contemporary Problems in Macroeconomics

Course Units: 1

(Fall; Motahar) A detailed analysis of some fundamental current macroeconomic issues: growth and productivity, the roots of the current economic and financial crisis, and an examination of policy options designed to address the crisis. We will also conduct some relevant macroeconomic modeling and simulation exercises. **Prerequisite(s):** ECO 241, ECO 242, and ECO 243

ECO 353 - Seminar in Econometrics

Course Units: 1

(Winter; SJ Schmidt) Application of econometric methods to economic problems, plus additional topics in econometrics selected from multicollinearity, serially correlated and heteroskedastic disturbance terms, systems of simultaneous equations, seasonal adjustment, distributed lag models, other time series topics. **Prerequisite(s):** ECO 243, and ECO 241 or ECO 242

ECO 354 - International Economics

Course Units: 1

(Spring; Motahar) Foreign trade and international finance, protectionism, international migration of capital and labor, political economy of trade policy, strategic trade policy, international coordination of macroeconomic policies. **Prerequisite(s):** ECO 241, ECO 242, and ECO 243

ECO 355 - Monetary Economics

Course Units: 1

(Fall; Lewis) What money has been and is, with study of relevant institutions, including the Federal Reserve and its policies; the bond market and interest rates; asset demand for domestic and foreign currencies; and monetarist, Keynesian, and Modern Monetary Theory (MMT) approaches to the role of money in macroeconomics. **Prerequisite(s):** ECO 241, ECO 242, and ECO 243; ECO 241 may be taken concurrently.

ECO 364 - Business Analytics

Course Units: 1

(Winter; Dvorak) This course is about creating business insights from big data. The learning objective is to develop three abilities. The first is the ability to manipulate big data. This includes downloading, merging, appending and reshaping data, and creating new variables. Second is the ability to analyze data. This includes exploratory data analysis, visualization, and sophisticated predictive algorithms including nearest neighbor, naive Bayes, decision trees, regression and others. We will pay special attention to validating our predictions using the train and test regimen. Finally, students will develop an ability to formulate questions that can be answered using big data, and lead to better business performance. This includes using data to improve marketing, pricing, investing capital, customer satisfaction, costs, etc. The data manipulation and analysis will be implemented by writing programs in statistical software. **Prerequisite(s):** ECO 101 and ECO 243 (or STA 264)

ECO 374 - Sports Economics

Course Units: 1

(Not offered this Academic Year) The application of economics to issues in sports. Sports topics include player salaries, free agency, discrimination, gambling, the Olympics, the Super Bowl, and the impact of stadiums on local economies. **Prerequisite(s):** ECO 241 and ECO 243

ECO 375 - Efficient Management of Technology

Course Units: 1

(Spring; Yaisawarng) Economic models of the firm; efficiency and productivity concepts; Data Envelopment Analysis (DEA); ethics in management; DEA guide and ethical procedures for improving efficiency and allocating resources; empirical applications to specific industries. **Prerequisite(s):** ECO 241 and ECO 243

ECO 376 - Seminar in Global Economic Issues

Course Units: 1

(Winter; Sener) This seminar explores different perspectives on current global economic issues. A review of the recent debate on globalization provides a framework for discussion of a variety of issues related to international trade and the international financial system. Topics covered may include: international trade and the environment, international trade and labor standards, regionalism vs. world trade, international financial crises, reforming the global financial architecture, and international capital flows and developing countries. **Prerequisite(s):** ECO 241, ECO 242 and ECO 243

ECO 378 - Labor Economics

Course Units: 1

(Not offered this Academic Year) Determinants of wages and terms of employment, wage and employment theories and the impact of unions, wage structures, unemployment, poverty, wage legislation. **Prerequisite(s):** ECO 241

ECO 380 - Seminar in Economic Growth and Development

Course Units: 1

(Not offered this Academic Year) Reviews the empirical record on economic growth and the resulting division of the world into rich and poor countries; considers the role of accumulation, innovation and institutions in the theory and experience of economic growth; investigates selected topics in the economics and political economy of growth, potentially including international trade, income inequality, international aid, democracy, social conflict, and corruption. **Prerequisite(s):** ECO 241, ECO 242 and ECO 243

ECO 381 - Economics of Culture

Course Units: 1

(Spring; Davis) Students will read and discuss the emerging literature on the economics of culture, become familiar with commonly used sources of data on cultural values and beliefs, and address the empirical challenges of using this data to evaluate economic theories of culture. Topics will include 1) the measurement of cultural values, 2) theories of socialization, 3) religion and economic outcomes, 4) cultural beliefs, attitudes toward government redistribution and the welfare state, 5) culture as informal institutions: trade and exchange in the absence of law, management of collective goods, and informal risk-sharing arrangements, 6) family and kinship networks as economic institutions, 7) the economic role of trust, 8) trust, social capital and political institutions, 9) immigration and theories of acculturation, 10) cultural values and institutional quality. Students will conduct a significant independent research project on the economics of culture. **Prerequisite(s):** ECO 241 and ECO 243

ECO 382 - Seminar in Finance

Course Units: 1

(Not offered this Academic Year) Study of important topics in finance, such as capital structure, risk, uncertainty, and portfolio theory; agency costs; market efficiency; options theory, and the effects of financial crises on markets. **Prerequisite(s):** ECO 241 and ECO 334

ECO 383 - Seminar in International Finance

Course Units: 1

(Not offered this Academic Year) This course is about the financial markets that facilitate trade and investment in today's global economy. We will learn about the balance of payments, exchange rate determination and exchange rate regimes. Emphasis in the course will be placed on understanding the events currently happening around us: including the widening U.S. current account deficit, dollar depreciation against the euro, China's reluctance to float its exchange rate, and the financial crises in Asia and Argentina. **Prerequisite(s):** ECO 241 and ECO 242

ECO 387 - Seminar in Labor

Course Units: 1

(Fall; Song) The objective of this course is to learn how to do empirical research in labor economics using data drawn from the Current Populations Survey (CPS). The CPS is a monthly survey of about 50,000 households conducted by the Bureau of the Census for the Bureau of Labor Statistics and is the primary source of information on the labor force characteristics of the U.S. population. Using the CPS data many economists have written papers on topics such as gender/racial wage discrimination, economic performance of immigrants, labor union, job training, involuntary job loss, computer use, poverty, health insurance, and welfare. Students will write and present an empirical paper using data drawn from the CPS. In order to process the CPS data for their research, students will learn how to write programs in statistical software Stata. This would be an excellent prep course for students interested in writing a senior thesis on any topics in labor economics or applied microeconomics and analyzing large data sets. The main labor economics topics to be covered in this course include compensating wage differentials, human capital, labor mobility, immigration, and labor market discrimination. **Prerequisite(s):** ECO 241 and ECO 243

ECO 390 - Economics Internships

Course Units: 1

(Winter; Fried) Designed to involve students in the operation of various economic agencies, commissions in New York State government and private firms. Interns apply skills to practical problems in economic analysis and gain exposure to the functioning of the agency or firm. **Prerequisite(s):** ECO 241, ECO 242, and ECO 243

ECO 391 - The Income Tax: Policy and Practice

Course Units: 1

(Winter; O'Keeffe) This course integrates theory and practice in addressing income tax policy issues. Students run a Volunteer Income Tax Assistance Site at the College's Kenney Community Center at which income tax forms are filled out for low-income tax payers. Students undergo training and pass an IRS certification test. Students participate in all aspects of running the site, including publicity, electronic filing, and site management. Class sessions are used for training and for study of the economics literature on income tax policy issues, including the Earned Income Tax Credit, policy towards subsidization of child care, tax compliance issues, and tax incentives for saving. **Prerequisite(s):** ECO 241 and ECO 243, and a minimum GPA of 2.9.

ECO 445 - Managerial Economics

Course Units: 1

(Fall; Kenney) Use of economic and statistical analysis in management decision making and practical problem solving; demand evaluation and sales forecasting; cost and profitability analysis; pricing policy; extensive use of case studies. **Prerequisite(s):** ECO 241 and ECO 243 and senior standing.

ECO 490 - Economics Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) For projects which require one or more of the core courses ECO 241, ECO 242, or ECO 243 as prerequisites.

ECO 491 - Economics Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) For projects which require one or more of the core courses ECO 241, ECO 242, or ECO 243 as prerequisites.

ECO 492 - Economics Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) For projects which require one or more of the core courses ECO 241, ECO 242, or ECO 243 as prerequisites.

ECO 493 - Economics Independent Study 4

Course Units: 1

(Fall, Winter, Spring; Staff) For projects which require one or more of the core courses ECO 241, ECO 242, or ECO 243 as prerequisites.

ECO 498 - Economics Senior Thesis 1

Course Units: 0

(Fall, Winter, Spring; Staff) Independent research thesis. **Prerequisite(s):** A minimum grade of C in each of the courses in the core sequence of ECO 241, ECO 242, ECO 243, at least one course in the area of the thesis and senior standing; ECO-498 is prerequisite to ECO 499. **CC:** WS

ECO 499 - Economics Senior Thesis 2

Course Units: 2

(Fall, Winter, Spring; Staff) Independent research thesis. **Prerequisite(s):** A minimum grade of C in each of the courses in the core sequence of ECO 241, ECO 242, ECO 243, at least one course in the area of the thesis and senior standing; ECO 498 is prerequisite to ECO 499. **CC:** WS

English

EGL 098 - (274) Tragedy

Course Units: 1

(Not offered this Academic Year) Tragedy is an ancient Greek dramatic art that in its first forms and their later permutations has profoundly shaped the thinking of the western world. Tragedy meditates on the power of the gods, justice and injustice, order and chaos, fate and freedom, and the whole spectrum of human existence.

The first great tragic playwright, Aeschylus, affirms the painful, yet hopeful notion that wisdom comes through suffering; but less than two generations later the plays of Euripides offer much more pain than hope, and the wisdom gained from the tragedies of Elizabethan and Jacobean England (e.g., Shakespeare) tends to be extremely bitter. Tragedy in the 19th and 20th century gets bleaker still, as writers lose faith in both the existence of traditional heroes and any sort of cosmic justice--the very possibility of reconciling oneself with the world as it is. But, despite this dark vision, modern as well as ancient tragedy can also generate a powerful kind of pleasure in audiences and readers--just one of the many paradoxes built into the genre. This course will attempt to make sense of it all. **CC:** HUL **Note:**

EGL 099 - (271) The Bible: An Introduction

Course Units: 1

CLS 099 **(Spring; Heinegg)** This course is a basic survey of the most historically and culturally important book in the world. Actually, the Bible is not a single book, but a complex anthology of many different genres, including history, legend, myth, law, poetry, prophecy, philosophy, and an astonishing variety of religious texts, from passionate prayers to bitter complaints against God, composed over the course of something like a thousand years. In addition to reading the most essential parts of the Old and New Testaments, we will also examine some of the countless ways that the Bible has left an imprint on modern western and American life. No previous acquaintance with the Bible is required. **CC:** HUL

EGL 100 - Introduction to the Study of Literature: Poetry

Course Units: 1

(Fall, Winter, Spring; Staff) Students will explore the art of poetry by examining a selection of poems from at least three cultures and by considering how poetry conveys its complex meanings through voice, image, rhythm, formal and experimental structures. Particular attention will be given to developing reading and writing skills. **CC:** HUL, WAC **Note:** Introductory courses are open to all students.

EGL 101 - Introduction to the Study of Literature: Fiction

Course Units: 1

(Fall, Winter, Spring; Staff) Students will explore fictional works from at least three cultures. Emphasis will be placed on exploring the art of narrative--on considering the ways stories get told and the reasons for telling them. Attention may be paid to such concerns as narrative point of view, storytelling strategies and character development, the relationship between oral and written narrative traditions, and narrative theory. Particular attention will be given to developing reading and writing skills. **CC:** HUL, WAC **Note:** Introductory courses are open to all students.

EGL 102 - Introduction to the Study of Literature: Drama

Course Units: 1

(Spring; Jenkins) In this course, we will ask how different representations of disguise help to articulate the themes with which drama is so concerned. Not only do plays acted on the stage abound in examples of characters who switch places or are mistaken for each other, they also provide a forum for individual characters to question their relationship with the people and culture that surround them. Even as plays stage the most private of feelings in a public setting, they also suggest that human interactions frequently involve playing a role. Throughout our examination of mix-ups, imposters, and identity crises in plays that range from ancient times to the present day, we will pay attention to both the literary and theatrical conventions of drama and the changing social place of the theater. The syllabus will include works by authors such as Euripides, Christopher Marlowe, Henrik Ibsen, Arthur Miller, August Wilson, Yasmina Reza, and David Ives. One of the most important aspects of the course will be the development of your ability to express your insights about the plays we read in your own written work. There will be frequent informal written assignments designed to help you build up to the longer papers. **CC:** HUL, WAC

EGL 200 - (223) Shakespeare to 1600

Course Units: 1

(Spring; Doyle) (Offered at least once per year) We'll explore in this course some of the most entertaining, moving, and provocative theater the world has ever known. Focusing mainly on Shakespeare's comedies and histories, we'll discover characters who offer us complicated and engaging perspectives on topics such as love, magic, revenge, family relationships, "outsiders," and political power. We will work together to appreciate both the nuances of Shakespeare's poetry and the excitement of his works in performance (whether on stage or screen). **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 201 - (224) Shakespeare after 1600

Course Units: 1

(Fall; Jenkins) (Offered at least once per year) We will look at Shakespeare's great tragedies and romances with particular attention to the dramatic practices of his time. In this we will be helped by performances and workshops conducted on campus by the American Shakespeare Center, so be prepared to chew (or at least nibble on) the scenery as well as paying close textual attention to the artistry of the plays. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 202 - Amazons, Saints and Scholars: Women's Writing in the Middle Ages and Renaissance

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) This course explores the medieval and early modern female writers of England and France. We will ask: how did women respond in writing to the male-defined literary traditions and conventions of these eras? The course also provides an introduction to some of the major questions and works of feminist literary criticism, including: Why should we read the works of women? What aesthetic standards should we apply when discussing their works? Is there a difference between "masculine" and "feminine" writing? We will focus on six female writers: Marie de France, Christine de Pizan, Elizabeth Carey, Isabella Whitney, Amelia Lanyer, and Mary Sidney. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 203 - The Age of Heroes: The Anglo-Saxon Era

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) In 410 the Romans abandoned Britain, withdrawing to the continent just as pagan Germanic invaders began to challenge the island's native Picts and Celts. In 1066 the Duke of Normandy crossed the Channel and kicked a Danish king off the throne of a fully Christianized England. In between these two events lies the matter of this course: the literature of the Anglo-Saxon era, which, despite (or perhaps because of) successive waves of foreign invasion and political disunity, developed arguably the most

distinctive and sophisticated culture in all of early medieval Europe. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 204 - Plague, Revolt, Religion, and Nation: The Fourteenth Century

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) This course explores English literature as it reflects, shapes, and critiques society from the onset of the Hundred Years' War to the overthrow of Richard II (1337- 1400), a turbulent period that includes the Peasants' Revolt, the Black Plague, the rise of English as the language of literature and government, and the proto-Protestant movement known as Lollardy.

Prerequisite(s): EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 205 - The Road to Canterbury

Course Units: 1

(Fall; Doyle) Comedy, chivalric adventure, magic, miracles, saints' lives, sermons -- Chaucer's best-known work, *The Canterbury Tales*, runs the gamut from sublime love poetry to slapstick fart jokes. We will study a generous selection of the major Tales, exploring Chaucer's literary sources, his style, his perspective on his own contemporary culture, and his ideas about the purpose of storytelling. Along the way, we will learn to read some Middle English and grapple with some of the questions Chaucer raises: Who defines the term "great literature," anyway? What does it mean when an author writes in someone else's voice? How do a storyteller's social class and choice of genre determine the story's impact? Should literature challenge political and cultural norms? What are the uses of irony? How should texts treat women? What role does an audience have in defining the meaning of a story? **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 206 - (205) Renaissance Literature

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) Attention to selected literary texts from ancient Greece and Rome, consideration of their "rebirth" and influence on aesthetic and intellectual work produced in western Europe from the 14th century to the 17th, and consequent close attention to the achievements of one or more major literary figures of the English Renaissance. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 208 - Renaissance Drama

Course Units: 1

(Winter; Jenkins) (Offered once every four years) How various Renaissance playwrights represented those on the margins of the dominant culture, particularly the malcontent or madman (Marlowe's *Jew of Malta*; Kyd's *The Spanish Tragedy*; Marston's *The Malcontent*), women (Middleton and Dekker's *The Roaring Girl*, Webster's *The Duchess of Malfi*, Ford's *'Tis a Pity She's a Whore*), the criminal (the anonymous *Arden of Faversham*), and sometimes the intersection of all three (Jonson's *Bartholomew Fair*). **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, WAC

EGL 209 - (206) British Literature: The 1590s

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) Early modern London was a place in which everyone—from the queen to courtiers to poets—could see herself or himself as an "actor on the stage." It was a culture in which role-playing was a necessary and dangerous art, one that led to both paranoia and creativity. In this course we'll explore a wide variety of Renaissance poses and impersonations: portraits and speeches of Queen Elizabeth (as well as recent film treatments of her); sophisticated and scandalous love poetry; the advice given to young ladies and

courtiers on how to protect themselves from vicious gossip and dazzle their onlookers; and audacious works of theater. Course authors include Sidney, Marlowe, Spenser, Shakespeare, Castiglione, and Queen Elizabeth. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 210 - British Literature: Seventeenth-Century Literature

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) This course will look at seventeenth-century literature and culture through the idea of revenge, which became a dominant form in an age of turmoil, injury, and change. We will begin with the early revenge plays of Shakespeare, Tourneur, Marston, Ford, and Webster, proceed through the cosmic revenge of Satan in *Paradise Lost*, and end with the ironic revenge exacted on moral goodness by the Restoration poets, playwrights, and philosophers. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 211 - Milton

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) The two sides of Milton - the high humanist poet, author of the greatest epic in English and one of the greatest religious poems in any language, and the Puritan revolutionary, defender of regicide and champion of the English commonwealth. The goal of the course will be to see if the two sides can be held separate, or if they must be seen as complementary. We will read *Paradise Lost* at the rate of one book per week, always trying to relate the two sides of the poet. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 212 - The Restoration

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) This course will closely examine the culture that produced both the first official poet laureate of England, John Dryden, and the most notoriously libertine poet in English, the Earl of Rochester. Also appearing will be the first English woman to make a living from literature, Aphra Behn; the wittiest playwrights in English dramatic history (Wycherley, Etherege, Congreve); John Milton; some very early English novels; and some pretty good philosophers, including Thomas Hobbes, John Locke, and maybe even Sir Isaac Newton. All that and the Great Fire of London, outbreaks of the plague, several wars, and major revolutions in politics and science. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 213 - (209) American Literature in Historical Context: Beginnings to 1800

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) This course focuses on beginnings of American literature and culture, with an emphasis on writings prior to 1700. Selections will vary but may include early exploration literature; early Spanish, French and British texts; Native American traditions; Puritan and Pilgrim poetry and essays; writings on witchcraft; the Great Awakening; the rise of science, discovery and invention; the Declaration and the Constitution; and the early sentimental novel. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 216 - (210) Eighteenth-Century British Literature

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) A survey of some crucial-and hotly contested-ideas that emerge in the work of six major 18th-century writers: Jonathan Swift, Alexander Pope, Daniel Defoe, David Hume, Edward Gibbon, and Mary Wollstonecraft. These will include the

definition of human nature, the western world's view of itself, the "noble savage" and colonialism, the classical tradition vs. "modern" Europe, deism, attacks on Christianity, the empirical challenge to the old order, the legacy of the French Revolution, and feminism. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 217 - (214) Enlightenment and Romanticism

Course Units: 1

(Winter; Kuhn) (Offered twice every four years) Consideration of the relationships between two major currents in modern European thought and culture: Enlightenment and Romanticism. Authors will range from Descartes to Nietzsche and may include Voltaire, Rousseau, Goethe, and Kant.

Prerequisite(s): EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 218 - European Novel in Translation

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) A survey of six great works, three from the 19th and three from the 20th century: Stendhal, *The Red and the Black*; Gustave Flaubert, *Madame Bovary*; Ivan Turgenev, *Fathers and Sons*; Marcel Proust, *Swann's Way*; Franz Kafka, *The Trial*, and I. J. Singer, *The Brothers Ashkenazi*. Despite their many differences in setting and style, these novels share a number of themes: the alienated individual, the legacy of the French Revolution, social conflicts, the "values vacuum," the meaning of art, and so on. We'll explore all these as we make our way through the gripping, often astonishing world of modern Continental fiction. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 219 - Rise of the Novel

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) Development of the novel form in its social, cultural, and literary contexts, focusing primarily on the 18th century. We will consider adventure/picaresque, domestic/epistolary and questions of genre, gender, and history. Authors include Chariton, Cervantes, Defoe, Barker, Behn, Richardson, and Burney. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 220 - (211) The Romantic Revolution

Course Units: 1

(Spring; Burkett) The Romantic period was one of Britain's most "revolutionary" eras in a number of important ways. For England, the age was marked by dramatic social, political, literary, and scientific upheaval and change. In this course we will investigate the various causes that were envisioned, promoted, and enacted during this era and trace their often wide-ranging and revolutionary effects. Readings will likely include selections from the following authors: William Wordsworth, Samuel Taylor Coleridge, William Blake, Mary Shelley, Lord Byron, Percy Bysshe Shelley, and John Keats. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 221 - (235) Romanticism and Media Studies

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) In this course we will examine the ways in which Romantic-era stories become taken up and transformed by media technologies such as photography, hypertext projects, film, and even the World Wide Web. In doing so, we will study Romantic-era imaginative literature (e.g., its fascination with imagination, vision, projection, transcendence, etc.) in the context of developments in a number of disciplines and media forms including photography, film, hypertext, recorded sound, virtual reality, and computer

technologies. Romantic authors will likely include: W. Wordsworth, S. T. Coleridge, M. Shelley, P. B. Shelley, Ada Lovelace, Lord Byron, W. Blake, and J. Keats. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 224 - 19th-Century Novel

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) The golden age of the novel examined in its historical, intellectual, and literary contexts. Topics will include satire and the novel, realism vs. gothicism, fiction and the visual arts (especially book illustration), the impact of Darwin, fiction and the role of women, the city vs. the country, the individual vs. society, the novel and commerce, fiction and imperialism.

Prerequisite(s): EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, WAC

EGL 225 - (291) The Brontë Sisters

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) This course will examine five first-person narratives by Charlotte Brontë and her sisters Emily and Anne. Readings will include *The Professor*, *Jane Eyre*, *Villette*, *Wuthering Heights*, *The Tenant of Wildfell Hall*, and Elizabeth Gaskell's 19th-century biography *The Life of Charlotte Brontë*. We will consider biographical, interpersonal, and inter-textual relations alongside questions of gender, class, religious vocation, communal authorship, pseudonymous publication and the cult of genius. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 226 - (266) Victorian Detective Fiction

Course Units: 1

(Fall; Lewin) (Offered once every four years) In 2016 there are two groups of Jews of roughly equal numbers that make up the majority of Jews in the world: seven or so million Jews in Israel and the United States, respectively. The contemporary literature of these two communities will be the focus of this course. We will investigate fiction that is making its way out of Israel in translation - what subjects are appearing in translation, written by whom, with what political motivations? Similarly, what are the concerns of American Jews writing today's fiction? How might they complement or diverge from writing in Israel? Finally, one burgeoning trend in Israel and America is to render one's concerns in both word and image, through Jewish graphic novels. Therefore, a portion of what we read by both Americans and Israelis will be in graphic novel form. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 227 - Governess Tales

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) Social upheaval and unrest in the early decades of Victoria's reign (1830s and 1840s) gave way to greater national confidence and stability in the 1850s and 1860s. We will consider England's internal concerns of class mobility, industrialization, professions for women, and working class conditions, as well as international questions of empire and nationalism. Our special focus will be "Governess Tales," specifically three published virtually simultaneously in 1847-8: Charlotte Brontë's *Jane Eyre*, W. M. Thackeray's *Vanity Fair*, and Anne Brontë's *Agnes Grey*. Precursors (*Emma*) and parodies (*Behind a Mask*, *Turn of the Screw*) may round out the syllabus.

Prerequisite(s): EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 228 - (264) Novels of Education

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) The growth of a young person's mind provided the subject for many great works of nineteenth century fiction. In this course we will examine how and why the novel of education (otherwise known as the Bildungsroman) evolved

in British and Irish fiction over the course of the Victorian period. Why did they begin to appear when they did, and what cultural issues were the writers and their audiences interested in thinking through? How were novels of female education different from those of young men? What contradictions did they lay bare about the structure of British society? We will see that this dynamic literary form allowed the novelist to articulate new social roles and forms of identity in a changing, though highly rule-bound, society. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 230 - (253) Desire, Incest, Cross-dressing, and Homo-erotica: Identity Politics In the Early American Sentimental Novel

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) In her seminal study, *Revolution and the Word: The Rise of the Novel in America*, Cathy N. Davidson states that "literature is not simply words upon a page but a complex social, political, and material process of cultural production" (viii). Thus, the eighteenth century sentimental novel serves to highlight a moment in history lodged among judgments, anxieties and controversies about the direction the newly formed American Republic would take at the end of the Revolution. Embedded within these narratives are questions about both men's and women's power and authority in the public and private spheres, the negation of the female self, the social function of romance and courtship, and the nature of women as moral, social, and biologic commodities. This course seeks to explore disjunctions between the sentimental structure of the early American novel and its contradictory attitudes toward liberty and self-expression. Questions that will guide our discussion include: How and why does the seduction plot of earlier novels reinforce American values and ideals distinct from European standards of morality? In what ways does the cult of "true womanhood" prominent during the first few decades of the nineteenth century suppress the plea for women's equality? How are these texts concerned with defining the new nation, its citizens, and boundaries? In what ways do these texts consolidate nationhood through the formation of a national literature and the narrative construction of a national history, culture, and consciousness? Do these novels construct, conserve, or subvert American cultural institutions? **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 231 - (215) Nineteenth-Century American Literature

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) This course focuses on the self-conscious development of literary tradition in 19th century America-- its meaning, its implications, its failures-- and its aesthetic and moral possibilities. Writers under consideration may include Emerson, Fuller, Thoreau, Douglass, Hawthorne, Melville, Dickinson, and Twain, and topics will include individualism, transcendentalism, abolition, the coming of war, the aftermath of war, growth, expansion, and power. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 232 - The American Renaissance

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) This course will examine major works written during the American Romantic period, as well as some written in the post-Romantic period up to the death of Walt Whitman in 1892. We will begin by discussing some of Emerson's essays and continue with works by authors who reacted, both positively and negatively, to Emerson. Other works will be selected from the following list: at least two of Poe's short stories, Hawthorne's *The Scarlet Letter*, excerpts from Thoreau's *Walden*, Douglass's *Narrative*, excerpts from Melville's *Moby-Dick*, poems by Walt Whitman, excerpts from Margaret Fuller, Louisa May Alcott's satire "Transcendental Wild Oats," and poetry by Emily Dickinson. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 233 - (216) African American Literature: Beginnings to 1900: Vision and Re-Vision

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) This introductory survey course will trace African American movement towards literary and aesthetic mastery beginning with what Henry Louis Gates calls "oral writing." Readings begin with the first known written poems and progress from slave narratives and autobiography to essays and fiction. Authors include Phillis Wheatley, Harriet Jacobs, Frances Ellen Watkins

Harper, Solomon Northup, Charles Chesnutt, W.E.B. Du Bois, among others. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** LCC, HUL

EGL 236 - (229) American Realism and Naturalism

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) Realism and naturalism were aesthetic movements that emerged in American fiction between approximately 1865 and 1925. This course examines these two literary movements to show how writers of this era explored the trauma created by war (the Civil War and WWI), the moral consequences of freedom and sexual awareness, rapid urbanization and the Great Northern migration, inconsistencies between wealth and poverty, and innovative discoveries in science and technology. The purpose of this course, then, is to investigate how the authors of this period practiced their art both collectively and individually and the ways in which American social life informed the ideologies of realism and naturalism. Possible writers we will study include William Dean Howells, Stephen Crane, Frank Norris, Theodore Dreiser, Kate Chopin, Mary Wilkins Freeman, Mark Twain, Edith Wharton, Henry James, and Paul Laurence Dunbar. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 237 - (219) African-American Literature 1900-Present

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) Introductory survey of African-American literature from the 1920s to the present. The involvement of African-American writers in various artistic, social, and political schools of American thought and activism. Readings include novels, short fiction, poetry, short criticism, theory, and drama by writers such as George Schuyler, Nella Larsen, Langston Hughes, James Baldwin, Amiri Baraka, Toni Morrison, Randall Kenan, Soniz Sanchez, Yusef Komunyakaa, among others. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, LCC

EGL 239 - (217) American Literature and Culture: 1900-1960

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) This course will survey American poetry, fiction, nonfiction, and perhaps one play of the pre-Modernist and Modernist periods, putting the works into a cultural and historical context. The course will show how urbanism, psychology, science, secularism, "The Great War" and World War II, consumerism and feminism influenced literature of the period. Writers might include Henry Adams, Ernest Hemingway, F. Scott Fitzgerald, T.S. Eliot, Robert Frost, Wallace Stevens, W.C. Williams, Willa Cather, William Faulkner, Langston Hughes, Ralph Ellison, Flannery O'Connor, Tennessee Williams, Allen Ginsberg, and/or Adrienne Rich. Poetry of the period will be generously represented on the syllabus. At least one recent film adaptation of a work from the period will be discussed. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 240 - (218) American Literature and Culture: 1960-Present

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) This course will survey American poetry, fiction, nonfiction (including essays and New Journalism), at least one film (probably *The Graduate*), and perhaps one play of the Postmodern era. Emphasis will be placed on social movements that redefined the American cultural landscape, including Civil Rights, Gay Rights, and Women's Rights. The traumatic impact of historical events- such as assassinations in the sixties, the War in Vietnam, and 9/11-will also be discussed. Nonfiction writers will include Betty Friedan, Martin Luther King, Jr., Joan Didion, Hunter Thompson, and possibly Ryan Smithson. Poets might include Robert Lowell, Gwendolyn Brooks, Allen Ginsberg, Anne Sexton, Adrienne Rich, Sylvia Plath, Billy Collins, Simon Ortiz, Rita Dove, Li-Young Lee and others. Fiction writers might include Kurt Vonnegut, Toni Morrison, Raymond Carver, Alice Walker, James Baldwin, Amy Tan, Tim O'Brien, Sherman Alexie, Jhumpa Lahiri, and Alfredo Véa. Music, television shows and technology of the period will also be discussed. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 241 - (260) From the Greatest Generation to the Generation Gap: American Fiction, 1900-1960

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) This course will examine major developments in the American novel and short story from the turn of the century to 1960, focusing primarily on the Modernist period. The course will treat such issues as the relationships of science, technology, and religion to the literary imagination, as well as the impact of the World Wars, psychology, urbanism, feminism, consumerism, and racism on literature of the period. Authors might include Chopin, Henry James, Anderson, Wharton, Cather, Faulkner, Fitzgerald, Hemingway, Flannery O'Connor, Wright, Salinger, and others. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 242 - (261) Time Travelers, Dark Knights, and Grrrls [sic] with Attitude: American Fiction, 1960-Present

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) This course will examine short stories and novels (and possibly one film) written since 1960 by U.S. and perhaps one or two Canadian writers, with an emphasis on the various manifestations of postmodernism and the complex relationships between authors and their narrators and protagonists. A few older works that influenced these works might also be studied for comparison. Authors might include Sherman Alexie, Margaret Atwood, John Barth, T.C. Boyle, Raymond Carver, John Cheever, Louise Erdrich, Gish Jen, Jamaica Kincaid, Jhumpa Lahiri, Ursula LeGuin, Clarice Lispector, Arthur Miller, Toni Morrison, Bharati Mukherjee, Alice Munro, J.C. Oates, Tim O'Brien, ZZ Packer, Amy Tan, Kurt Vonnegut, Alice Walker, David Foster Wallace, Tobias Woolf, and others. At least one recent film adaptation of a work from the period will be discussed. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 246 - (270) Modern Poetry

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) Selected poetry from the high modern period (from the turn of the twentieth century to circa 1945) in relation to changing views of the poet's role in culture and the poet's contradictory posture as prophet, exile, romantic, outcast. Authors will include W.B. Yeats, T.S. Eliot, Ezra Pound, Robert Frost, Wallace Stevens, William Carlos Williams, Marianne Moore, Langston Hughes, W. H. Auden, others. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 247 - (294) Studies in Modern Poets: Bishop and Gunn

Course Units: 1

(Winter; Smith) Elizabeth Bishop and Thom Gunn. This class will focus on the work of two major twentieth century poets, Elizabeth Bishop and Thom Gunn, both of whom combine intelligence, empathy, and technical skill with the exploration of a wide range of experiences, ranging from travel to sexuality to loss. In doing so, they provide the reader with a great deal of pleasure and also raise serious, often challenging questions about the nature of the self. Along with poems and prose by Bishop and Gunn, we will read Irish novelist Colm Toibin's book on the two poets.ell. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 248 - (274) Introduction to Black Poetry

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) We will explore the development of African-American poetic voices in North America. We will look at poems and poets as they constitute a hybrid and composite tradition. We will read poetry in anthologies; we will also read several full books by individual authors, and will listen to performance poetry on CD and DVD. A partial list of poets we will read includes Wheatley, Harper, Dunbar, Hughes, McKay, Helene Johnson, Brooks, Baraka, Clifton, Sanchez, Cortez, Morris, Mullen, Brathwaite, Komunyakaa,

Francis, Dungy, among others. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, LCC

EGL 249 - American Poetry Since 1960

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) A course in the development of American poetry from the confessional breakthrough of the Vietnam era to more contemporary experiments with language, narrative, and the nature of the poet's authority. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 250 - (234) The Beats and Contemporary Culture

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) An examination of the writers of the Beat Generation (including Allen Ginsberg, Jack Kerouac, Gary Snyder, Edward Sanders) and of their lasting influence on American popular culture. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 253 - (254) Narratives of Haunting in US Ethnic Literature

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) This course examines the theme of haunting in contemporary US ethnic literature. With this theme in mind, we will investigate the following questions throughout the trimester: Why is haunting such a prevalent theme in ethnic writing? What do we mean when we say that a text is haunted? What are the causes of haunting? What is possession? What are some ways to dispossess or exorcise ghosts? What are the functions of ghosts? Is there such a thing as a good haunting? What are their messages to us? How do we listen to ghosts? Authors include Lan Cao, Nora Okja Keller, Maxine Hong Kingston, Cynthia Ozick, Toni Morrison, Sandra Cisneros, and Leslie Marmon Silko. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, LCC

EGL 254 - (255) Discourses on the Viet Nam War

Course Units: 1

(Not offered this Academic Year) (Offered three years out of four) This class will examine various perspectives on "The Vietnam War," or, as the people of Viet Nam call it, "The American War." In our archeological exploration into the nature of knowledge about this period in Viet Nam/U.S. history, we will not privilege one perspective over another. Rather, we will examine the diverse political, ideological, and moral positions from which various groups, such as the U.S. government, U.S. soldiers, U.S. citizens, the North Vietnamese people, and the South Vietnamese people, perceive this historic conflict. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 255 - (244) Asian American Literature and Film

Course Units: 1

(Fall; Tuon) (Offered three years out of four) If you are interested in the diverse history of Asian immigration in the U.S., take this course. Together as a class, we will examine major historical moments in Asian America: the first wave of Asian immigration in the mid-nineteenth century, the anti-Asian laws of the late nineteenth century, the Japanese internment during the Second World War, the emergence of Asian American studies during the 1960s Civil Rights Movement, Southeast Asian refugees after the Viet Nam/American War, and the contemporary turns to the transnational and the pan ethnic. To cover these historical moments, we will read the following texts: *Island: Poetry and History of Chinese Immigrants on Angel Island*, *Eat a Bowl of Tea*, *Farwell to Manzanar*, *When Broken Glass Floats*, *Jazz at Manzanar*, *American Born Chinese*, and *American Son*. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, LCC

EGL 258 - (252) Changing Ireland

Course Units: 1

(Fall; Bracken) (Offered twice every four years) This course will be looking at the changing nature of Irish society since the economic boom of Celtic Tiger Ireland in the 1990's. EU membership, US investment and the effects of global internationalism have brought about radical culture transformations in the country which in turn are altering conventional meanings of Irishness and Irish identity. We will be looking at representations of this changing Ireland in literature and film, paying attention to issues such as new technologies, post-feminism, sexualities, race and ethnicity. Texts will include Martin McDonagh's *In Bruges*, Anne Enright's novel *The Wig My Father Wore*, and the poetry of Leanne O'Sullivan.

Prerequisite(s): EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, LCC

EGL 259 - (247) Irish Literature and Film

Course Units: 1

(Winter; Bracken) (Offered twice every four years) The aim of this course is to introduce you to the field of Irish Studies, examining how issues relating to language, identity and nationhood are intimately connected in Irish literature and film. In this course we will be studying Irish literary texts from the beginning of the 19th century to the late 20th century, examined alongside a selection of contemporary films. This course will ask you to consider the ways in which cultural concerns of the Irish past continue to haunt the landscape of the present day, paying attention to issues of gender, class, race and sexuality. Texts will include Lady Morgan's *Wild Irish Girl*, Bram Stoker's *Dracula*, Samuel Beckett's *Waiting for Godot* and Neil Jordan's film *Michael Collins*. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, LCC

EGL 260 - (297) James Joyce

Course Units: 1

(Spring; Bracken) (Offered three years out of four) This course will focus entirely on Irish writer James Joyce's modernist masterpiece *Ulysses*, published in 1922. This is a complex, challenging and experimental novel (900 pages), which uses stream of consciousness as its primary literary mode. Set on just one day, June 16th 1904, it tells the story of Leopold Bloom, Stephen Dedalus, and Molly Bloom as we learn of their pasts, presents and hopes for the future. Joyce's novel is a meditation on the lives of these characters, and the modern colonial Dublin they inhabit, however it is also a self-reflective piece of literature which foregrounds issues relating to language, style, and storytelling. In the course, we will successively read all of the chapters of *Ulysses*, analyzing it through a variety of critical paradigms, including post-colonialism, modernism, and feminism. We will also watch a number of films relating to Joyce and his work, such as *Nora, Bloom, and Ulysses*, and at the end of the course we will consider the commodification of Joyce as the 'Great Irish Writer' through the yearly Bloomsday celebrations of June 16th in Dublin. Students are encouraged to read Joyce's *Dubliners* and *A Portrait of the Artist as a Young Man* before the class begins. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 264 - (237) Women Writers, 18th to 20th Century

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) Traces the tradition of women's literary writing by "thinking back through our mothers." Authors may include Behn, Burney, Austen, Radcliffe, Shelley, Bronte, Rossetti, Eliot, and Woolf. We may consider European contemporaries (LaRoche, Sand) and transatlantic connections (Fuller, Alcott). **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 265 - (238) Jewish Women Writers

Course Units: 1

(Winter; Lewin) (Offered once every four years) A study of Jewish women's writing. We will be particularly concerned with how the question of religion complicates female representations of gender, nationality, class, sexual orientation, and ethnicity. Texts range from the first autobiography by a Jewish woman (17th-century Glikl of Hameln) to novels and short stories of the 21st century in English and translation. Each instance of the class has been taught differently in consultation with class members' interests. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC: HUL** **Note:** Each instance of the class has been taught differently in consultation with class members' interests.

EGL 266 - (240) Black Women Writers

Course Units: 1

(Winter; Lynes) (Offered twice every four years) This course provides an introduction to the major themes and concerns of twentieth- and twenty-first century African American women writers. We begin in the 18th century and move quickly to the 20th and 21st. We will examine the ways in which black womanhood is characterized through intersecting categories of race, gender, class, sexuality, and empire. We will explore how selected authors wrestle with stereotypical images of African American women, examine the connections between black womanhood, community, and empire, and discuss the benefits and limitations of the concept of "black women's writing." Possible writers include Frances Harper, Maria Stewart, Anne Spencer, Zora Neale Hurston, Gwendolyn Brooks, Toni Morrison, Audre Lorde, Gloria Naylor, Octavia Butler, and others. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC: LCC**

EGL 268 - Gender and Genre

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) How do conventions of gender difference inflect the way stories are told and interpreted? We will explore a variety of historical contexts as well as the concepts of "gender" and "genre" while investigating basic narrational elements such as the contract between narrator and addressee, framing devices, closure and delay and how these elements contribute to a construction of gender categories. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC: HUL**

EGL 270 - Humanities: The Origins

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) Readings of selected masterworks from Hebrew, Greek, and Latin literature. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC: HUL**

EGL 272 - (279) Epic

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) In this course students will be introduced to epic poetry, long narrative poems on a serious subject. We will study both traditional oral epic poetry and literary epic poems and read most of the Homeric Iliad and Odyssey as well as Virgil's Aeneid, Milton's Paradise Lost, Beowulf, and The Song of Roland. The course will emphasize close reading as the basis for getting to know these works and becoming familiar with the language, epithets, similes, and other stylistic conventions that characterize epic. Students will be expected to develop critical skills in several short and longer papers and learn how to write about epic poetry in a clear and articulate way. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC: HUL**

EGL 273 - Satire

Course Units: 1

(Spring; Heinegg) (Offered intermittently) Satire is a paradoxical art, a form of social chemotherapy: it mocks and scorns in order to correct and improve. And since humanity provides a constant supply of follies and pretensions, it is an enduring and universal art as well. This course will study satire through time and various cultures, from Aristophanes and Horace to Swift and Pope and up through Slaughterhouse Five and The Simpsons.

Prerequisite(s): EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 275 - Autobiography

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) "Who am I and how did I get this way?" This course is a study in the development of autobiography as literary genre from St. Augustine's Confessions to Frank McCourt's Angela's Ashes. We will focus on autobiography as a space for exploring, expressing, and constructing the self as well as an inquiry into the developing relationship between mind and world. We will also examine the various motives behind writing one's life-story from the existential and religious to the political and historical.

Related issues to be discussed include the role of imagination, memory, and language in narrating the self, and the particular impact of minority, marginalized, and forbidden voices. We will also talk about the recent scandals involving fabricated autobiographies. Does an autobiography have to be true? Readings may include Montaigne's Essays, Rousseau's Confessions, Woolf's A Sketch of the Past, Styron's Darkness Visible, Wurtzel's Prozac Nation, Spiegelman's Maus, and Satrapi's Persopolis. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 276 - (281) Literature of the Manor House

Course Units: 1

(Winter; Burkett) (Offered three years out of four) In this course we will investigate the rich and complex history of the genre of English manor house fiction. Focusing on texts ranging from Jane Austen's Northanger Abbey and E. M. Forster's Howards End to Kazuo Ishiguro's The Remains of the Day, Sarah Waters' The Little Stranger, and Ian McEwan's Atonement, we will explore issues of gender, sexuality, race, and especially class in both course readings and class discussions. Furthermore, we'll examine a number of filmic representations of British country house life, including Robert Altman's Gosford Park and Julian Fellowes's Downton Abbey. In addition to crafting course papers, students will have the option to research, create, and showcase their own multi-media projects exploring virtual manor homes via a range of freely downloadable programs and platforms.

Prerequisite(s): EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 277 - Philosophical Fiction

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) This course will deal with works of fiction in which philosophy or philosophical concepts play a significant role. A key issue is the relationship between ideas and (literary) form. Authors will come from a wide range of traditions and may include Descartes, Rousseau, Wordsworth, Nietzsche, Camus, Dostoevsky, Borges, Calvino, Lem, and Le Guin. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 278 - (287) Science Fiction

Course Units: 1

(Not offered this Academic Year) (Offered once every four years) A survey of science fiction, focusing primarily on novels written after World War II. Topics covered may include: visions of dystopia, alternate histories, models of gender, fears of technology, and new views of race and sexuality. Likely authors include Asimov, Clarke, Lem, Dick, Herbert, LeGuin, Delany, Butler, and Gibson. Film may also be a significant component of the course. Possible directors include Kubrick, Spielberg, Cronenberg, Gilliam, and Scott. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 279 - (250) Literature and Science

Course Units: 1

(Not offered this Academic Year) (Offered three years out of four) An interdisciplinary examination of the interactions between literature and science. Topics will vary from year to year and may include science writing, the representation of science and scientists in literature, literature inspired by science, literature and science as competing ways of knowing the world, the figurative dimension of scientific writing, and speculative fiction. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 280 - Nature and Environmental Writing

Course Units: 1

(Fall; Lynes) (Offered intermittently) This course will focus on the traditions of nature and environmental writing in the American context, with an emphasis on the social and cultural dynamics of the environment and environmental action. Among other questions, we will ask ourselves: How do class, gender, and race enter into the nexus of social interactions that shape our environment? What is the place of literature in community, literacy, and environmental activism? What are the connections between the ways we speak and write about the environment and our actions toward the environment? How does the wilderness concept affect the ways citizens have access to public spaces? We will consider the concept of "nature" as we move through the course, culminating (if you like) with some nature writing of your own.

Attendance for community conversation is required, as are the completion of short papers, reading-aloud performances, quizzes. Engaged interaction with the poetry and with others in the class will be expected and appreciated. Selections from *Reading the Roots: American Nature Writing Before Walden*; Thoreau, Henry David: selections from *Walden and Other Writings*; Carson, Rachel: *Silent Spring*; selections from *Colors of Nature*; Leopold, Aldo: selections from *Sand County Almanac*; Savoy, Lauret: *Trace: Memory, History, and the American Landscape*; Schauffler, F. Marina: *Turning to Earth: Stories of Ecological Conversion*; Kingsolver, Barbara: *Small Wonder*, essays. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 281 - Environmental Psychology and Place Attachment in the American Literary Landscape

Course Units: 1

(Not offered this Academic Year) New Course. Environmental research psychologist Maria Vittoria Giuliani emphasizes that human-to-place attachments "not only permeate our daily life but very often appear also in the representations, idealizations and expressions of life and affect represented [in] literature." Indeed, many literary works emphasize humanity's basic attachment needs and the importance person-to-place bonds have in the development of the human psyche. American fiction writers frequently employ descriptions of American landscapes as inspiration for character and plot development, and American nature writers often emphasize the way in which wilderness environments may influence one's mental and physical health and emotional well-being. In fact, recent studies in the field of cognitive neuroscience provide empirical evidence to substantiate the theory that exposure to a natural environment may actually generate structural changes in the brain by increasing oxygenation and blood flow that occur in response to neural activity. Hence, this course will employ contemporary studies in place attachment, environmental psychology, and cognitive neuroscience to examine the way in which various literary works illustrate the important role environment plays in aiding or obstructing one's ability to think, reason, remember, problem-solve, process information, use language, or be creative. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, WAC

EGL 286 - Transnational Literature, Film, and Theory

Course Units: 1

(Not offered this Academic Year) While modern colonialism dating back to the 18th century brought the entire globe into contact, the nation-state remained the relevant unit of culture. Unprecedented levels of migration and technological development in the past century, however, have made it impossible to ignore the fact that we are now living in a thoroughly transnational world—a new world order whose contours we yet barely grasp. How do social identity formations shift when nation-state boundaries are challenged? What sorts of new ethical dilemmas and self-other relations are engendered? Is anti-colonialism, staged as it was in the theater of national liberation, de-fanged or enabled by transnationalism? What new aesthetic forms and modes are generated by transnationalism; and how do cosmopolitans, exiles, diasporics, hybrids, and long-distance nationalists affect the field of culture? These are among the questions we will examine over the course of the term through the complementary lenses of film, literature, and

theory. This blended learning course, co-developed by Bina Gogineni from Skidmore College and Jenelle Troxell from Union, will draw on new media to cultivate students' creativity and analytical skills, and link students between campuses. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, WAC

EGL 287 - Gender and Sexuality in Film

Course Units: 1

(Not offered this Academic Year) This course examines the intersecting roles played by gender and sexuality in our media, with particular emphasis placed on film and video. Over the course of the semester, we will investigate the ways in which various media texts transmit and construct gender and sexuality and how viewers interpret and integrate these representations into their daily lives. As we analyze films by such directors as Alfred Hitchcock, Douglas Sirk, Julie Dash, Trinh T. Minh-ha, and Jonathan Caouette we will explore the ways in which conceptions of gender and sexuality are facilitated and constrained by legal, medical, and ethical discourses that emerge from specific historical and geographic contexts.

Prerequisite(s): EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, WAC

EGL 288 - (285) Film as Fictive Art: World Cinema - History and Analysis

Course Units: 1

(Not offered this Academic Year) (Offered most years) The designation "world cinema" has customarily denoted cultures of filmmaking existing outside the Hollywood monolith and has generally focused on traditions of national cinema. Today more than ever, however, the film industry is enmeshed in systems of TV and cable networks, digital technologies, and capital flows, which exceed national boundaries. Over the course of the term, we will investigate the heuristic, political, and affective force of the concept of "national cinema," while at the same time, analyzing the complex formations of identity, citizenship, and ethics, portrayed on screen and constructed through transnational networks of production, exhibition, and distribution. We will pay close attention to methods, terminology, and tools needed for the critical analysis of film and will link the analysis of such formal features as editing, mise-en-scene, and sound design to specific historical and cultural distinctions and changes, ranging from the coming of synchronized speech to the digital convergences that shape screen studies today. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL, WAC

EGL 289 - Studies in a Major Film Director

Course Units: 1

(Not offered this Academic Year) This course provides a close viewing of a variety of films from across a single director's career, paying particular attention to continuities of theme, style, and structure. Each incarnation of the course will feature a different director. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 290 - (288) Studies in Film Genre/Style: Documentary

Course Units: 1

(Not offered this Academic Year) Documentary films and reality television shows have become more prevalent than ever. Documentary images pervade intimate spheres of our lives through cell phones, youtube, and a variety of other screen interfaces, engendering powerful affective forces driving everything from humanitarian aid to global political agendas. Why this increased interest in the documentary form? Traditionally, the documentary has tended to emerge during crisis situations, often reflecting and commenting on past and present social and political unrest. Over the course of the term we will examine documentarians' search for appropriate forms to provoke discussion of social content. We will investigate the myth of documentary authenticity as well as controversial epistemological and ethical claims bound up with the genre. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 293 - (200) Workshop in Poetry

Course Units: 1

(Fall; Smith) This is a course for students with a serious interest in writing poetry. Classes will be divided between discussions of literary technique, workshop critiques of student writing, and consideration of the work of several contemporary poets. Students will prepare a final portfolio of ten to fifteen pages. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 294 - (201) Workshop in Fiction

Course Units: 1

(Winter; Tuon) (Offered every year) A first course in the writing of fiction, intended for students with good writing skills. Some class time will be devoted to the discussion of published fiction and to lectures/instruction about constructing the "well-made" short story. However, most of the course will be devoted to workshop critiques of students' stories. Students will be asked to write at least five short stories outside of class, as well as several in-class exercises; to write one or more essays on published works of fiction and on their own writing experiences; and to provide both written and oral critiques of classmates' work. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 295 - (202) Workshop in Non-Fiction Prose

Course Units: 1

(Not offered this Academic Year) (Offered twice every four years) A first course in the writing of nonfiction prose, emphasizing critiques of student work and workshop-like critiques of such nonfiction stylists as Didion, Dillard, Emerson, D'Agata, Sebald, Montaigne. We will focus on point of view, pacing, tone, and other such prose techniques. Students will write and revise several short pieces, only one of which may be autobiographical. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 296 - (299) Power of Words

Course Units: 1

(Not offered this Academic Year) (Offered intermittently) Employers everywhere want to hire the best writers and communicators. Let's get ready! The Power of Words is for all students -- in any major -- who are serious about writing well and presenting ideas effectively. From e-mails to cover letters, from short talks to PowerPoint's, this course is about communication for the real world. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test. **CC:** HUL

EGL 296H - English Honors Independent Project 2

Course Units: 1

(non-Honors)

EGL 297 - Literary Research Practicum 1

Course Units: 0

(Not offered this Academic Year) The English research practicum is designed to allow students to engage in advanced literary research during their undergraduate careers. Students will work on the research project of a faculty member, under that faculty member's direction. This course requires advance permission of the instructor, who sets the course requirements. To receive Pass/Fail credit equivalent to one course, the student must earn passing grades for three terms of the practicum experience. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test.

EGL 298 - Literary Research Practicum 2

Course Units: 0

(Not offered this Academic Year) The English research practicum is designed to allow students to engage in advanced literary research during their undergraduate careers. Students will work on the research project of a faculty member, under that faculty member's direction. This course requires advance permission of the instructor, who sets the course requirements. To receive Pass/Fail credit equivalent to one course, the student must earn passing grades for three terms of the practicum experience. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test.

EGL 299 - Literary Research Practicum 3

Course Units: 1

(Not offered this Academic Year) The English research practicum is designed to allow students to engage in advanced literary research during their undergraduate careers. Students will work on the research project of a faculty member, under that faculty member's direction. This course requires advance permission of the instructor, who sets the course requirements. To receive Pass/Fail credit equivalent to one course, the student must earn passing grades for three terms of the practicum experience. **Prerequisite(s):** EGL 100 or EGL 101 or EGL 102 or a grade of 5 on the AP English Literature or Language test.

EGL 300 - Jr. Seminar: Poetry Workshop

Course Units: 1

(Spring; Smith) A workshop course for students with some experience and a serious interest in the writing of poetry. **CC:** HUL, WAC

EGL 301 - Jr. Seminar: Fiction Workshop

Course Units: 1

(Not offered this Academic Year) A workshop course for students with some experience and a serious interest in the writing of fiction. Most of the course will be devoted to workshop critiques of students' stories. Students will be asked to write at least five short stories outside of class, as well as several in-class exercises; to write one or more essays on published works of fiction; and to provide both written and oral critiques of classmates' work. **Prerequisite(s):** It is strongly recommended, although not required, that students have already taken EGL 294 **CC:** HUL, WAC

EGL 302 - Jr. Seminar: Literary Theory

Course Units: 1

(Winter; Bracken) (Offered every year) Reading involves more than just the reader and the text; when we read, our cultural and personal experiences inform our reading. This course considers different critical approaches to literature—from the history of English as a discipline onward—in an attempt to help contextualize reading practices. We will read primary critical texts, primary literary texts, and examples of literary criticism. We will discuss various schools of literary criticism, including (but not limited to) Structuralism, Post-structuralism, Marxism, Psychoanalysis, Feminism, Queer Theory, Disability Studies, Postcolonial Theory, and Critical Race Theory. By the end of the semester, students will be able to use appropriate terminology, produce critically informed readings, and speak authoritatively about different critical approaches to literature.

EGL 304 - Jr. Seminar (Fall): The Russian Novel: Leo Tolstoy

Course Units: 1

(Fall; Troxell) A survey of the work of Leo Tolstoy (1828-1910), one of the world's greatest novelists and a major modern prophet-critic. We will

read his supreme masterpiece, *War and Peace*, his midlife autobiography, *A Confession*, and some of his best short fiction. Tolstoy was a brilliant, but difficult person - passionate, headstrong, full of idealism and anger, at once overflowing with life and terrified of death. These qualities give his writing the energy and breadth of vision that make it unforgettable. **CC:** HUL, WAC

EGL 306 - Jr. Seminar (Spring): Milton

Course Units: 1

(Spring; Jenkins) In this seminar we will investigate the ways in which British Romantic imaginative literature becomes employed and transformed by audio, visual, and other technological productions from the mid-nineteenth century to the present. In so doing, we will explore Romantic-era primary texts (e.g., odes, novels, lyric poetry, closet dramas, etc., by William Wordsworth, Mary Shelley, Lord Byron, John Keats and others) alongside theories of new media as well as contemporary media theory and history. **CC:** HUL, WAC

EGL 400 - Sr. Seminar: Poetry Workshop

Course Units: 1

(Not offered this Academic Year) An advanced workshop course in the writing of poetry. **CC:** HUL, WS

EGL 401 - Sr. Seminar: Fiction Workshop

Course Units: 1

(Not offered this Academic Year) An advanced workshop course in the writing of fiction. **CC:** HUL, WS

EGL 402 - English Honors Thesis Seminar 1

Course Units: 0

(Fall; Burkett) A two-term course required for all English majors who are writing an honors senior thesis. The course is conducted mainly as a writing workshop to guide students through the process of writing a thesis. Workshops focus on developing the research and writing skills needed to complete a successful thesis. There will be weekly individual meetings with the instructor as well as weekly group meetings. The course instructor will direct your thesis. **CC:** HUL, WS

EGL 403 - English Honors Thesis Seminar 2

Course Units: 2

(Winter; Burkett) A two-term course required for all English majors who are writing an honors senior thesis. The course is conducted mainly as a writing workshop to guide students through the process of writing a thesis. Workshops focus on developing the research and writing skills needed to complete a successful thesis. There will be weekly individual meetings with the instructor as well as weekly group meetings. The course instructor will direct your thesis. **CC:** HUL, WS

EGL 404 - Sr. Seminar (Fall): Contemporary Jewish Women

Course Units: 1

(Crossed with GSW 495) **(Fall; Lewin)** Today two groups of Jews make up the Jewish majority in the world: half in Israel and half in the US. The

contemporary literature of these two "communities" (though varied within themselves, to be sure) will be the focus of this course. Fiction from Israel is being translated for an English-speaking readership - written by whom, on what subjects, with what political motivations? Similarly, what are the concerns of US writers of fiction identified as "Jewish"? How might they complement or contrast with Israeli concerns? Several genres will be represented; short story collections are particularly popular right now. If students are interested, we may read both American and Israeli graphic novels as well.

Topics: British Mandate Palestine and the founding of Israel, Leaving orthodoxy, Jewish homosexuality, Non-European (Sephardi, Mizrahi) Jews in Israel or America, Americans in Israel, Israelis writing in English, Russian-Jewish immigrant writers;

Genres: Jewish magical realism, sci-fi/speculative, award-winning short story collections, humor-memoir, graphic novels. CC: WS

EGL 406 - Sr. Seminar (Spring): Langston Hughes

Course Units: 1

(Spring; Lynes) Langston Hughes infused American culture with African American folk forms and literary traditions, and has come to represent Blues poetry, African-American drama, and activist writing. What he is not known for is his nature poetry: thus, we will explore this work, along with his more representative pieces. Readings will include his novel, autobiographic writings, poetry, short stories, drama, and essays; we will put his primary works into context with the contemporary readings of his oeuvre. In addition, we will read the current reception and criticism of his primary works.. CC: HUL, WS

EGL 490 - English Independent Studies 1

Course Units: 1

Directed reading and research on arranged topics. By permission of department chair, after a petition submitted in the fifth week of the previous term.

EGL 491 - English Independent Studies 2

Course Units: 1

Directed reading and research on arranged topics. By permission of department chair, after a petition submitted in the fifth week of the previous term.

EGL 496 - English Senior Thesis 1

Course Units: 0

Two-term senior thesis. For use by ID English majors who do not meet the requirements for an English Honors thesis but who are required to complete a two-term interdepartmental thesis by their other ID department.

EGL 497 - English Senior Thesis 2

Course Units: 2

Two-term senior thesis. For use by ID English majors who do not meet the requirements for an English Honors thesis but who are required to complete a two-term interdepartmental thesis by their other ID department.

Environmental Science & Policy

ENS 100 - Introduction to Environmental Studies

Course Units: 1

(Fall, Winter, Spring; Staff) An introduction to the study of environmental studies from both a policy and a scientific perspective. Topics include human population dynamics, pollution and remediation, global warming, acid rain, and biodiversity. Fieldwork during lab periods involves the investigation of local environmental problems. This course is intended for sophomores in the environmental studies program, but it is open to all students. **Corequisite(s):** ENS-100L **CC:** SCLB

ENS 200 - Energy

Course Units: 1

(Not offered this Academic Year) Designed to acquaint the student with the many societal and technological problems facing the United States and the world due to the ever increasing demand for energy. **Corequisite(s):** ENS-200L **Lecture/Lab Hours** Weekly Lab sessions.

ENS 201 - Food Ecology

Course Units: 1

(Same as BIO 201) **(Fall; Willing)** Sophomores and juniors have priority. This course will examine the environmental issues related to producing food; it will include food derived through agriculture and from domesticated or wild animals (dairy, beef, chicken, pork, or fish). We will compare production methods in the technologically advanced West with those in more traditional systems, both past and present. We will look at how and why food production was transformed from an energy-harvesting endeavor into an enormous user of fossil fuel. We will look at how and why food production causes environmental problems, such as: loss of soil fertility, reductions in fresh water supplies, and the pollution of groundwater, rivers, and oceans. We will explore whether current methods of food production are sustainable and adequate for a growing population; we will discuss new ideas that could help ensure food production, while also reducing pollution and use of fossil fuel. **Prerequisite(s):** Prerequisite(s): BIO 110 (102) or declared ENS major **CC:** SET

ENS 204 - Geographic Information Systems

Course Units: 1

(Winter; Ghaly) An introduction to Geographic Information Systems (GIS) technology and its practical uses. Topics include history of GIS, geographic data types, primary data structures, system design, map coordinate systems, data sources, metadata, census data, geographic coding and address matching, digitizing, remote sensing imagery, measures of data quality, and needs assessment. An emphasis will be on hands-on instruction using GIS software (ArcView). Students will work with ArcView throughout the term to complete assignments and a class project. Focus areas include archeology, electric and gas utilities, surveying, health and human services, insurance, law enforcement and criminal justice, media and telecommunications, transportation, water and wastewater, and natural resources. The ultimate goal is to use the spatial component of data in conducting analysis and making decisions. **Prerequisite(s):** A good background in the use of modern computer software. **Corequisite(s):** ENS-204L **CC:** SET **Lecture/Lab Hours** Two class hours and two lab hours weekly.

ENS 208 - Waste Management and Recycling

Course Units: 1

(Not offered this Academic Year) This course will introduce students to various sources of solid waste materials including hazardous and nonhazardous waste, and biodegradable and non-biodegradable waste. Focus areas are overview of landfill systems, geosynthetics, geotextiles, geomembranes, geonets, single clay liner, single geomembrane liner, composite liner systems, leak detection and leachate collection, removal and treatment of leachate, and capping and closure systems. The recycling segment will explore natural resources of raw materials including origin and use. It will also investigate the potential and limitation for recycling of materials. The focus area will be various applications of recycling recyclable

and nonrecyclable materials especially non-biodegradable waste. Discussion of methods of manufacture and compositions of such materials will concentrate on advanced industrial applications for the reuse of non-recyclable waste materials. Application areas include production of new materials, materials with superior qualities for special purposes, and materials with high level of resistance against certain environmental conditions. The course will also touch on the political aspect of recycling including consumer attitude and government incentives to encourage recycling.

Prerequisite(s): ENS 100 or GEO 110 **CC:** SET

ENS 209 - Renewable Energy Systems

Course Units: 1

(Not offered this Academic Year) The study of renewable energy resources and the conversion technologies available to utilize them to meet society's energy needs. Topics include forms of energy; First and Second Laws of Thermodynamics; energy conversion and efficiency; sustainability; energy storage. Historical perspective on world and U.S. energy usage, conversion technologies, and energy resources. Fundamentals of the conversion processes and systems involved in the use of solar thermal and photovoltaic, wind, bioenergy, geothermal, thermoelectric, hydro and ocean technologies. The use of hydrogen as a fuel and technologies to produce and use it. Economic and environmental issues relevant to renewable energy resources. Class will be supplemented with laboratory demonstrations and field trips to visit existing renewable energy systems.

Prerequisite(s): MER 231 or PHY 122 **Corequisite(s):** ENS 209L **CC:** SET

ENS 222 - The New Wall of China

Course Units: 1

(Same as MLT 209) **(Not offered this Academic Year)** See MLT 209 **CC:** LCC, SET

ENS 247 - Sustainable Infrastructure

Course Units: 1

(Not offered this Academic Year) Infrastructure is the backbone of nations. It is a society's inventory of systems and facilities that allow it to function properly and smoothly. This includes, but is not limited to, roads, bridges, tunnels, dams, transit, waterways, ports, aviation, pipelines, transmission lines, rail, parks, and public buildings such as schools, courts, hospitals, and recreational and sport facilities. Infrastructure involves also services such as energy, water supply, wastewater treatment, power and gas distribution grids, waste collection, and sewer disposal. Major advances in technology resulted in digital infrastructure that includes communication networks, signal transmission towers, data centers, information repositories, servers/computers, and the Internet. This course explores the progress humanity achieved in developing infrastructure facilities and the present move towards sustainability. Methods, materials, processes, technologies, practices, and operations required to maintain a healthy environment and efficient infrastructure will be examined. The intersection between policies necessary for sustainable infrastructure and political, economic, social, societal, and cultural factors will be emphasized. **CC:** SET **Lecture/Lab Hours** Four class hours weekly.

ENS 252 - Environmental Geotechniques

Course Units: 1

(Not offered this Academic Year) Environmental Geotechniques: This course explores the natural characteristics, techniques of coring, methods of classification, and testing of soils as a material impacted by the surrounding environment. The utilized methods of testing are those standardized by the American Society for Testing and Materials (ASTM). Basic topics covered are soil exploration, composition, flow and permeability, compaction, compressibility, strength, slope stability, and environmental geotechnology with focus on the Environmental Protection Agency's (EPA) testing and design specifications. **Prerequisite(s):** ENS 100 or GEO 112 **Corequisite(s):** ENS 252L **CC:** SCLB **Lecture/Lab Hours** Three class hours and a weekly lab.

ENS 253 - Environmentally Friendly Buildings

Course Units: 1

(Spring; Mafi) A large percentage of energy consumption and negative effect on environment is attributable to buildings and their use. In this course, through hands-on experience, computer simulation and research, the students will become acquainted with the inner-workings of the subsystems in buildings, such as: Structures, lighting and appliances, heating/air-conditioning, plumbing, basement/crawl space/attic, water and moisture management; enclosure, interior, exterior. The students will become aware of indoor and outdoor environmental and life cycle costs of the existing systems and will learn the latest science and technology to reduce the negative effect of these subsystems on the environment. Laboratory: hands-on experience with the above subsystems, site visits, Computer simulations, research, projects, presentations. **Corequisite(s):** ENS 253L **CC:** SET

ENS 277 - The Water Paradox

Course Units: 1

(Spring; Ghaly) Fresh water is tasteless, odorless, and colorless. These characteristics make water one of the most intriguing materials. It is a necessity for life. A paradox involves features or qualities of contradictory nature. Water is notorious with such qualities. Water is one of the cheapest materials yet it is the most precious commodity known to humanity. Water could be the source of peace and development yet it could be a reason for war and conflict. Water could be a force for good to generate hydropower yet unchecked or unregulated this force could be in the form of destructive floods. Water could be a weapon to combat desertification yet too much thereof could cause erosion and failures. Floods come with loads of mud and silt that charge river deltas and keep them fertile yet weaker floods result in lesser deposits that could threaten river deltas with sea attacks. Water has always been a main reason for people to settle the land yet a shortage thereof could force people to migrate and leave their homeland. This course shows the role water played in the past, is presently playing, and will play in the future in defining communities and societies. **CC:** SET

ENS 291 - Construction for Humanity

Course Units: 1

(Same as HST 291) **(Fall; Ghaly)** An interdisciplinary introduction to the technology of construction and the social uses of building by humans. The course will consider types of building materials and their application to domestic housing, castles, cathedrals, palaces, monuments, dams, bridges, tunnels, factories, and office buildings. **CC:** SET

ENS 295H - Environmental Science & Policy Two Term Honors Independent Project 1

Course Units: 0

Prerequisite(s): Union Scholar.

ENS 296H - Environmental Science & Policy Two Term Honors Independent Project 2

Course Units: 1

Prereq/Corequisite(s): Union Scholar.

ENS 299 - Environmental Forensics

Course Units: 1

(Fall; Ghaly) An interdisciplinary course that will present topics detailing the intersection between the environment, ethics, law, society, litigation, policy, economics, pollution/contamination, cleanup, testing, standards, and sustainability. Sources of environmental problems are usually related to emissions, pollution, contamination, and/or waste disposal. Whether the cause is

intentional or non-intentional, natural factors or a man-made disaster, or due to normal operation or accident, a crisis ensues and cleanup becomes necessary. This inevitably leads to legal actions and litigations that rely on experts in conducting scientific investigations to establish the facts surrounding potential controversies. Topics discussed in the course include liability, environmental site assessment, insurance litigation, toxic torts, science tools, sampling & measurements, statistical analysis, chemical fingerprinting, contaminant transport models, and environmental forensic microscopy. The course will illustrate the above points using case studies. CC: SET

ENS 460 - Environmental Science & Policy Senior Seminar

Course Units: 1

(Winter; Klein) This capstone course for the environmental science and policy program brings together the expertise and experience of all environmental science and policy seniors to study contemporary environmental issues, usually related to a single topic or small number of topics. Issues may include legal cases, legislation and regulation, application of technology to social problems, and national and global environmental policy. Class time may include discussion, debate, field trips, class presentations, and outside speakers. Research and presentation of findings will be stressed. **Prerequisite(s):** Senior standing; Environmental Policy or Environmental Science Major

ENS 490 - Environmental Science & Policy Independent Study 1

Course Units: 1

Independent work on an environmental topic of particular interest under the direction of a faculty advisor. **Prerequisite(s):** Permission of the instructor.

ENS 491 - Environmental Science & Policy Independent Study 2

Course Units: 1

Independent work on an environmental topic of particular interest under the direction of a faculty advisor. **Prereq/Corequisite(s):** Permission of the instructor.

ENS 497 - Environmental Science & Policy Senior Research

Course Units: 1

Senior-level independent research on an environmentally related topic. Substantial writing is required for ENS 497 (must satisfy WACWS requirements, for which WS credit is awarded). Topics are chosen in consultation with, and conducted under the direction of the student's senior research advisor. The results of senior research are presented to an audience of faculty members and peers. **Prerequisite(s):** Senior standing in the environmental science program and permission of the project advisor. **CC: WS Note:** This option is not open to environmental policy majors.

ENS 498 - Environmental Science & Policy Research 1

Course Units: 0

Senior-level research on an environmentally-related topic. Work may take the form of two independent study term projects, or as a two-term senior thesis. Topics are chosen in consultation with and conducted under the direction of the student's advisor. Thesis research must follow the guidelines of the host department. The results of senior research are presented in the senior seminar. **Prerequisite(s):** Senior standing in the environmental studies program and permission of the instructor.

ENS 499 - Environmental Science & Policy Research 2

Course Units: 2

Senior-level research on an environmentally-related topic. Work may take the form of two independent study term projects, or as a two-term senior thesis. Topics are chosen in consultation with and conducted under the direction of the student's advisor. Thesis research must follow the guidelines of the host department. The results of senior research are presented in the senior seminar. **Prerequisite(s):** Senior standing in the environmental studies program and permission of the instructor. **CC: WS Note:** Substantial writing is required (must satisfy WAC-WS requirements, for which WS credit is awarded).

Engineering Science

ESC 100 - Exploring Engineering

Course Units: 1

(Fall; Staff) An introduction to engineering including fundamental topics core to engineering. The course includes a weekly design studio that emphasizes engineering design, teamwork, technical writing and ethics through several individual and team design projects. Not available to junior or senior engineering students. **Corequisite(s):** ESC 100L **CC: SET Note:** General engineering course common to more than one program.

ESC 324 - Advanced Topics in Nanoscience

Course Units:

(Winter; Staff) In-depth coverage of micro and nanoscale microscopy, including scanning electron microscopy and atomic force microscopy and their related modes and diagnostics methods. The course will feature special topics in nanoscience/nanotechnology, such as nanochemistry and structure/property relationships in select nanomaterial systems and/or biological nanomachines, self-assembly of bionanomaterials, and use of nanomaterials for biological sensors. **Prerequisite(s):** PHY 111 or PHY 121 or IMP 113; MTH 115; and CHM 101 or CHM 110; or permission of instructor.

Film Studies

FLM 201 - Documentary Filmmaking: Filtering Your World

Course Units: 1

(Spring; De Seve) This class introduces students to the basics of documentary filmmaking. While covering enough technical know-how to successfully complete class projects, the class will keep its focus on documentary form and storytelling techniques. Students will practice storyboarding, writing synopses and treatments, and deconstructing well-respected documentaries to analyze how they were made. The primary course activity is the production of a short documentary (around 20 minutes) which can be done individually or in groups of two. Besides his or her own work, the student will be expected to participate in screening nights in which students will share each other's work for peer evaluation and discussion. There is also the option of organizing screenings open to the entire student body.

FLM 202 - Digital Filmmaking

Course Units: 1

(Fall; De Seve) This intensive hands-on class guides students from concept to finished film. Students practice the essentials of filmmaking technique, including storytelling, camera work, lighting, sound and editing. Students must be up for a challenging schedule and will make a film each week as they explore the nuts and bolts of moviemaking.

FLM 303 - Cinematic Montage

Course Units: 1

(Winter; De Seve) Learn and practice cinematic montage in this fun, hands-on course. From Dziga Vertov's *Man with a Movie Camera* to modern movie chase scenes, montage takes the basic building blocks of film and combines them to evoke the condensation of space, time, and information. The course will review the history of montage as a starting point to help you practice shooting, editing, sound and effects to create your own montages.

FLM 490 - Film Project or Internship 1

Course Units: 1

Film Studies Independent Study. May take form of independent film project. **Prerequisite(s):** Four other film courses from the lists above and project proposal approved by the Program Directors. Also, upon consultation with Program Directors, a Film Studies-related internship may be arranged for credit toward the minor.

FLM 491 - Film Project or Internship 2

Course Units: 1

Film Studies Independent Study. May take form of independent film project. **Prerequisite(s):** Four other film courses from the lists above and project proposal approved by the Program Directors. Also, upon consultation with Program Directors, a Film Studies-related internship may be arranged for credit toward the minor.

FLM 492 - Film Project or Internship 3

Course Units: 1

Film Studies Independent Study. May take form of independent film project. **Prerequisite(s):** Four other film courses from the lists above and project proposal approved by the Program Directors. Also, upon consultation with Program Directors, a Film Studies-related internship may be arranged for credit toward the minor.

First-Year Preceptorial

FPR 100 - First-Year Preceptorial

Course Units: 1

First-Year Preceptorial (FPR 100) engages students in the exploration of ideas and diverse perspectives through critical reading, thinking, and writing. Note that students in the Scholars Program take Scholars Preceptorial (FPR 100H).

FPR 100H - Scholars Preceptorial

Course Units: 1

Engages students in the exploration of ideas and diverse perspectives through critical reading, thinking, and writing. Note that students in the Scholars Program take Scholars Preceptorial (FPR-100H)

French

FRN 100 - Basic French 1

Course Units: 1

(Fall, Winter; Staff) Basic skills for students who begin with no knowledge of French. **CC:** HUM

FRN 101 - Basic French 2

Course Units: 1

(Winter, Spring; Staff) A continuation of FRN 100 . **Prerequisite(s):** FRN 100 or two years of secondary school French. **CC:** LCCF

FRN 102 - Basic French 3

Course Units: 1

(Fall, Spring; Staff) A continuation of FRN 101 , with introduction of readings. **Prerequisite(s):** FRN 101 or three years of secondary school French **CC:** LCCF

FRN 200 - Intermediate French 1

Course Units: 1

(Fall, Winter; Staff) Intensive review and development of all language skills, with emphasis on vocabulary building, conversation, and composition. **Prerequisite(s):** FRN 102 or equivalent. **CC:** LCCF

FRN 201 - Intermediate French 2

Course Units: 1

(Winter, Spring; Staff) Continuation of extensive review and development, vocabulary building, conversation, and composition. **Prerequisite(s):** FRN 200 or equivalent. **CC:** LCCF

FRN 204T - The French Language Studied Abroad

Course Units: 1

(Fall; Staff) CC: LCCF Note: Fall term in Rennes

FRN 205T - The French Language Studied Abroad

Course Units: 1

(Fall; Staff) CC: LCCF Note: Fall term in Rennes.

FRN 206T - The French Language Studied Abroad

Course Units: 1

(Fall; Staff) CC: LCCF Note: Fall term in Rennes.

FRN 207T - The French Language Studied Abroad

Course Units: 1

(Fall; Staff) CC: LCCF Note: Fall term in Rennes.

FRN 208T - Contemporary France

Course Units: 1

(Fall; Staff) See Terms Abroad program. **CC: LCCF Note:** Fall term in Rennes.

FRN 250T - The French Language Studied Independently Abroad

Course Units: 1

CC: LCCF

FRN 251T - The French Language Studied Independently Abroad

Course Units: 1

CC: LCCF

FRN 300 - Modern France/La France actuelle

Course Units: 1

(Spring; Staff) Studies of contemporary French culture through authentic material, texts, films, radio, and television broadcasts dealing with current historical, political, sociological, and aesthetic issues. **CC: LCCF**

FRN 301 - A Survey of French Literature 1

Course Units: 1

(Fall; Staff) The evolution of French literature from the earliest writings through the age of Enlightenment. Readings of major works from each period to illustrate trends. **CC:** HUL, LCCF, HUM

FRN 302 - A Survey of French Literature 2

Course Units: 1

(Not offered this Academic Year) Selected works representing literature and society from the late eighteenth century to the present. Readings of works from each period to illustrate cultural, historical, and artistic trends. **Prerequisite(s):** FRN 201, any 300-level or permission of instructor. **CC:** HUL, LCCF, HUM

FRN 303 - Advanced French

Course Units: 1

(Not offered this Academic Year) Advanced language training for students who have completed the term abroad in Rennes or who have had similar experience. Examination of finer points of grammar, stylistics, and phonetics. **Prerequisite(s):** FRN 204T or equivalent. **CC:** LCCF

FRN 304 - Studies in the French Caribbean

Course Units: 1

(Not offered this Academic Year) Exploration of how French colonialism has informed artistic expression in the French Antilles. Taking Martinique as a point of departure, we will examine how colonial and post-colonial subjects represent and are represented through literary, theatrical, and musical productions. Themes to include notions of negritude, creolite, and bilingualism, as well as issues of class and gender. **CC:** HUL, LCCF, HUM

FRN 305T - Mini-term in Martinique

Course Units: 1

(Not offered this Academic Year) See Terms Abroad Program. Continuation of the themes of FRN 304, studied and experienced on the island of Martinique. **Prerequisite(s):** FRN 304. **CC:** LCCF

FRN 306T - Readings in French and Francophone Culture

Course Units: 1

(Fall; Staff) See Terms Abroad Program. France and the French of today as reflected in selected literary works from various genres and periods. **CC:** LCCF **Note:** Fall term in Rennes.

FRN 307 - Negritude Movement: Point of Departure in Black African and Afro-Caribbean Literatures in French

Course Units: 1

(Not offered this Academic Year) This study of the Black diaspora in French in the 1930s examines a variety of political and literary strategies developed in reaction to French colonial policies before the era of official independences. We consider authors such as Césaire, Damas, Senghor, Fanon, and Sartre to better understand how these writers represent influences on the literatures of decolonization and post-colonial identity.

Prerequisite(s): FRN 201, any 300-level or permission of instructor. **CC:** LCCF

FRN 308 - Women on Top: Great Women Writers and Characters of French Narrative Fiction

Course Units: 1

(Not offered this Academic Year) French language women writers and the women they write about in their novels and short stories. Authors may include Claire de Duras, George Sand, Colette, Anne Hebert, Marguerite Yourcenar, Simone de Beauvoir, Marguerite Duras, Andrée Chédeville and Mariama Ba. Focus on cultural, historical and political positioning of both writers and their subjects. **CC:** HUL, LCCF, HUM

FRN 309 - Identifying Desire, Desiring Identity: French and Francophone Non-Narrative Literature

Course Units: 1

(Not offered this Academic Year) This course will explore French and Francophone theatre and poetry through the lenses of identity and desire. We will in particular examine notions of self and of other as they are set in play through various dramatic and poetic texts, including, but not limited to, those of Labe, Racine, Baudelaire, Tremblay, Césaire, and Schwartz-Bart. **CC:** HUL, LCCF, HUM

FRN 311 - Studies in Francophone North America: Quebec

Course Units: 1

(Winter; Staff) Exploration of the cultural, literary, and linguistic expressions from the province of Quebec, situating it in the historical and social context of the French-speaking Americas. Focusing on artistic expression from novels to film, we will examine the multiplicities of identities at play in the spaces of Francophone North America as we explore such themes as colonialism, bilingualism, and culturally informed demonstrations of self-determination, revolt, and accommodation. **CC:** HUL, LCCF, HUM

FRN 312 - What is French Cinéma?/Qu'est-ce que le cinéma français?

Course Units: 1

(Same as MLT 215) **(Not offered this Academic Year)** This course moves from an introduction to the earliest examples of French and world cinema, to an in-depth study of widely recognized classics of French cinema, considered in chronological order from 1933 to 1985, so as to develop an appreciation for the history, genre, and particular theme(s) of each film, as well as its originality. Students will learn how to talk about and write analytical papers on the films according to critical, cultural, and technological considerations, in order to determine what, if anything, is particularly "French" about French cinema. The course is taught in English, but students taking the course for French credit will read all materials in French, and assignments will be written in French. **CC:** HUM, LCCF

FRN 400 - Whose Enlightenment?

Course Units: 1

(Not offered this Academic Year) Eighteenth-century France's philosophical tradition, focusing on debates over sex, race, class, education and revolution. Writers may include: Rousseau, Toussaint Louverture, Voltaire, Louise d'Épinay, Olympe de Gouges, Condorcet, Marie Antoinette, and Sade. **CC:** HUL, LCCF, HUM

FRN 401 - The Writers of Romanticism

Course Units: 1

(Not offered this Academic Year) Writers of personal and imaginative prose, poetry, and drama following the French Revolution. The beginning of Realism. **CC:** HUL, LCCF, HUM

FRN 402 - Sex Lives and Videotape: Casting Sexuality in French and Francophone Film

Course Units: 1

(Not offered this Academic Year) Analysis and critique of films whose focus is the "sexual orientation" of its characters. Films may include *La Cage aux folles*, *Les Diaboliques*, *French Twist*, *Sitcom*, *Ma Vie en rose*, *Woubi Cheri*. Theoretical and critical works by authors such as Michel Foucault, Monique Wittig, Simone de Beauvoir, Susan Hayward, Laura Mulvey, Sigmund Freud, and Kate Bornstein will inform our study of these films. Readings in both French and English. All films subtitled. **CC:** LCCF

FRN 403 - Studies in the French Theater

Course Units: 1

(Spring; Staff) Studies of French-language theatrical texts and performances from the classical period to the present. **CC:** HUL, LCCF, HUM

FRN 410 - War Stories; 100 Years of French Literature

Course Units: 1

(Not offered this Academic Year) This course focuses on works in French about war, from memories of the Napoleonic wars to World War II. We will examine the impact of war and conflict on the development of French history and culture, and we will analyze texts (literary, films, novels, short stories, comic books) in their historical and sociocultural context, so as to develop a comparative approach to textual analysis through the connecting theme of war and conflict. **CC:** HUL, LCCF, HUM

FRN 411 - The 20th Century Novel

Course Units: 1

(Not offered this Academic Year) Scandale! Exploration of significant writings from twentieth-century France that have been considered scandalous and scandal-making. Examination of these novels, particular blendings of content and form, and interrogation of the various re-evaluations of identity and expression that they ask their reader to engage in. Explorations of these novels, questions of class, race, nationality, species, sex, and gender. Representative authors: Gide, Proust, Colette, Vian, Dariesussecq. **CC:** HUL, LCCF, HUM

FRN 421 - Histoire de la danse, Danse de l'histoire/History of Dance, Dance of History

Course Units: 1

(Same as ADA 153 , MLT 211) **(Not offered this Academic Year)** Examination of Western European dance and dance texts as revelatory of broader historical and cultural patterns, with special analyses of dance as a key tool of nation-building (as with the court of Louis XIV) and/or a central medium of artistic creation (as in 1920's Paris). Primary focus on France as creator, user, and potential abuser of dance's power, but some attention given other European models (Berlin, St. Petersburg, London). Readings from theoreticians, historians, and dance litterateurs (Moliere, Gautier, Cocteau). **CC:** HUL, LCCF

FRN 430 - West African Oral Literature

Course Units: 1

(Also MLT 213) **(Not offered this Academic Year)** West-African oral genres with a focus on tales and epics in their form and ideologies. Through a study of the oral literature of the region, we will explore the socio-cultural structures of ancient West Africa, their collapse through religious and colonial implications, and their vestiges in today's Africa. **CC:** HUL, LCCF

FRN 431 - Voices of Francophonie Literature from French-Speaking Countries and Territories other than France

Course Units: 1

(Fall; Staff) The ways contemporary writers from former French colonies in West and North Africa and from the French-speaking Caribbean stress local, social, political, religious, and gender matters in their novels and short-stories. We also examine these writers' particular use of the French language according to local meanings and other strategies they develop to redefine post-colonial societies. Among selected writers we have Calixthe Beyala, Mariama Ba, Assia Djebar, Rachid Minouni, Patrick Chamoiseau, and Maryse Conde. **CC:** HUL, LCCF, HUM

FRN 489 - French Senior Project

Course Units: 1

(Winter; Staff) The seminar will provide a forum in which a French or Francophone topic of current interest and importance is explored in depth. Students will gain experience in giving oral presentations and critically evaluating the written work of both established scholars and fellow students, and they must submit a paper to fulfill the senior writing requirement. **CC:** WS

FRN 490 - French Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in French literature. **Prerequisite(s):** At least one course at the 400-level and permission of the instructor.

FRN 491 - French Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in French literature. **Prerequisite(s):** At least one course at the 400-level and permission of the instructor.

FRN 492 - French Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in French literature. **Prerequisite(s):** At least one course at the 400-level and permission of the instructor.

MLT 211 - Histoire de la danse, Danse de l'histoire/History of Dance, Dance of History

Course Units: 1

(same as FRN 421, ADA 153) **(Not offered this Academic Year)** Examination of Western European dance and dance texts as revelatory of broader historical and cultural patterns, with special analyses of dance as a key tool of nation-building (as with the court of Louis XIV) and/or a central medium of artistic creation (as in 1920's Paris). Primary focus on France as creator, user, and potential abuser of dance's power, but some attention given other European models (Berlin, St. Petersburg, London). Readings from theoreticians, historians, and dance litterateurs (Moliere, Gautier, Cocteau). **Corequisite(s):**

CC: HUL, LCC

MLT 212 - Sex Lives and Videotape: Casting Sexuality in French and Francophone Film

Course Units: 1

(same as FRN 402) **(Not offered this Academic Year)** Analysis and critique of films whose focus is the "sexual orientation" of its characters. Films may include La Cage aux folles, Les Diaboliques, French Twist, Sitcom, Ma Vie en rose, Woubi Cheri. Theoretical and critical works by authors such as Michel Foucault, Monique Wittig, Simone de Beauvoir, Susan Hayward, Laura Mulvey, Sigmund Freud, and Kate Bornstein will inform our study of these films. Readings in both French and English. All films subtitled. **CC:** HUL, LCC

MLT 213 - West African Oral Literature

Course Units: 1

(same as FRN 430) **(Not offered this Academic Year)** West-African oral genres with a focus on tales and epics in their form and ideologies. Through a study of the oral literature of the region, we will explore the socio-cultural structures of ancient West Africa, their collapse through religious and colonial implications, and their vestiges in today's Africa. **CC:** HUL, LCC

MLT 215 - What is French Cinéma?/Qu'est-ce que le cinéma français?

Course Units: 1

(same as FRN 312) **(Not offered this Academic Year)** This course moves from an introduction to the earliest examples of French and world cinema, to an in-depth study of widely recognized classics of French cinema, considered in chronological order from 1933 to 1985, so as to develop an appreciation for the history, genre, and particular theme(s) of each film, as well as its originality. Students will learn how to talk about and write analytical papers on the films according to critical, cultural, and technological considerations, in order to determine what, if anything, is particularly "French" about French cinema. The course is taught in English, but students taking the course for French credit will read all materials in French, and assignments will be written in French. **CC:** HUM, LCC

Geology

GEO 103 - Great Moments in The History of Life

Course Units: 1

(Not offered this Academic Year) This course examines major events in the development of life on Earth including the origin of the chemical elements that make up our solar system, coalescence of the solar system, pre-biotic synthesis of organic chemicals, origin and consequences of

photosynthesis, the explosion of multicellular life, colonization of land, and the cause and effects of major extinctions (Ordovician, Permian, Cretaceous and Holocene). Geologic evidence related to these events will be central to the course. **Corequisite(s):** GEO-103L **CC:** SET

GEO 106 - Introduction to Oceanography

Course Units: 1

(Not offered this Academic Year) The oceans cover 71% of the planet and hold 97% of the earth's available water and 50% of the planet's species, but more than 95% of the ocean remains unexplored. This course covers physical, chemical, and biological oceanography. The course involves an examination of plate tectonics, ocean currents and the forces driving them, the role of the oceans in climate change, coastal processes and sea level change, biological productivity, and the ocean fishing industries. **Corequisite(s):** GEO-106L **CC:** SCLB **Note:** May require a weekend field trip.

GEO 108 - Earth Resources

Course Units: 1

(Not offered this Academic Year) The goal of this course is to provide students an appreciation of the importance of mineral and fuel resources for modern society, and insight into the geology of economically valuable deposits. Issues concerning the discovery, development, environmental impacts, and estimates of amounts of resources available will be discussed in a geological, economic, and technological context. **Corequisite(s):** GEO-108L **CC:** SCLB

GEO 109 - Geologic Perspectives on Global Warming

Course Units: 1

(Not offered this Academic Year) Global climate change is one of the defining issues of our time. This course covers the basics of the climate system; topics include: the radiation balance of Earth, the role of greenhouse gases on Earth's surface temperature, atmospheric and oceanic circulation, and natural oscillators in the climate system. A significant portion of the course is dedicated to understanding natural climatic variability on Ice Age and postglacial timescales, and the perspective that this understanding gives us when predicting future temperature trends on Earth and the likely impact that these trends will have on human society. **CC:** SET

GEO 110 - Physical Geology

Course Units: 1

(Fall; Hollocher) Examination of how our dynamic planet works including plate tectonics, geologic age determination, the processes that form the variety of rocks we see at the Earth's surface, the development of the stunning variety of landscapes we see, and many topics of contemporary interest including floods, the nature of underground water resources, coastal erosion, earthquakes, erosion and mass transport, volcanoes, and climate change. **Prerequisite(s):** Preference given to first and second year students. **Corequisite(s):** GEO-110L **CC:** SCLB

GEO 112 - Environmental Geology

Course Units: 1

(Not offered this Academic Year) Basic geologic concepts are used for understanding a variety of natural and human-induced geologic hazards that directly affect people. This course examines the nature of various natural hazards including earthquakes, volcanoes, landslides, floods, and coastal erosion. Also examines the interplay between human activities and the environment, such as soil and groundwater contamination, solid-waste disposal, resource development; the geologic record of global change, and the debate over global warming. **Prerequisite(s):** Preference given to first and second year students. **Corequisite(s):** GEO-112L **CC:** SCLB

GEO 117 - Natural Disasters

Course Units: 1

(Spring; Garver) An introduction to the geologic processes causing floods, earthquakes, volcanoes, landslides, and other natural hazards and how hazards affect people and society. The course will include discussion of major events in the geologic and historical record as well as future hazard potential. We will assess the risks humans face in different regions, including local hazards, our contribution to geologic hazards, and how we can minimize and cope with future events. **Prerequisite(s):** Preference given to first and second year students. **Corequisite(s):** GEO-117L **CC:** SCLB

GEO 120 - The Earth and Life Through Time

Course Units: 1

(Fall; Gillikin) An investigation of Earth's dynamic history and evolutionary changes over the past 4.5 billion years. Topics include the geologic evidence for the evolution of life, for major changes in the nature of Earth's atmosphere and oceans, and for major mountain building events that have affected the continents as well as the evolutionary development of plant and animal life as recorded in the geologic record. Specific topics include the origin of life, mass extinctions of dinosaurs and other organisms, paleoclimate, and the geologic history of New York State. The link between geology, chemical cycles and life is highlighted, as is the relation of past biogeochemical changes to current global environmental change. May require a weekend field trip. **Prerequisite(s):** Preference given to first and second year students. **Corequisite(s):** GEO-120L **CC:** SCLB

GEO 201 - Stratigraphy and Depositional Environments of New York

Course Units: 1

(Fall; Garver) Tectonic events revealed through the stratigraphy and inferred depositional environments of the lower Paleozoic sedimentary rock sequences in eastern New York. Stratigraphic and sedimentologic concepts are explored through weekly field studies and comparison with modern depositional systems. **Prerequisite(s):** Any geology course numbered 110 or higher. **Corequisite(s):** GEO-201L **Lecture/Lab Hours** Weekly lab.

GEO 202 - Geomorphology

Course Units: 1

(Fall; Rodbell) Processes operating on and near the Earth's surface are responsible for the development of landforms, and the evolution of these landforms through time. This course covers erosional and depositional processes of glaciers, rivers, hillslopes, and wind, and the geochemical reactions responsible for the formation of soils and caves. These topics are covered within the context of the geologic evolution of the Mohawk Valley since the end of the last Ice Age **Prerequisite(s):** Any geology course numbered 110 or higher. **Corequisite(s):** GEO-202L **Lecture/Lab Hours** Weekly lab.

GEO 203 - Lakes and Environmental Change

Course Units: 1

(Not offered this Academic Year) Modern limnology and the record of environmental change as recorded in the physical and chemical properties of lake water and lake sediments. Includes a term-long research project on two local lakes, and the interpretation of the proxy paleoenvironmental indicators contained in sediment cores from these lakes. **Prerequisite(s):** Any Geology or Biology course numbered 110 or higher. **Corequisite(s):** GEO-203L **Lecture/Lab Hours** Weekly lab.

GEO 205 - Tectonics

Course Units: 1

(Winter; Garver) This course explores the dynamics of active plate boundaries and plate motions as revealed in plate margin deformation,

earthquakes, volcanic activity, and metamorphism. Includes an introduction to stress and strain, deformation mechanisms, faults and folds, geochronology, and petrology of distinct rocks in convergent settings. **Prerequisite(s):** Any Geology course numbered 110 or higher.

GEO 206 - Volcanology

Course Units: 1

(Spring; Frey) Overview of the geological, chemical, and physical processes that generate volcanoes and the implications of volcanism and what they tell us about Earth's internal processes; properties, generation, and evolution of magmas and magma chambers; eruptive mechanisms; classification of volcanic deposits; climate effects; and volcanic hazards, including their prediction and mitigation. Labs include case studies of classic volcanic eruptions. **Prerequisite(s):** Any geology course numbered 110 or higher. **Lecture/Lab Hours** Weekly lab.

GEO 207 - Stable Isotopes in Environmental Science

Course Units: 1

(Not offered this Academic Year) Stable isotopes have become a fundamental tool in many biogeoscientific studies, from reconstructing past climates to tracking animal migration or unraveling foodwebs and even to study the origin of life on Earth and possibly other planets. This course highlights the applications of stable isotopes in biological, ecological, environmental, archeological, and geological studies. Students learn the fundamentals of stable isotope biogeochemistry in order to understand the uses and limitations of this tool. This course starts with an introduction to the fundamentals of stable isotope geochemistry and then moves on to applied topics such as paleoceanography and paleoclimatology proxies, hydrology, sediments and sedimentary rocks, biogeochemical cycling, the global carbon cycle, photosynthesis, metabolism, ecology, organic matter degradation, pollution, and more. **Prerequisite(s):** Any geology or biology courses numbered 110 or higher, or CHM 101, or ENS 100, or permission of the instructor. **Lecture/Lab Hours** Weekly lab.

GEO 208 - Paleontology, Paleobiology, and Paleoecology

Course Units: 1

(same as BIO 208) **(Spring; Verheyden)** Nearly all species that have existed on Earth are now extinct and are only known through the fossil record. This course examines the evolution and history of life on Earth as interpreted from the fossil record. Topics include fossil preservation, taphonomy, ontogeny, diversity trajectories through geologic time, evolutionary mechanisms, extinction, paleobiology, paleoecology, and paleoclimate. Special emphasis will be placed on using fossils to interpret ancient environments as well as deciphering past climates. The course focuses on the fossil record of marine invertebrates, but major groups of vertebrates and plants are also covered. **Prerequisite(s):** Any geology or biology course numbered 110 or higher. **Corequisite(s):** GEO-208L **Lecture/Lab Hours** Weekly lab.

GEO 209 - Paleoclimatology

Course Units: 1

(Not offered this Academic Year) Climate is fundamentally relevant to modern and ancient societies. Global warming is occurring today, and whether it is driven by human activities (e.g., CO₂, CH₄ emissions) or by natural climate cycles can only be determined by understanding natural climatic variability. Fortunately, there are many tools, and natural climatic records, which can provide us with information on past climate (e.g. tree rings, ice cores from glaciers, and sediment cores from lakes and oceans). Obtaining, documenting and interpreting these records is the field of paleoclimatology, and it is the focus of this course. Past climate variability is used to highlight possible scenarios of future climate change. **Prerequisite(s):** Any geology course numbered 110 or higher, or permission of the instructor. **Lecture/Lab Hours** Weekly lab.

GEO 220 - Mineral Science

Course Units: 1

(Winter; Manon) Study of the diverse solid materials that make up most of our planet, many of our industrial resources and materials, and most of our precious gems. We will examine the nature of the external and internal symmetry of crystals, chemical bonding and substitution in crystal lattices, mineral properties, crystal optics, and the identification of minerals by physical, chemical, optical, and X-ray diffraction techniques.

Prerequisite(s): CHM 101 and any geology course numbered 110 or higher. **Corequisite(s):** GEO-220L **Lecture/Lab Hours** Weekly lab.

GEO 300 - Glacial and Quaternary Geology

Course Units: 1

(Not offered this Academic Year) The transformation of snow to ice, the mass balance of glaciers, types of glaciers, and the processes that control glacier sliding, erosion, and deposition. Includes techniques commonly employed to date Quaternary deposits and an examination of the geologic record of the Ice Ages as recorded in glaciers, glacial deposits, and marine and lake sediments of the Quaternary period. Weekly labs document the geologic record of the last glaciation in exposures in the southern Adirondacks, central Hudson Valley, eastern Mohawk Valley, and northern Schoharie Valley.

Prerequisite(s): Any geology course numbered 200 or higher, or permission of the instructor. **Corequisite(s):** GEO-300L

Lecture/Lab Hours Weekly lab.

GEO 302 - Geochemical Systems and Modeling

Course Units: 1

(Winter; Hollocher) This course investigates the Earth as a chemical system and the use of chemical tools to understand geologic processes. Topics include origin of the elements, formation and differentiation of the earth, igneous processes, radioactive isotopes and radiometric dating, and geochemistry of near-surface waters and the oceans. Work includes theory, sample collection, sample preparation, chemical analysis using in-house equipment, and computer modeling of the analyzed geochemical systems using the acquired data. Clear writing, data presentation, and discussions of the contemporary geochemical literature are important components of this course.

Prerequisite(s): CHM 102 **Corequisite(s):** GEO-302L

Lecture/Lab Hours Weekly lab.

GEO 303 - Geophysics

Course Units: 1

(Not offered this Academic Year) Gravity and magnetic fields of the earth, gravity and magnetic anomalies, magnetic properties of rocks and paleomagnetism, earthquakes and seismology, precession of the Earth's spin axis, density distribution and models for the Earth's interior; wave propagation in rocks, seismic reflection and refraction, geophysical field methods, data processing and interpretation, electrical methods, radioactivity, heat flow, thermal history of the Earth, global dynamics and plate tectonics, comparative planetology. Labs emphasize hands-on use of modern geophysical equipment.

Prerequisite(s): PHY 100 or PHY 120 **Corequisite(s):** GEO-303L **Lecture/Lab Hours** Weekly lab.

GEO 304 - Carbonate Sedimentology

Course Units: 1

(Not offered this Academic Year) Examination of carbonate rocks, carbonate environments, animal-sediment interactions, and the oceanographic and climatic factors that affect deposition including sea level change, catastrophic storms, and groundwater. Field studies include examples of modern and ancient coral reefs, lagoons, tidal inlets, beaches, hypersaline lakes, and tidal flats. Course includes a required week field trip to the Bahamian Field station on San Salvador Island.

Prerequisite(s): Option 1: i) Any Geology course numbered 110 or higher; and ii) GEO 201 or GEO 202 (may be concurrent), or permission of instructor. Option 2: i) Any Geology numbered 110 or higher; and ii) declared major in biology (esp. helpful is Ecology), and permission of the instructor. For either option, students must meet basic term abroad requirements and must submit an application. **Corequisite(s):** GEO-304L

GEO 305 - Biogeochemistry

Course Units: 1

(Same as BIO 235) **(Not offered this Academic Year)** Biology, geology and chemistry are intricately linked to form the world around us. John Muir was aware of this in 1911 when he wrote his famous quote "When we try to pick out anything by itself, we find it hitched to everything else in the Universe." Biogeochemical cycles set the stage for life on Earth. This course explores the nitrogen, phosphorus, sulfur, water, and carbon cycles at the surface of the Earth. We investigate how biological (e.g., primary production, respiration), anthropogenic (e.g., urbanization, pollution) and geological processes (e.g., tectonics, rock weathering) influence these chemical cycles. Field studies focus on tropical marine biogeochemistry of coral reefs, mangrove forests, seagrass meadows, lagoons, estuaries, hypersaline lakes, and tidal flats. Course includes a required week-long field trip to San Salvador Island, Bahamas. There are additional costs associated with field trip expenses. **Prerequisite(s):** All students must meet basic term abroad requirements and submit an application. This course is open to all students, but preference will be given to those with a declared major in geology, environmental science or biology. **Corequisite(s):** GEO-305L

GEO 307 - Structural Geology

Course Units: 1

(Spring; Manon) The geometry and dynamics of deformed rocks involving detailed description and kinematic analysis of field sites. Topics include stress and strain, folding, faulting, cleavage formation, map interpretation, and the relationships between plate tectonic settings and crustal structure. Course focuses on the structural evolution of eastern New York as seen in field projects. **Prerequisite(s):** Any geology course numbered 200 or higher, or permission of the instructor. **Corequisite(s):** GEO-307L **Lecture/Lab Hours** Weekly lab.

GEO 320 - Origin of Igneous and Metamorphic Rocks

Course Units: 1

(Spring; Hollocher) How the processes of melting, crystallization, heat, pressure, and strain create some of the most abundant minerals and rocks in the Earth's crust and upper mantle. Emphasis will be on the examination of rock thin sections using polarizing microscopes, interpretation of rock mineralogy and textures, and use of rock and mineral chemistry to understand igneous and metamorphic processes. **Prerequisite(s):** GEO 220 **Corequisite(s):** GEO-320L **Lecture/Lab Hours** Weekly lab and three all-day trips.

GEO 355T - Living on the Edge

Course Units: 1

(Not offered this Academic Year) The field study of earthquakes, volcanoes, glaciers, and other hazards where tectonic plates collide and mountains form. Field studies focus on understanding the science behind geologic hazards that lead to catastrophic events and subsequent loss of life. Fieldwork is aimed at recognizing hazards, understanding the processes behind the hazards, and to see the role that society plays in mitigating these hazards. The study area alternates around the Pacific Rim between locations that include Peru (June), Alaska (June), and New Zealand (December). Fieldwork is preceded by organizational sessions on campus to prepare for field projects. **Prerequisite(s):** Any introductory geology course. Mini term abroad. **Note:**

GEO 356T - Volcanoes and Society

Course Units: 1

(Not offered this Academic Year) A close look at powerful volcanic eruptions and how those eruptions affect society and culture. This field course focuses on sites that have an excellent archeological record of volcanism or where modern society faces a serious volcanic threat. Course will include study of dating methods and the effects of major volcanic eruptions on global climate. This research-oriented course is conducted largely in the field and projects include mapping and interpreting volcanic deposits. **Prerequisite(s):** Any introductory level geology course and permission of the instructor. Mini-term abroad

GEO 405 - Geology Senior Seminar

Course Units: 1

(Winter; Manon, Frey) Senior capstone course required of all majors. Course covers current developments in the geosciences as reported in the primary literature. Course will include some combination of discussion and review of recently-published articles, review of guest lectures, and oral presentations by students **Prerequisite(s):** Geology major and senior standing. **Note:** Course carries senior writing (WS) credit.

GEO 490 - Geology Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) A program of independent study in a particular area of geology, not available through regular courses, under the supervision of a faculty member. **Prerequisite(s):** Permission of the instructor.

GEO 491 - Geology Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) A program of independent study in a particular area of geology, not available through regular courses, under the supervision of a faculty member. **Prerequisite(s):** Permission of the instructor.

GEO 492 - Geology Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) A program of independent study in a particular area of geology, not available through regular courses, under the supervision of a faculty member. **Prerequisite(s):** Permission of the instructor.

GEO 493 - Geology Independent Study 4

Course Units: 1

(Fall, Winter, Spring; Staff) A program of independent study in a particular area of geology, not available through regular courses, under the supervision of a faculty member. **Prerequisite(s):** Permission of the instructor.

GEO 494 - Geology Independent Study 5

Course Units: 1

(Fall, Winter, Spring; Staff) A program of independent study in a particular area of geology, not available through regular courses, under the supervision of a faculty member. **Prerequisite(s):** Permission of the instructor.

GEO 495 - Geology Thesis Research 1

Course Units: 0

(Fall, Winter, Spring; Staff) Geological research under the direction of a faculty member. Two terms are required for honors. Only one term can be counted toward the two geology electives. Senior writing (WS) credit is satisfied by completion of GEO 496. **Prerequisite(s):** Permission of the instructor.

GEO 496 - Geology Thesis Research 2

Course Units: 2

(Fall, Winter, Spring; Staff) Geological research under the direction of a faculty member. Two terms are required for honors. Only one term can be counted toward the two geology electives. Senior writing (WS) credit is satisfied by completion of GEO 496. **Prerequisite(s):** Permission of the instructor.

GEO 497 - Geology Thesis Research 3

Course Units: 1

(Fall, Winter, Spring; Staff) Geological research under the direction of a faculty member. Two terms are required for honors. Only one term can be counted toward the two geology electives. Senior writing (WS) credit is satisfied by completion of GEO 496. **Prerequisite(s):** Permission of the instructor.

GEO 498 - Geology Research and Writing

Course Units: 1

(Fall, Winter, Spring; Staff) One term of geological research under the direction of a faculty member. **Prerequisite(s):** Permission of the instructor.
CC: WS Note: Course carries senior writing (WS) credit.

German

German Cultural Studies Program

The German Program offers instruction in language, culture, and literature from beginning to advanced levels. Students can complete a minor and a major or interdepartmental major in German Cultural Studies. All students are well served if they combine their study of German with second fields (e.g. another language, the arts, economics, engineering, history, international studies and management, and/or political science). Language study and the experience of the Term Abroad with their resulting linguistic fluency and cultural sensitivity greatly enhance students' opportunities as they pursue careers in their chosen fields.

German Cultural Studies Courses

The study and critical understanding of the literature of Germany, Austria, and Switzerland, in the context of their larger-cultural, social, political, and intellectual history. Prerequisite for 300-level courses listed in this section is [GER 201](#) or another 300-level course. Prerequisite for all 400-level courses is a 300-level course.

GER 100 - Basic German 1

Course Units: 1

(Fall; Staff) Basic skills for students who begin with no knowledge of German. **CC: HUM**

GER 101 - Basic German 2

Course Units: 1

(Winter; Staff) Continuation of GER 100 . **Prerequisite(s):** GER 100 or two years of secondary school German. **CC: LCCG**

GER 102 - Basic German 3

Course Units: 1

(Spring; Staff) Continuation of GER 101 , with introduction of readings. **Prerequisite(s):** GER 101 or three years of secondary school German. **CC:** LCCG

GER 200 - Intermediate German 1

Course Units: 1

(Fall; Staff) Intensive grammar review, emphasis on vocabulary building, idiomatic expressions, conversation, and composition based on cultural and literary texts. **Prerequisite(s):** GER 102 or equivalent. **CC:** LCCG

GER 201 - Intermediate German 2

Course Units: 1

(Winter; Staff) Continuation of extensive grammar review, vocabulary building, conversation, and composition based on more advanced cultural and literary texts. **Prerequisite(s):** GER 200 or equivalent. **CC:** LCCG

GER 202 - Advanced German

Course Units: 1

(Not offered this Academic Year) Mastery of the spoken and written language, with an emphasis on the finer points of grammar, style, and colloquial expression. **Prerequisite(s):** GER 201 or equivalent. **CC:** LCCG

GER 204T - German Language and Culture Studies Abroad

Course Units: 1

(Spring; Staff) See International Programs.

GER 205T - German Language and Culture Studies Abroad

Course Units: 1

(Spring; Staff) See International Programs.

GER 206T - German Language and Culture Studies Abroad

Course Units: 1

(Spring; Staff) See International Programs.

GER 207T - German Language and Culture Studies Abroad

Course Units: 1

(Spring; Staff) See International Programs.

GER 250T - The German Language Studied Independently Abroad

Course Units: 1

GER 251T - The German Language Studied Independently Abroad

Course Units: 1

GER 300T - German Civilization

Course Units: 1

(Spring; Staff) See International Programs. An introduction to the cultural history of German speaking Europe. **Prerequisite(s):** GER 201 or permission of the instructor. **Note:** Spring term in Freiburg/Berlin.

GER 301 - German Culture and the Professions

Course Units: 1

(Not offered this Academic Year) Focus on business oriented linguistic competence (certification possible) and cultural sensitivity, combined with an introduction to the economic history of Germany 1945-present day. **Prerequisite(s):** GER 201 or permission of the instructor. **CC:** LCCG

GER 302 - German Prose: A Survey

Course Units: 1

(Not offered this Academic Year) Selected works representing literature and society from the late eighteenth century to the present. Readings of works from each period to illustrate cultural, historical, and artistic trends. **Prerequisite(s):** GER 201 or permission of the instructor. **CC:** HUL, LCCG, HUM

GER 303 - German Drama: A Survey

Course Units: 1

(Spring; Staff) Theory and practice of German theater from the Enlightenment to the Present. **Prerequisite(s):** GER 201 or permission of the instructor. **CC:** HUL, LCCG, HUM

GER 304 - Once Upon a Time: German Fairy Tales, Folklore, and Fantasy

Course Units: 1

(Not offered this Academic Year) Exploration of the genre and tradition of the German Fairy Tale, its reception within various cultural frameworks, and its influence on later literature of the nineteenth, twentieth and twenty-first centuries, with special focus on identifying aesthetic, sociological, psychological, and psychoanalytical implications and gender issues. The Grimm Brothers' Kinder- und Hausmärchen (and their revisions in popular and literary culture) will provide a basis for discussing the fairy tale's role in culture and its continued vitality within the different cultural frameworks of classical, romantic, and modern folklore and fantasy storytelling. **CC:** HUL, LCCG, HUM

GER 306 - Twentieth Century German Literature

Course Units: 1

(Not offered this Academic Year) Representative works by major writers, read as expressions of concern about their times. **Prerequisite(s):** GER 201 or permission of the instructor. **CC:** HUL, LCCG, HUM

GER 334 - Femme fatales? Women in 19th and 20th Century German Culture and Society

Course Units: 1

(Also MLT 234) **(Not offered this Academic Year)** An examination of female sexuality as one of the central controversies of modern German culture. In addition to analyzing cultural artifacts (plays, films, paintings), we will discuss such diverse social phenomena as the Women's movement, morality crusades, psychoanalysis, and sexuality. **Prerequisite(s):** GER 201. **CC:** HUL, LCCG, HUM

GER 335 - Voices from Abroad: German Exile Culture, 1933-1990

Course Units: 1

(Same as MLT 235) **(Not offered this Academic Year)** This course, taught in translation, is designed for both Germanists and other students of literature interested in exploring notions of exile and the particular cultural artifacts, including novels, films, essays and poetry, that bear witness to the struggle of artists exiled from WWII Germany and Austria. The class additionally examines texts by current emigres to Germany and incorporates theoretical assessments of exile, considering works by Said, Milosz and others. **CC:** HUL, LCCG, HUM

GER 336 - The Thrill of Victory: Reading German Sports and Culture

Course Units: 1

(Also MLT 336). **(Not offered this Academic Year)** This course traces the ways that Sports have reflected and influenced German culture through the 20th century, analyzing links between athleticism and conceptions of gender, nationhood, individuality and race set out in literary texts, films, and visual arts. Exploring notions of victory, physical perfection, and spectatorship, we will consider works by some of Germany's greatest authors and artists, including Kafka, Schnitzler, Brecht, Riefenstahl, Kirschner and Handke. **CC:** HUL, LCCG, HUM

GER 337 - Flashy Erotics to Forbidden Laughter: German Cabaret through the 20th Century

Course Units: 1

(Not offered this Academic Year) This course explores the German "Kabarett," a dramatic form essential to German culture throughout the 20th Century. Very versatile, cabaret throughout Germany's history was at times didactic, subversive, raunchy, witty, extravagant and sharply critical. We examine cabaret's development in contexts ranging from Weimar and Vienna, to Nazi and Concentration Camp forms, to East and West German political cabaret, and contemporary forms, considering the institutions and figures that shaped cabaret over time. **CC:** HUL, LCCG, HUM

GER 338 - Poetry, Performance, Protest & Power: A History of Twentieth-Century Germany

Course Units: 1

(Also GER 338) **(Not offered this Academic Year)** This course explores the legacy of 20th century German literature and cultural history through its poetic tradition of performance and protest, while analyzing the political, social, and cultural climate and the shifts in understandings of gender, race, class and generational relations during this critical century in contemporary German history. **CC:** HUL, LCCG, HUM

GER 339 - The Shoah in Film: Cinematic Treatments of Holocaust Trauma and Memory

Course Units: 1

(Also MLT 339) **(Winter; Staff)** The course examines cinematic representations of the Holocaust in the films of German, German-Jewish, and other European filmmakers. Comparing and contrasting a variety of film genres and cinematic techniques, we explore fundamental questions about the relationships between art and history, representation and experience and memory and responsibility. By considering theoretical and historical readings as well, we situate the films within significant intellectual and historical contexts. **Prerequisite(s):** GER 201 or permission of the instructor. **CC:** HUM, LCCG

GER 341 - Of Ghosts and Demons: Encountering the Uncanny in German Literature

Course Units: 1

(Also MLT 237) **(Not offered this Academic Year)** From ghost children, animated statues, ominous angels, and the walking dead to machine women, demons, and doppelgangers, German literature teems with things that go bump in the night. The course examines encounters with the supernatural as depicted throughout German literature, with special focus on Romanticism's fascination with das Unheimliche ("the uncanny"), in order to sketch the history of this tradition of fantastic literature in German, trace its origins, and present its main authors and defining features. Readings include works by Goethe, Kleist, the Brothers Grimm, Hoffmann, Hauff, Schnitzler, Kafka, Rilke, and Bachmann, as well as films by Murnau, Lang, and von Sternberg. **Prerequisite(s):** GER 201 or permission of the instructor. **CC:** HUL, LCCG, HUM

GER 401 - Meeting the Other: Multiculturalism in Contemporary Germany

Course Units: 1

(Fall; Staff) This course studies post-World War II German cultural and literary history through the lens of migration. How are memories of migration included (or excluded) in national histories? By analyzing recent cultural productions by minorities (literature, music and films) with respect to national, cultural, and sexual self-representations in the context of social and political developments, this course will contextualize controversies and relate specific events to broader questions of economic globalization, the recruitment of "guest workers," refugees and border regimes, xenophobia and racism, citizenship legislation, education and national identity, religion and ritual, media and popular culture. **Prerequisite(s):** Any 300-level course or permission of the instructor. **CC:** HUL, LCCG, HUM

GER 402 - German Film Studies

Course Units: 1

(Not offered this Academic Year) Decoding film-specific 'narratives' in German movies on the background of socio-political, economic, and cultural conditions of their production. **Prerequisite(s):** Any 300-level course or permission of the instructor. **CC:** HUM, LCCG

GER 403 - Shoah: Literary, Artistic and Filmic Representations of the Holocaust

Course Units: 1

(Not offered this Academic Year) Comparing and contrasting works of German and German-Jewish writers. **Prerequisite(s):** Any 300-level course or permission of the instructor. **CC:** LCCG, HUM

GER 489 - German Senior Writing Project

Course Units: 1

(Winter, Spring; Staff) **CC:** WS

GER 490 - German Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in German literature. **Prerequisite(s):** At least one course at the 400-level and permission of the instructor.

GER 491 - German Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in German literature. **Prerequisite(s):** At least one course at the 400-level and permission of the instructor.

GER 492 - German Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in German literature. **Prerequisite(s):** At least one course at the 400-level and permission of the instructor.

MLT 234 - Femmes fatales? Women in 19th- and 20th-Century German Culture and Society

Course Units: 1

(same as GER 334) **(Not offered this Academic Year)** An examination of female sexuality as one of the central controversies of modern German culture. In addition to analyzing cultural artifacts (plays, films, paintings), we will discuss such diverse social phenomena as the Women's movement, morality crusades, psychoanalysis, and sexology. **CC:** HUL

MLT 235 - Voices from Abroad: German Exile Culture, 1933-1990

Course Units: 1

(Also GER 335) **(Not offered this Academic Year)** This course, taught in translation, is designed for both Germanists and other students of literature interested in exploring notions of exile and the particular cultural artifacts, including novels, films, essays and poetry, that bear witness to the struggle of artists exiled from WWII Germany and Austria. The class additionally examines texts by current emigres to Germany and incorporates theoretical assessments of exile, considering works by Said, Milosz and others. **CC:** HUL

MLT 236 - Poetry, Performance, Protest & Power: A History of Twentieth-Century Germany

Course Units: 1

(Also GER 338) **(Not offered this Academic Year)** This course explores the legacy of 20th century German literature and cultural history through its poetic tradition of performance and protest, while analyzing the political, social, and cultural climate and the shifts in understandings of gender, race, class and generational relations during this critical century in contemporary German history. **CC:** HUL, LCC

MLT 237 - Of Ghosts and Demons: Encountering the Uncanny in German Literature

Course Units: 1

(Also GER 341) **(Not offered this Academic Year)** From ghost children, animated statues, ominous angels, and the walking dead to machine women, demons, and doppelgangers, German literature teems with things that go bump in the night. The course examines encounters with the supernatural as depicted throughout German literature, with special focus on Romanticism's fascination with das Unheimliche ("the uncanny"), in order to sketch the history of this tradition of fantastic literature in German, trace its origins, and present its main authors and defining features. Readings include works by Goethe, Kleist, the Brothers Grimm, Hoffmann, Hauff, Schnitzler, Kafka, Rilke, and Bachmann, as well as films by Murnau, Lang, and von Sternberg. **Prerequisite(s):** GER 201 or permission of the instructor. **CC:** HUL, LCC

MLT 336 - The Thrill of Victory: Reading German Sports (and) Culture

Course Units: 1

(Also GER 336) **(Not offered this Academic Year)** This course traces the ways that Sports have reflected and influenced German culture through the 20th century, analyzing links between athleticism and conceptions of gender, nationhood, individuality and race set out in literary texts, films, and visual arts. Exploring notions of victory, physical perfection, and spectatorship, we will consider works by some of Germany's greatest authors and artists, including Kafka, Schnitzler, Brecht, Riefenstahl, Kirschner and Handke. **CC:** HUL

MLT 339 - The Shoah in Film: Cinematic Treatments of Holocaust Trauma and Memory

Course Units: 1

(Also GER 339) **(Winter; Staff)** The course examines cinematic representations of the Holocaust in the films of German, German-Jewish, and other European filmmakers. Comparing and contrasting a variety of film genres and cinematic techniques, we explore fundamental questions about the relationships between art and history, representation and experience and memory and responsibility. By considering theoretical and historical readings as well, we situate the films within significant intellectual and historical contexts. **CC:** HUM, LCC

Greek

GRK 101 - Beginning Ancient Greek 1

Course Units: 1

(Winter; Mueller) Study of elementary Greek grammar with selected readings from classical authors. **CC:** HUM

GRK 102 - Beginning Ancient Greek 2

Course Units: 1

(Spring; Mueller) Continuation of GRK 101. **Prerequisite(s):** GRK 101 or one year of secondary school Greek. **CC:** LCCK, HUM

GRK 103 - Greek Reading

Course Units: 1

(Fall; Gazzarri) Selected readings from the works of a variety of Greek authors. **Prerequisite(s):** GRK 102 or equivalent. **CC:** LCCK, HUM

GRK 230 - Homer: The Iliad

Course Units: 1

(Not offered this Academic Year) Readings in the Iliad, with relevant secondary readings on Greek epic, its place in the development of Greek literature, and its influence. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC, HUM

GRK 231 - Homer: The Odyssey

Course Units: 1

(Fall; Toher) A study of several books of the Odyssey, with relevant secondary readings on Greek epic, its place in the development of Greek literature, and its influence. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC, HUM

GRK 235 - Plato

Course Units: 1

(Not offered this Academic Year) A study of several of the early dialogues in the original together with readings of others in translation. May be repeated with change in texts. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC, HUM

GRK 243 - New Testament Greek

Course Units: 1

(Winter; Bedford) The foundational text of Christianity, the New Testament also represents a fascinating social and historical document, and, as such, offers an unparalleled glimpse into provincial life under the early Roman empire. A survey of the gospels, Acts, and the letters of Paul in light of these contexts. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC

GRK 320 - Attic Prose

Course Units: 1

(Spring; Toher) Readings from the major prose authors of Athens. May be repeated with change in author. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC

GRK 331 - Herodotus and Thucydides

Course Units: 1

(Not offered this Academic Year) A study of several books of Herodotus and Thucydides with relevant secondary readings. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC

GRK 333 - Greek Tragedy

Course Units: 1

(Not offered this Academic Year) Tragedies chosen from the works of the three great tragic poets of Athens, with relevant secondary readings. May be repeated with change in author or texts. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC

GRK 337 - Greek Oratory

Course Units: 1

(Not offered this Academic Year) Readings of various Athenian orators, with secondary reading on Greek legal practice and rhetorical style. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC

GRK 338 - Greek Lyric and Elegiac Poetry

Course Units: 1

(Not offered this Academic Year) Readings from Sappho, Archilochus, Solon, Pindar, and others. The traditions, evolution of the genre, social context and role of the poet will be considered. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC

GRK 339 - Greek Comedy

Course Units: 1

(Not offered this Academic Year) Readings in the plays of Aristophanes. The criticism and theory, history, and social context of the comedies will be studied. **Prerequisite(s):** GRK 103 or equivalent. **CC:** HUL, LCC

GRK 490 - Greek Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study of a special author or subject, or of Greek prose composition. **Prerequisite(s):** Six courses in Greek or the equivalent.

GRK 491 - Greek Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study of a special author or subject, or of Greek prose composition. **Prerequisite(s):** Six courses in Greek or the equivalent.

GRK 492 - Greek Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study of a special author or subject, or of Greek prose composition. **Prerequisite(s):** Six courses in Greek or the equivalent.

GRK 498 - Greek Senior Thesis 1

Course Units: 0

(Fall-Winter or Winter-Spring; Staff) Independent reading and thesis in the field of Greek language and/or literature. **Prerequisite(s):** Permission of the chair.

GRK 499 - Greek Senior Thesis 2

Course Units: 2

(Fall-Winter or Winter-Spring; Staff) Independent reading and thesis in the field of Greek language and/or literature. **Prerequisite(s):** Permission of the chair. **CC:** WS

Gender, Sexuality, & Women's Studies

GSW 100 - (WGS-100) Introduction to Gender, Sexuality, and Women's Studies

Course Units: 1

(Fall; Foroughi, Winter; Nelson) This course serves as an interdisciplinary introduction to the findings of feminist scholarship on gender, women, and sexuality. The course is broad in scope and covers topics in feminist theory, the social construction of gender, and issues affecting women's, men's, and others' lives throughout the world. **CC:** HUM, SOCS

GSW 479 - Internship in Gender, Sexuality, and Women's Studies

Course Units: 1

An internship experience in local agencies, social services, law and media centers, women's advocacy groups, childcare centers, gay and lesbian organizations, with health care providers, and others. The goal is to develop students' knowledge of and ability to analyze organizations that work on issues related to gender and sexuality in the Capital Region. **Prerequisite(s):** Sophomore standing and permission of the director.

GSW 495 - (WGS-495) Capstone Course on Theories of Gender, Sexuality, and Women

Course Units: 1

(Fall; Foroughi; Spring; Marso) A required interdisciplinary course designed as the culmination of the major or minor. This course reinforces and provides a coherent perspective on the major issues in gender studies and affords an opportunity to reflect upon the importance of the chosen major and/or minor focus in light of these issues. The topic of the capstone course varies from year to year; this year's will be Women's Rights in the United States in the fall and Feminist Film in the spring, cross-listed as HST 312 and PSC 434, respectively. **Prerequisite(s):** GSW 100

GSW 498 - (WGS-498) Gender Sexuality & Women's Studies Senior Thesis 1

Course Units: 0

A student directed two-term project culminating in a thesis representing the depth and breadth of knowledge attained in Gender, Sexuality, and Women's Studies interdisciplinary course work. Student theses in GSWS are usually advised by the current director, but can be advised by any faculty member in GSWS in consultation with the director.

GSW 499 - (WGS-499) Gender Sexuality & Women's Senior Thesis 2

Course Units: 2

A student directed two-term project culminating in a thesis representing the depth and breadth of knowledge attained in Gender, Sexuality, and Women's Studies interdisciplinary course work. Student theses in GSWS are usually advised by the current director, but can be advised by any faculty member in GSWS in consultation with the director.

Biblical Hebrew

HBR 111 - Biblical Hebrew 1

Course Units: 1

(Fall; Bedford) Study of elementary Biblical Hebrew grammar with selected readings from the Hebrew Bible. **Note:** CC: HUM

HBR 112 - Biblical Hebrew 2

Course Units: 1

(Winter; Bedford) Continuing study of elementary Biblical Hebrew grammar with selected readings from the Hebrew Bible. **CC:** LCCB

HBR 113 - Biblical Hebrew 3

Course Units: 1

(Spring; Bedford) Completion of the study of elementary Biblical Hebrew grammar with selected readings from the Hebrew Bible. **CC:** LCCB

HBR 490 - Biblical Hebrew Independent Study 1

Course Units:

(Fall, Winter, Spring; Staff) Independent reading and thesis in the field of Greek language and/or literature. **Prerequisite(s):** HBR 113 or the equivalent.

Health Care Management

HC 500 - (LIM-500) Introduction to Health Systems

Course Units: 1

Hebrew

HEB 100 - Basic Hebrew 1

Course Units: 1

(Fall; Staff) The beginning of a year-long sequence of three courses designed to introduce students to the Hebrew language and to familiarize students with linguistic aspects that will prepare them to function with more advanced skills. Emphasis on learners' ability to use the Hebrew language in all four skill areas, listening, reading, writing, and speaking, with particular attention given to mastering conversation in Hebrew. **CC:** HUM

HEB 101 - Basic Hebrew 2

Course Units: 1

(Winter; Staff) Continuation of HEB 100. **CC:** LCCH

HEB 102 - Basic Hebrew 3

Course Units: 1

(Spring; Staff) Continuation of HEB 101. **CC:** LCCH

History

HST 101 - History of the United States to the Civil War

Course Units: 1

(Not offered this Academic Year) Political, economic, and social developments in the colonial and early national periods.

HST 102 - History of the United States Since the Civil War

Course Units: 1

(Not offered this Academic Year) Political, economic, and social developments: continuity and change in modern America.

HST 105 - Comparative Global History to 1800

Course Units: 1

(Not offered this Academic Year) Provides a "bird's-eye" view of human history from the emergence of human "civilization" in the Fertile Crescent to the European conquest of the Americas. Surveys the comparative development of the world's continents, regions, and empires and investigates how expansion of the "human web" facilitated both cooperation and conflict among the world's peoples. Pays particular attention to environmental and ecological determinism, the influence of technology on economic growth, the rise of "portable" religions, and the interaction of culture and politics.

HST 106 - Comparative Global History from 1800

Course Units: 1

(Fall; Mazumder) This course examines the broad themes in world history from the 19th century onwards, beginning with the rise of the nation-state and the expansion of European and subsequently Japanese imperialism. It looks at the indigenous and global response to colonialism, the impulse of nationalism and the quest for modernity, as well as how race and gender came to be rethought and reconfigured going into the 20th century. We will examine the impact of the two world wars, the process of decolonization, the Cold War and the rise of globalization in the late 20th century.

HST 107 - Africa to 1800

Course Units: 1

(Not offered this Academic Year) This course explores the history of Africa from the beginnings of humanity through the period of the trans-Atlantic slave trade. In it, we will examine political, social, economic and cultural changes in Africa, with particular focus on the relationships between local communities and the political elites who sought to rule them. This perspective will enable us to focus on the social dynamics of African communities and the daily activities of ordinary Africans, as well as on the political intrigues and roles of kings, chiefs, and merchants. **CC: LCC**

HST 108 - Africa since 1800

Course Units: 1

(Winter; Peterson) This course is a survey of the African continent from 1800 to present. In this course, we will examine the political, social, economic and cultural changes in Africa during the nineteenth and twentieth centuries. Focus will be on key themes that span much of African history during this period including: slavery and the slave trade, European conquest and African resistance, the expansion of world religions (Islam and Christianity) in Africa, colonialism, the growth of nationalism, decolonization and the emergence of independent postcolonial states, and the challenges facing contemporary African states related to political instability and economic development. Given the enormous breadth and diversity of Africa, this course explores these themes by focusing on certain case study regions and countries, such as Francophone West Africa, Nigeria, the Congo region (Zaire), the East African coast and Arabic-speaking North Africa. **CC: LCC**

HST 113 - The Origins of American Society

Course Units: 1

(Winter; Aslakson) The evolution of American society from its 17th-century origins through the aftermath of the Revolution.

HST 114 - The American Revolution

Course Units: 1

(Spring; Aslakson) The causes and consequences of the American Revolution (1763-1815).

HST 116 - Age of Jackson

Course Units: 1

(Not offered this Academic Year) An examination of the United States in the turbulent period from 1815-1845, surveying the second party system, various utopian and reform movements, the cult of domesticity, and other wrenching transformations instigated by the market revolution.

HST 118 - Civil War and Reconstruction

Course Units: 1

(Not offered this Academic Year) An examination of the causes of the deepening sectional crisis; the political, economic, and social reasons for Southern secession; the move toward emancipation as a Northern war aim; the impact of the war on women and men, with special attention to geographic location, race, and class; and the experience of Reconstruction in the South.

HST 120 - The Emergence of Modern America, 1877-1918

Course Units: 1

(Not offered this Academic Year) The impact of urbanization and industrialization on the creation of the modern United States, 1890-1920.

HST 121 - The Depression and New Deal

Course Units: 1

(Winter; Staff) The years between the end of World War I and the beginning of World War II witnessed not only a dramatic contrast between the prosperity of the 1920s and the Great Depression of the 1930s, but also a fundamental reordering of America's political system forged during Franklin D. Roosevelt's New Deal. This course will examine the crisis and transformation of the American economy and political system during the 1920s and 1930s, and their impact on Americans of all walks of life.

HST 123 - Postwar America and the Origins of the Cold War

Course Units: 1

(Not offered this Academic Year) The stand-off between the United States and the Soviet Union permeated the politics and culture of the United States from the end of the Second World War through the early 1960s. This course will explore the origins of the Cold War, the terms on which it was fought, and the degree to which it imposed a political and cultural "consensus" on the United States.

HST 124 - (224) Monuments, Museums, and Movies: Introduction to Public History

Course Units: 1

(Fall; Lawson) This course will provide an overview of public history, defined as the presentation of history to a general public audience. Students will learn the theory, methods, and practice of public history in its various dimensions, including museums, monuments, historic sites, and films; they will explore the controversies that emerge in public history settings, including the battle over the Enola Gay, the Holocaust Museum, and commemorations of September 11th; and they will engage in a public history project in the Schenectady area.

HST 125 - Coming Apart?: America in the Sixties

Course Units: 1

(Spring; Feffer) A study of the breakdown of political and cultural consensus between 1956 and 1974. We will examine the degree to which counter-cultural and racial politics of the period successfully challenged the dominant political culture on issues of war, race, and gender.

HST 126 - Since Yesterday: United States History, 1974-2000

Course Units: 1

(Fall; Feffer) If the United States "came apart" in the 1960s, did it come back together in the 1970s and 1980s, or something else? This course looks at the emergence of new social movements (e.g., the women's and environmentalist movements), the rise of the "new right," the Reagan "revolution" in domestic policy, and American foreign policy from the fall of Saigon to the collapse of the Soviet Bloc.

HST 128 - The American Jewish Experience

Course Units: 1

(Not offered this Academic Year) Jews arrived in Britain's American colonies in 1654. In the space of 350 years their numbers increased dramatically and they made significant contributions to a plethora of areas in American society. Jews and Judaism also experienced significant changes through the encounter with the United States. But for all the gains in status and achievement, there are those who speak of a problematic future for American Jewry.

HST 129 - History of Sports in America

Course Units: 1

(Not offered this Academic Year) Fields of battle (military, political, economic, and social) generally characterize the teaching of American history. Throughout times of conflict, however, it has often been the fields of American sport which have provided distraction, respite, and relief from these struggles. Meanwhile during times of peace, the fields of sport have contributed more than leisure and entertainment; they have reflected the American people's lives, hopes and dreams. Sport, in other words, has been and continues to be an active mediator in America's life, and a lens through which we can examine the broader contexts of American history.

HST 131 - African-American History 1

Course Units: 1

(Not offered this Academic Year) The purpose of this course is to help you better understand both the role of race and slavery in early American history and the contributions of African-Americans to society and culture in America before 1877. The course will examine the lives of black Americans, enslaved and free, from the arrival of the first Africans in the New World through Reconstruction. It will also address more abstract ideas about cultural and "racial" differences. Throughout this course, you will be asked to consider the question "which came first, racism or slavery?" **CC: LCC**

HST 132 - African-American History 2

Course Units: 1

(Not offered this Academic Year) This course covers the Black experience in America from the end of the Civil War until the present day. It will generally proceed chronologically, but there may be some overlap as it tries to cover certain themes, such as culture, oppression, resistance, and

identity. Throughout the course students will be asked to consider the question to what extent is the African-American experience unique and to what extent is it representative of the "American" experience. **CC: LCC**

HST 135 - Latinos(as) in US History

Course Units: 1

(Spring; Meade) The Spanish exploration of the Southwest and West; the changes in all areas of the U.S. through major waves of immigration from Latin America and the Caribbean. **CC: LCC**

HST 138 - Big History

Course Units: 1

(Winter; Walker) An exploration of the past from the big bang to the present, dividing the history of the universe, earth, life, and humanity into periods using very large scales of time.

HST 141 - Medieval Europe

Course Units: 1

(Winter; Sargent) The emergence of western European civilization after the fall of the Roman Empire. The period 300-1350 is surveyed with special attention to factors that influenced later European civilization.

HST 142 - Renaissance and Reformation Europe

Course Units: 1

(Not offered this Academic Year) The beginnings of modern Europe in the period 1350-1650 with emphasis on Italian humanism, Renaissance Florence, the Protestant Reformation, and the rise and fall of Spain.

HST 143 - Entrepreneurship in Medieval and Renaissance Europe

Course Units: 1

(Not offered this Academic Year) Examines the meaning and impact of entrepreneurship during the 500 years (or so) prior to the rise of modern capitalism in the early modern era. Takes a broad view of entrepreneurship as the ability to perceive opportunities that others cannot see and to exploit those opportunities by combining resources and expertise to achieve a particular end. Economic entrepreneurs get most, but not all, of the attention.

HST 145 - Early Modern Europe

Course Units: 1

(Not offered this Academic Year) European society from the seventeenth century through the Enlightenment, stressing social, economic, institutional, and intellectual developments.

HST 147 - Revolutionary History

Course Units: 1

(Not offered this Academic Year) This course will survey major themes in modern European history, including: the Enlightenment and the Industrial Revolution; the French Revolution; the Russian Revolution and Soviet Communism; and the National Socialist Revolution, World War II, and the Holocaust.

HST 148 - Europe Between Two Wars

Course Units: 1

(Fall; Hansen) An analysis of major socio-economic and political developments in western Europe from the end of the First World War to the beginning of the Second World War.

HST 149 - The Second World War Era

Course Units: 1

(Spring; Berk) Authoritarian movements in Europe and Asia during the Depression decade, the origins of World War II, the alliance against the Axis, the consequences of the war, and the emergence of new social and political structures during the postwar era.

HST 152 - The Great War

Course Units: 1

(Winter; Berk) This course will cover World War I, at the time called the "Great War," beginning before 1914 with the run-up to war and ending after the war, including the postwar settlement, the early period of the Russian Revolution, and the origins of fascism in Italy and Germany. This is an international history, including the conflict on the western and eastern fronts as well as conditions on the home fronts of the various countries. The course lectures and readings will be accompanied by several films.

HST 154 - Russia in the Imperial Age

Course Units: 1

(Not offered this Academic Year) Major institutional and ideological developments from the time of the first Romanov to the February Revolution of 1917.

HST 155 - From Lenin to Putin: The Rise and Fall of the Soviet Union

Course Units: 1

(Fall; Berk) Russia on the eve of the Revolution. Political, economic, and social developments during the periods of revolution, war, communism, NEP, rapid industrialization, and the postwar years, including the post-Soviet period.

HST 156 - History of Poland

Course Units: 1

(Not offered this Academic Year) A history of Poland from the formation of the first Polish state to the present. Poland under foreign occupation, independent Poland, communist, and post communist Poland are the focal points in this course.

HST 157 - Modern Jewish History

Course Units: 1

(Winter; Berk) European, American & Middle Eastern Jewish communities from the fifteenth century, their origins and function within Christian Europe; response of the European Jewry to the Enlightenment and the growth of anti-Semitism and Zionism.

HST 158 - The Holocaust

Course Units: 1

(Spring; Berk) European and American Jewry in the period 1933- 1945, focusing on modern anti-Semitism, the Nazi world view, German extermination policies, the response of Europe and the United States, and Jewish behavior in a time of crisis.

HST 161 - The Peoples of Britain

Course Units: 1

(Fall; Cramsie) Images of royalty, Wimbledon, fish and chips, or 'Rule Britannia' sometimes come to mind when we think of Britain. Typically, England has received disproportionate attention in histories despite the fact that four 'nations' have existed within the geographical bounds of the 'British Isles' (Ireland, Wales, Scotland, England) and many peoples have found their way to those islands: Celts, Romans, Angles, Saxons, Jutes, Danes, Norse, Normans, Afro-Caribbeans, Southeast Asians, peoples of South Asia, Africa, and the Middle East. This introductory course explores the remarkable interactions among these people who defined the British Isles from the first settlements right through to the present. Upon completion of this course you will have obtained a working knowledge of British History from which to explore the subject in more depth and also be able to demonstrate understanding and appreciation of cultural complexity through the cross-cultural comparisons made in the course. **CC: LCC**

HST 171 - Europe and the Americas in the Era of Columbus

Course Units: 1

(Not offered this Academic Year) A study of the relationship of Spain and Portugal with Africa, Asia, and the Americas from the early fifteenth through the late eighteenth centuries. The course examines the early civilizations of Africa, Europe, and the Americas in the era before the voyage of Columbus and the interaction among these three worlds in the centuries after the Encounter. It concludes with an examination of the cultural legacy of Africa and Europe on the indigenous societies of the Americas and the subsequent development of multicultural and multiracial independent nations. The central role of gender relations between the civilizations, the gendered conflict that characterized the era of exploration, and the role of masculinity are all examined. **CC: LCC**

HST 172 - Reform and Revolution in Latin America and the Caribbean

Course Units: 1

(Not offered this Academic Year) Examines the political and social changes in Latin America as a result of the nineteenth and twentieth century reform and revolutionary movements, including the Unidad Popular government in Chile under Salvador Allende and its overthrow by General Pinochet and the subsequent dictatorial rule. The effect of the 1959 Cuban Revolution on Latin America; the revolutionary uprisings in Central America, in Chiapas, Mexico, and against the military government of Argentina form other key areas of examination. The course places special emphasis on the intersection of gender, race and class conflicts and movements, with particular attention to the role of emerging feminist movements. **CC: LCC**

HST 173 - History of the Caribbean and Central America

Course Units: 1

(Not offered this Academic Year) This course covers the history of the Caribbean and Central America from pre-colonial times to the present. It includes a survey of the impact of both extinct and enduring indigenous cultures, the rivalries among Spanish, Dutch, French, and British powers for control of the Caribbean, and the history of slavery, the plantation system, rebellions and revolutions against enslavement, colonialism, and modern imperialism. The course ends with the early 21st-century struggles for self-determinism among the nations of the region. **CC: LCC**

HST 181 - Confucians and Conquerors: East Asian Traditions

Course Units: 1

(Not offered this Academic Year) An overview of the traditional civilizations of China, Japan, and Korea, focusing on the emergence and development of ideologies, institutions, and social patterns up to 1800. Special emphasis on fostering an appreciation for the richness and complexity of each individual society. **CC: LCC**

HST 182 - Rebels, Reds, and Regular Folks: The Turbulent History of Modern Asia

Course Units: 1

(Fall; Madancy) An analytical overview of the major themes and historical processes that shaped China, Japan, and Korea from the nineteenth century to the present. **CC: LCC**

HST 183 - Introduction to South Asian Civilizations

Course Units: 1

(Not offered this Academic Year) In this course we shall investigate the area of South Asia by focusing on important historical debates surrounding themes such as history, religion, nationalism, colonialism and family life. We will seek to explore these themes for two to three weeks through Movies and Documentaries: Gandhi, Jinnah, Ambedkar, India Untouched, Jodha Akbar. **CC: LCC**

HST 184 - Making Modern India 1800-1947

Course Units: 1

(Fall; Mazumder) We will concentrate on the impact of colonialism on the Indian subcontinent and on the formation of the modern South Asian States of India and Pakistan through historically-based films. We will study the representation of Indian society and history in the booming Bollywood film industry. The culture of colonialism, the nature of the colonial state and the emergence of nationalism, are themes which are explored. Chronologically, we will survey the history of Indian subcontinent from the inception of colonial rule in the late eighteenth century to the establishment of independent nation states of India and Pakistan in the middle of the twentieth century (1800-1947). **Prerequisite(s):** Since this is a survey course there are no prerequisites. **CC: LCC**

HST 194 - The Modern History of the Middle East

Course Units: 1

(Fall; Berk) Problems in the political, social, and economic history of the Middle East in modern times; the demise of the Ottoman Empire; impact of the West upon the Arab world; relations among the new Arab states; and the coming of modernization.

HST 195 - The Early History of the Jews

Course Units: 1

(Not offered this Academic Year) History of the Jewish people in its first 1600 years from tribal beginnings to the destruction of the second Commonwealth.

HST 201 - Contemporary Africa

Course Units: 1

(Spring; Peterson) This course examines the history of Africa since 1950 with an emphasis on politics and culture. Through readings of novels, memoirs and historical accounts, combined with lectures, discussions and films, this course will explore the last fifty years of African history. Much of the course will focus on case studies in such countries or regions as West Africa, East Africa, the Congo, Nigeria, Algeria and Egypt. **CC: LCC**

HST 203 - Judaism/Christianity/Islam

Course Units: 1

(Same as REL 203) **(Fall; Bedford)** This course offers a comparative approach to Judaism, Christianity and Islam, three closely related religious traditions. It attempts to draw out commonalities among and differences between these traditions by focusing on their histories, their understandings of God, revelation and tradition, religion and society, and responses to social and political change. **CC: HUM**

HST 209 - Race, Gender, and Nationalism in American Sports

Course Units: 1

(Fall; Brennan) This course examines the development and the history of US sports from the 19th through the 21st centuries with special focus on sports' bond with nationalism, race, and gender. Modern sports cannot escape its association with US emergence in international affairs at the end of the 19th century. Intertwined with the process of establishing national identity were muscular Christian notions about masculine prowess and belief in women's natural physical limitations accompanied by a persistent belief in the fundamental superiority of the white race and its obligation to dominate over "inferior" races and cultures. As surely as sport became associated with American identity, nationalism, gender, and race became integral defining characteristics of sport. This course will be driven primarily by reading and discussion. Lectures will be used to supplement and place the readings in historical perspective, but the focus will be on reading, comprehension, and analysis. Students are encouraged to bring a variety of pre-occupations, pre-conceived ideas, and personal viewpoints to the course; they will be expected to give oral and written expression to their analysis and perspectives.

HST 211 - American Indian History

Course Units: 1

(Spring; Foroughi) An overview of the diverse experiences and histories of the native peoples of North America in the last five centuries. Particular attention will be paid to native peoples' various strategies to respond to change and challenges to native autonomy and communities. **CC: LCC**

HST 212 - "Remember the Ladies": American Women to 1900

Course Units: 1

(Not offered this Academic Year) An examination of changing gender roles from 1600 to 1890. Topics include work, family, civil and legal identity, and the impact of race, class, and geographic location on women's experiences.

HST 213 - Work, Wars, and Wombs: American Women from 1900

Course Units: 1

(Not offered this Academic Year) An examination of changing gender roles from 1890 to the present. Topics include the evolution of feminism, and the impact of race and class on women's experiences.

HST 216 - The Writing and Ratification of the Constitution

Course Units: 1

(Not offered this Academic Year) A study of the major influences on the US Constitution, how it was written, and how it was adopted.

HST 221 - Popular Culture and American History

Course Units: 1

(Not offered this Academic Year) The popular arts and entertainments of the late nineteenth and twentieth centuries are placed in historical context and studied as a means to rediscover the intellectual and emotional life of ordinary Americans.

HST 222 - Other Voices: Women in the History of American Ideas

Course Units: 1

(Not offered this Academic Year) The contribution of women to the development of American intellectual and cultural life, from Charlotte Perkins Gilman to Angela Davis.

HST 223 - Twentieth Century American Intellectual History

Course Units: 1

(Not offered this Academic Year) An overview of the major social and political issues that shaped and unshaped American liberal thought from John Dewey to Andrea Dworkin.

HST 225 - American Environmental History

Course Units: 1

(Not offered this Academic Year) This course aims to give students the knowledge and the tools to think critically about how history has shaped the present state of the earth and human relationships with it. It focuses on the history of man's interaction with nature on the North American continent, with a particular focus on the area that would become the United States, from precolonial times until the present.

HST 226 - A Novel View of US History

Course Units: 1

(Not offered this Academic Year) This course will examine the broad scope of American history from colonial times to the present as it has been revealed in American literature and novels. Employing principally primary source literature, the course will introduce students not only to American history but to an understanding of important events and developments as comprehended by those who experienced those events or who were contemporary interpreters of those events. Supplemented by lectures on the facts of historical events, primary source works will be used to re-introduce personality and complexity to the historical context in order to stimulate student understanding of the American experience. Students will be encouraged to analyze and examine the variety of outlooks that propel history, while also learning an appreciation for the value and potential of

personal scrutiny, insight, and perspective. Primarily driven by readings and discussion, lectures will be used to supplement and place the readings in historical context; however, the focus will be on reading, analysis, comprehension, and communication.

HST 227 - Interviews with History: An Introduction to Oral History

Course Units: 1

(Not offered this Academic Year) This course is an introduction to the theories, practice, and uses of Oral History. Students will learn theories of memory and perspective as they relate to oral history, listen to and watch audio and visual oral history interview, read and analyze published works grounded in oral histories, discuss the ethical and legal issues surrounding oral history, and learn how to perform, record, and edit an oral history interview. Students will spend a significant portion of their time working on individual projects wherein they will conduct and interpret oral history interviews and write an essay based on that work.

HST 228 - Union's History and Treasures

Course Units: 1

(Spring; Brennan) The history of Union College is broad and impressive; however, tight schedules while rushing to class in Butterfield or Bailey, a meeting in Hale House or Feigenbaum, a conference or guest lecture in the Nott, or an event at Achilles makes it easy to overlook that history. Since 1795, there have been wars, economic expansions and depressions, internal and external political conflicts, and social revolutions; through it all. Union has not just survived but endured, while remaining committed to the progressive ideals of its founding. This course will investigate the history of the modern, living institution that is Union today, that is, the physical realities of the college (grounds, buildings, and landscape) as well as the academic, athletic, and social environments that provide life and meaning for all who have entered its gates. Understanding the history of Union gives students an opportunity to shape the future - as Union and its alumni have shaped the past.

HST 229 - The Adirondacks and American Environmental History

Course Units: 1

(Not offered this Academic Year) The Adirondack region of northern New York State has been a proving ground for shifting American attitudes toward the environment, from early colonial (ears of wilderness, to intensive resource exploitation, and to efforts to conserve natural resources and preserve distinctive wilderness areas. This course will examine Adirondack environmental history and place it in the context of broader American environmental history. It will leverage Union College's proximity to the region, and the resources of the Union College Kelly Adirondack Center, to offer students both intellectual and experiential engagement with the history of this distinctive place.

HST 231 - The Civil Rights Movement

Course Units: 1

(Winter; Lawson) A survey of the civil rights movement, assessing the early campaigns of the 1940s, the development of black grassroots organizations in the 1950s and 1960s, and the impact of black nationalist consciousness in the late 1960s and early 70s. **CC: LCC**

HST 232 - History of New Orleans

Course Units: 1

(Fall; Aslakson) This class examines the history of New Orleans from its founding in 1718 to the present day. The course will proceed chronologically and will focus on the recurring and interrelated themes of Race, Geography, and Culture. In the process we will unravel the extent to which the crescent city is or is not representative of the history of urban America in general. **CC: LCC**

HST 240 - The Crusades: Christianity and Islam in Conflict

Course Units: 1

(Not offered this Academic Year) The conquest of Jerusalem and the Holy Land by knights from western Europe and the response of the region's Muslims, 1096-1291. Special attention is given to the development of a crusading spirit and its corruption under the influence of religious, political, and economic expediency and personal greed.

HST 241 - Mystics, Magic, and Witchcraft in Medieval and Early Modern Europe

Course Units: 1

(Not offered this Academic Year) A survey of learned and popular beliefs about the influence of supernatural and occult powers on individuals and society.

HST 242 - The Scientific Revolution, 1400-1700

Course Units: 1

(Winter; Sargent) An examination of the fundamental reorientation in the study of nature that gave rise to modern science. Special attention is given to the contributions of Copernicus, Galileo, Descartes, and Newton.

HST 245 - Occult Sciences and Societies

Course Units: 1

(Spring; Sargent) Surveys the rise of occult sciences, such as ritual magic, astrology, and alchemy, and the influence of real and imagined secret societies dedicated to the preservation and transmission of such esoteric knowledge. Examines the legends associated with the suppression of the Templars in fourteenth-century France, and the revival of Platonism, Jewish Kabbalah, and pseudo-Egyptian Hermeticism in Renaissance Italy. Considers the dissemination of such ideas throughout early-modern Europe, the alchemical theories of Paracelsus and Isaac Newton, and the imagined societies of esoteric utopias. Concludes with the rise of Rosicrucianism, Freemasonry, and the Bavarian Illuminati and their possible influence on the French Revolution.

HST 247 - Men, Women, and Gender in Early Modern Europe

Course Units: 1

(Not offered this Academic Year) This course is a lower-division exploration of the creation, operation, and interaction of masculinities and femininities (in the plural) in Europe between roughly 1500 and 1789. We will read both primary and secondary works on the topic. "Gender history" is not simply another way of saying "women's history." Instead, we also will employ gender as a lens through which to consider the experiences of both men and women during the period. Learning objectives for the term include critiquing the use of gender as a category of historical analysis; investigating the gap between prevailing early modern notions about manhood and womanhood and the lived experiences of modern men and women; and teasing apart the intersection of gender with other factors, especially race, class, age, marital status, and religious identity.

HST 248 - Men, Women, and Gender in Modern Europe

Course Units: 1

(Not offered this Academic Year) This course is a lower-division exploration of the creation, operation, and interaction of masculinities and femininities (in the plural) in Europe between roughly 1789 and the present. We will read both primary and secondary works on the topic. "Gender history" is not simply another way of saying "women's history." Instead, we also will employ gender as a lens through which to consider the experiences of both men and women during the period. Learning objectives for the term include critiquing the use of gender as a category of

historical analysis; investigating the gap between prevailing modern notions about manhood and womanhood and the lived experiences of modern men and women; and teasing apart the intersection of gender with other factors, especially race, class, age, marital status, and religious identity.

HST 253 - Physics and Politics

Course Units: 1

(Same as PHY 053) **(Not offered this Academic Year)** An introduction to some of the most important developments during the twentieth century in modern physics, the theory of relativity, quantum mechanics, and nuclear physics, set in a comparative context of the capitalist democratic United States, fascist National Socialist Germany, and the communist Soviet Union. Along with explanations of how the science works, this course will examine how the political, social, and ideological context can influence science and scientists. **CC: SET**

HST 256 - Modern European Ideas

Course Units: 1

(Not offered this Academic Year) This course will survey important ideas in modern European history, including the writings of Jean Jacques Rousseau, Voltaire, Montesquieu, Adam Smith, Karl Marx, Charles Darwin, Friedrich Nietzsche, Sigmund Freud, Albert Einstein, Jean-Paul Sartre, Simone de Beauvoir, and Michel Foucault.

HST 257 - Modern France and Its Empire

Course Units: 1

(Not offered this Academic Year) In this course, we will examine the political, social, economic and cultural history of modern France and its empire since 1789. We will explore the history of France within wider transnational and imperial contexts, as well as in its post-colonial era, when immigration and cultural difference have emerged as central issues within France itself. Through lectures, discussions, novels, memoirs, and films, we will seek to understand the history of modern France as both a nation-state and empire. In particular, we will also look at the colonial and post-colonial histories of francophone West and North African countries.

HST 258 - Nazi Science, Medicine, & Technology

Course Units: 1

(Fall; Walker) This course is a history of how science, medicine, and technology interacted with Nazism, beginning with the background of the First World War and Weimar Republic, through the Third Reich, and continuing through to its legacy during the post-Second World War era. This story extends beyond Germany, both because of the international effects of this interaction, and through comparisons with science, medicine, and technology under other regimes and in other cultures.

HST 261 - Medieval Britain 1000-1509

Course Units: 1

(Not offered this Academic Year) Britain in 1000: England was divided and the Anglo-Saxons were in a fight for survival with the Norse, the kingdom of Scots was an ill-formed hodgepodge of Gaels, Celts, Picts, Saxons, and Norse, and in the West the Cymry, the peoples of Wales, clung fiercely to their identity as the original Celtic inhabitants of Britain. In the decades after the famous Norman conquest of 1066, Britain became part of a vast French-speaking Empire. Which peoples and nations would survive, thrive, and achieve supremacy on the island of Britain? This question is examined by analyzing the Scottish wars of independence, the Hundred Years War with France, the great dynastic struggles of the English Wars of the Roses, the notorious reputation of Richard III and the rise of the Tudors, and the triumph of the Stewart kings in Scotland. **CC: LCC**

HST 262 - (266) The Age of Henry VIII

Course Units: 1

(Spring; Cramsie) Remarkable women and men made history in Britain during the Age of Henry VIII: six wives (Catherine, Anne, Jane, Anne, Catherine and Katherine), faithful and far from saintly servants like Cardinal Wolsey, Thomas More, and Thomas Cromwell, and an evangelical boy destined to become Edward VI. This was an age of personal monarchy, patriarchy, and the rule of wealthy elites, but these figures travelled paths and pursued policies that changed the way every person lived. They nurtured and unleashed religious passions that divided generations and whole peoples from one another, and hundreds - eventually thousands - died at the hands of those who believed they had a monopoly on spiritual truth. This course analyzes the imperial ambitions of Henry VIII and Edward VI in Britain and Ireland, the brutal dynastic and religious politics of the period, and the all-out assault on the traditional faith in the Tudor dominions.

HST 263 - (267) The Tudor and Stewart Queens

Course Units: 1

(Winter; Cramsie) The radical Protestant John Knox published a tract in 1558 denouncing what he called the 'monstrous regiment of women'. He had in mind three women who dominated the political scene: Queen Mary I of England (Henry VIII's Catholic daughter) Marie of Guise (widow and queen regent of the deceased James V of Scotland); and young Mary Queen of Scots, betrothed to the future king of Catholic France. Knox had the spectacularly bad luck to publish his attack on queenship at the moment when Mary I died and her Protestant sister Elizabeth ascended the throne, a queen mighty in defense of her authority and with a temper to match her illustrious father Henry VIII. These women defined British History after 1550. Looking back on these years, Francis Bacon wrote of the 'strange perturbations' of England, having been ruled by a boy king (Edward VI) and two women before finally again seeing on the throne a proper adult male, James VI of Scotland - with nice irony, Mary Queen of Scots' son. This course explores the lives of these Tudor and Stewart queens and analyzes the intersections of gender, authority, and religious zeal that defined their age.

HST 264 - The Stuart Wars 1603-1660

Course Units: 1

(Not offered this Academic Year) In 1603, James VI of Scotland became the first king to rule all of Britain and Ireland, when he added Elizabeth I's crown to his own. This was the first in a series of remarkable revolutions examined in this course. James successfully consolidated this new Stuart imperium in England, Wales, and Scotland. The Protestant plantations in Ulster created the origins of the modern-day troubles in Northern Ireland. Settlements in the Americas inaugurated a British Atlantic Empire built on sugar and tobacco, slavery and a British diaspora. James passed to his successor Charles I a dangerous ideology of imperial kingship that asserted the crown's unchallenged authority over all matters spiritual and temporal. When Charles attempted to make good on that ideology in his religiously and ethnically diverse kingdoms, the result was war, wars that eventually cost the king his head. For the first and only time, a British king was tried and executed for committing tyranny, the monarchy abolished, and a republic created. Inspired by the message of radical social justice in the Bible, English men and women demanded freedom and equality in these years. **CC: LCC**

HST 265 - The Museum: Theory and Practice

Course Units: 1

(Same as ANT 265) **(Spring; Lawson)** The historical and contemporary role of the museum is examined through course work and a student internship at the Schenectady Museum. Seminar and essay topics include issues in interpretation and the representation of culture, public history debates, intellectual property rights, and exhibit design. Field trips to local museums included.

HST 268 - (162) The Making of Modern Scotland

Course Units: 1

(Not offered this Academic Year) Kilts, haggis, heather, and Highlands: all things that come to mind when we think of Scotland. Yet few of us

probably appreciate just how much the people of that rugged country contributed to modern history: radical Protestantism and the King James Bible, Highland regiments and Enlightenment thinkers, links golf and Robbie Burns, the steam engine (James Watt) and the "invisible hand" (Adam Smith), Trainspotting (Irvine Welsh) and the Edinburgh Arts Festival. This course studies Scotland's history and its people's search for a modern identity. **CC: LCC**

HST 269 - Orwell's England 1900-1950

Course Units: 1

(Not offered this Academic Year) The English writer George Orwell did far more than give us the famous novel 1984. Just 47 years old when he died, Orwell lived through the decades that defined both his England and the 20th century. Too young to fight in the Great War, Orwell became a colonial administrator in Burma before answering the call to write. Orwell's pen interrogated English society, championed social justice, and denounced totalitarian ideologies of the Right and Left. He chronicled the epic history through which his generation lived: British imperialism, the Great Depression, Stalinism and the rise of Fascism, Britain's 'finest hour' in World War II, and the challenges of building a just, peaceful order in a world dominated by two rival superpowers. This course examines the history of England and the first half of the twentieth century through a selection of Orwell's novels, non-fiction books, essays, and reportage combined with standard historical accounts, film, and critical analyses of Orwell's literary record. By the time you complete this course you will have studied the works of an important literary figure and used your critical literary and historical analysis of them to broaden and deepen your understanding of England and the Twentieth Century. **CC: HUL**

HST 270 - History of Latin American Popular Culture

Course Units: 1

(Not offered this Academic Year) This course examines the history of Latin America and the Caribbean in the 19th and 20th centuries. Our "texts" for this course are novels, political cartoons, movies, TV shows and music, along with traditional history books. The course seeks to examine the way that Latin American societies have depicted themselves in the popular media, the way that the United States has viewed and absorbed Latin American culture, and the ways that historians have sought to explain the transformations in various countries by examining popular culture. Since Latin American and Caribbean cultures are so closely linked to the United States, and because an increasing number of U.S. citizens are of Latino descent, this course offers valuable insights into the transformations occurring in US culture. **CC: LCC**

HST 271 - History of Mexico

Course Units: 1

(Not offered this Academic Year) Mexican civilization from its origins to the present - ancient Maya and Aztec cultures; the Spanish conquest; colonial society; the independence wars; Mexico in the nineteenth and twentieth centuries, especially the Mexican Revolution; and current cultural, social, and economic issues, including the Zapatista rebellion, NAFTA, and the changing nature of the borderlands region between Mexico and the USA. **CC: LCC**

HST 272 - History of Brazil

Course Units: 1

(Not offered this Academic Year) This is a survey interpretation of Brazilian history from the days of Portuguese expansion to the present, including the contrast between the urban and rural areas, the Atlantic slave trade, slavery and the resistance to it, the plantation system and post-abolition race relations, the destruction of the rainforest, the emergence of democratic structures in modern Brazil, and the rise of Brazil as a 21st century economic powerhouse. **CC: LCC**

HST 274 - Social and Political Movements in Latin America

Course Units: 1

(Not offered this Academic Year) This course examines the history of recent social movements in Latin America. We will explore a variety of issues including democracy, racism, class, gender and ethnic divisions, human rights, globalization and popular movements. Rather than viewing Latin America from a North American point of view, we will examine how Latin Americans see themselves and how their culture, economics, and politics have developed in different directions than other parts of the world, especially the United States and Europe. While social movements have at times erupted into full fledged revolutionary upheavals, more often Latin American struggles have been ongoing, such as factory occupations, land seizures, and demonstrations for gender equality, workers' rights, indigenous autonomy, protection of the environment, and students' rights. **CC:** LCC

HST 275 - United States Foreign Relations and Modern Latin America

Course Units: 1

(Not offered this Academic Year) This course is about relationships, exchanges, and tensions among the people and nations of the Americas from the mid 19th century to the present. The most powerful foreign influence (political and otherwise) in Latin America has consistently been the US, often with quite negative consequences. In the 21st century relations between the US and Latin America have changed dramatically. China has replaced the US as the most important trading partner for several countries, particularly Brazil, the largest economy of Latin America. In addition, the US is experiencing a demographic transformation with an increasing number of immigrants from Latin America making up the populations of just about every state. The history of the US and Latin American is increasingly a "shared" history. In this course we will look at interconnections, comparisons, and the common links between Latin America and the US in what is now a history of both foreign and domestic relations. **CC:** LCC

HST 278T - South Africa Mini-Term

Course Units: 1

CC: LCC

HST 281 - Samurai to Salarymen: Modern Japanese History

Course Units: 1

(Not offered this Academic Year) Analysis of the social, economic and political changes that have characterized Japan's emergence as a world power from the Meiji restoration to the present. **CC:** LCC

HST 282 - The Mongols: Terror & Trade and Tolerance

Course Units: 1

(Not offered this Academic Year) This course explores the rise, fall, and memory of the great Mongol empire. Students will read not only about the Mongols themselves, but also about the many cultures and countries that the Mongols conquered, and we will analyze those fraught cross-cultural encounters through primary and secondary source materials. We will also look at how the overwhelmingly negative portrayal of the Mongols has evolved over time, and students will look at the way Genghis Khan is depicted in films and monuments. **CC:** LCC

HST 283 - The Mao Years

Course Units: 1

(Not offered this Academic Year) This course explores the phenomenal changes and catastrophic consequences of Mao Zedong's domination of China. Although the bulk of the class focuses on events following the founding of the People's Republic of China in 1949 to Mao's death in 1976, we will begin by looking at the China into which Mao was born in 1893 and trace his rise to power. We will also examine the legacy of the Mao years on

contemporary Chinese politics and society. Students will analyze Mao's China through memoirs, films, visual propaganda, secondary analyses, and of course, Mao's Little Red Book. **CC: LCC**

HST 284 - Women in China and Japan: Power and Limitations

Course Units: 1

(Not offered this Academic Year) A comparative look at how the societies of China and Japan shaped the various roles assumed by women in these two cultures, as well as the evolution of those roles over time. **CC: LCC**

HST 285 - The Samurai: Lives, Loves, and Legacies

Course Units: 1

(Not offered this Academic Year) This course explores the evolution of the samurai as a caste, their military and family lives, their passions, and their symbolic meaning to Japanese and to others. We will be reading first-hand accounts written by samurai men and women, viewing a number of well-known and lesser-known samurai films, and looking at how the realities of samurai life compare with the many meanings the samurai have acquired over the centuries. **CC: LCC**

HST 286 - Women in South Asia

Course Units: 1

(Not offered this Academic Year) This course takes a historical approach towards the topic of gender and sexuality in South Asia, with a particular, though not exclusive, focus on the history of women in the region. The course has three major goals: first, to analyze the colonial state and its policies with respect to women and gender relations; second, to study gender relations, women's voices and women's movements within the context of nationalist struggles in the post-colonial era; and third, to understand the complexities of trying to recover the "voice" of heterogeneous groups of women in South Asia, divided along lines of caste, class, region, occupation and religion. Study material will include academic texts, films and popular television from the subcontinent. **CC: LCC**

HST 287 - Film and Modern India

Course Units: 1

(Spring; Mazumder) This course uses a medium of visual representation-cinema-to explore the portrayal of India. It historically traces the development of the cinematic industry in India and highlights the changing images of the region since the 1950s. Each decade evokes a list of stereotypes, of ideas, and of historical realities. We will examine the extent to which films in each decade captured the reality of the period. In particular, we will trace the maturation of the idea of a nation through films and we will explore the positioning of gender in these decades. In general, this course will adopt critical approaches for looking at aesthetics and the representation of South Asia through cinema. **CC: LCC**

HST 288 - Bombay to Mumbai: The Maximum City in India

Course Units: 1

(Winter; Mazumder) Bombay represents a distinctive mode of cultural experience in India - an unceasing traffic in things, people, images, and ideas. It has been the crucible of social and cultural politics in India. It is the epitome of modern Indian imagination. The course will examine this state of modernity by doing a focused study on the city of Bombay as a city, society and as the capital of popular culture in India. Some questions the course will examine are: what happens in India when cities-within-cities coincide or collide? How are the categories of caste, class, and ethnicity mapped onto urban bodies and landscapes? What are the political implications of the production of popular culture? How does violence transform the geography of a city and its urban experience? **CC: LCC**

HST 289 - Global Indians: South Asian Identity in the United States

Course Units: 1

(Spring; Mazumder) The Indian diaspora today constitutes an important, and in some respects a unique force, in world culture and in the United States. We will begin by studying Indians migrating worldwide through the nineteenth and twentieth centuries with a focus on the United States to pose critical questions about identity, race, religion, gender, cultural assimilation and change. **CC: LCC**

HST 291 - Construction for Humanity

Course Units: 1

(Crossed with ENS 291) **(Fall; Ghaly)** An interdisciplinary introduction to the technology of construction and the social uses of building by humans. The course considers types of building materials and their application to domestic housing, castles, cathedrals, palaces, monuments, dams, bridges, tunnels, and skyscrapers. **CC: SET**

HST 292 - History of Computing

Course Units: 1

(Same as CSC 080) **(Not offered this Academic Year)** A survey of tools for computation, from number systems and the abacus to contemporary digital computers. The course focuses on the development of modern electronic computers from ENIAC to the present. Study of hardware, software, and the societal effects of computing. **CC: SET**

HST 295H - History Honors Independent Project 1

Course Units: 0

(Fall, Winter, Spring; Staff)

HST 296H - History Honors Independent Project 2

Course Units: 1

(Fall, Winter, Spring; Staff)

HST 302 - Comparing Muslim Cultures

Course Units: 1

(Not offered this Academic Year) This course explores the history of Islam in diverse regional and temporal settings. It explores the unity of Islam, through an examination of the early history of the religion and its founding texts and tenets. However, the main emphasis of this course will be Islam's remarkable heterogeneity over time and space; the foci will be case studies drawn from across the Muslim world - in Africa, the Middle East Asia and Europe. Through readings and discussions, the course examines the following ten topics: The foundation of Islam, the expansion of Islam and conversion processes, Muslim travelers and trade, religious tolerance, women and gender in Islam, Islamic Education, religious revivalism and reform, Muslim lands under European colonial rule, Islam in the West, and the challenge of modernity. **CC: LCC**

HST 304 - Cold War in Africa

Course Units: 1

(Not offered this Academic Year) This course will explore the Cold War period in African history with particular focus on theaters of conflict, such as the Congo, the Horn of Africa, and Angola, as well as revolutionary movements. We will examine modes of governance and political culture in African states, socialist and capitalist variants of development, and their discontents.

HST 310 - Special Topics in United States History

Course Units: 1

(Not offered this Academic Year) **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor.

HST 312 - "Bonds of a Woman": History of Women's Rights in the United States

Course Units: 1

(Fall; Foroughi) This course examines major themes in the study of women's rights in the United States. Topics include constitutional and legal rights changes over time; the interplay of gender with race, class, and sexuality involved in "rights" movements since the nineteenth century; and current controversies over women's rights. **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor.

HST 315 - Race and Constitution

Course Units: 1

(Not offered this Academic Year) One purpose of this course is to help you better understand the role of race in the legal, constitutional, and political history of the United States. Issues regarding race and slavery have been a constant source of constitutional debate (in one way or another) from the drafting of the Constitution until the present day. Focusing on racial issues, this course examines the historical context in which the Constitution of the United States was drafted and ratified and explores the various methods by which its meaning has changed since 1787. Therefore, it is course about both race in America as well as the Constitution and Constitutional interpretation.

HST 322 - Slavery and Freedom

Course Units: 1

(Not offered this Academic Year) Examines major themes in the historiography of American slavery. Topics include the relationship between racism and the growth of slave labor, the development of African American slave culture, the nature of the enslaved family, and the transition from slavery to freedom. **Prerequisite(s):** any 100-level or 200-level history course or permission of the instructor. **CC: LCC**

HST 323 - Race and Revolution

Course Units: 1

(Spring; Aslakson) This course examines the American Revolution and the Haitian Revolution. With regard to the former, it addresses the "Jefferson question" - that is, how could the author of the Declaration of Independence be the owner of over 200 slaves. Therefore, it deals with competing interpretations in the Early American Republic of the Ideology of "liberty" and "equality." Next, the course delves into the far more radical Haitian Revolution, the only successful slave revolution in history. It will deal with the influences of the American and French revolutions on the French New World colony of St. Domingue that made the Haitian revolution possible. Finally, the course examines the impact of the Haitian Revolution on slavery and the anti-slavery movement in the United States. **CC: LCC**

HST 324 - Race in American Memory

Course Units: 1

(Not offered this Academic Year) "The struggle of man against power," wrote Milan Kundera, "is the struggle of memory against forgetting." This course will examine that struggle as it has taken place in the United States around the issue of race. How have Americans as a nation chosen to remember events that involved race? How and by whom were these collective memories constructed? In what ways were they contested? How have they changed over time? We will explore these issues focusing on such phenomena as Indian removal, slavery, the Civil War, Jim Crow, Japanese internment and World War II, and the Civil Rights movement, examining depictions in public history and popular cultural forms, including memorials, museums, battlefields, literature, and film. **CC: LCC**

HST 325 - War in American Memory

Course Units: 1

(Not offered this Academic Year) In recent years, historians have become increasingly interested in collective memory: its construction, its evolution, and the ways in which it has been used as an instrument of power. Collective memories of wars in particular work to inform ongoing debates about national identity. This course examines the ways that Americans have remembered their nation's wars. How were these collective memories constructed and in what ways were they contested? What do they reveal about social, political, and economic tensions? To what ends were these collective memories mobilized? How have they changed over time, and how do we as historians understand those changes? In this class we will explore traditional expressions of war memories such as monuments, memorials, and battlefields as well as cultural expressions of these memories in art, literature, and film.

HST 331 - Representing America: United States History in Film

Course Units: 1

(Winter; Feffer) This course compares the representation of American history in Hollywood film with the reconstruction of our past by scholars. Each week students will critically examine the historically-based films of D. W. Griffith, John Ford, Frank Capra, and others. **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor

HST 332 - Transnational America

Course Units: 1

(Not offered this Academic Year) The United States is now the center of global production, yet it is also swept by the forces of international cultural change. How did we reach that position and what consequences does it have for our national integrity, our identity as Americans, our way of life, and our relationship to other nations and peoples? Students read recent literature on the history of transnationality and globalism as it has affected the economy, ethnic identity, cultural production (in literature and film), and international relations of the United States in the twentieth century. **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor. **CC: LCC**

HST 333 - Hollywood Film

Course Units: 1

(Not offered this Academic Year) In studying the history of Hollywood film, then, we will study one of the most important elements of American culture as seen at home and from abroad. Our objectives in this course will be to get behind the clichés and platitudes about the Hollywood experience to its more complex and substantive history. We will learn the basic chronology of American dramatic film history, the tools of historical film research and some of the methods of technical film analysis. **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor.

HST 336 - The Roosevelt Era

Course Units: 1

(Not offered this Academic Year) This course will focus on major interpretive issues that surround the presidency of Franklin Delano Roosevelt. We will study how historians have disagreed, over time, on issues such as: Was FDR a raving radical or the best friend of big business? Was the New Deal a good deal or a raw deal for African Americans? Was World War Two a "good war"? Could FDR's administration have done more to prevent the Holocaust? This is a reading-intensive, discussion-centered class that requires active student engagement.

HST 340 - Special Topics in European History

Course Units: 1

(Fall; Sargent) Prerequisite(s): any 100-level or 200-level history course or permission of the instructor.

HST 366 - (364) British Cinema

Course Units: 1

(Not offered this Academic Year) What films come to mind when you see the words "British Cinema"? Alfred Hitchcock's 39 Steps or Carol Reed's classic film noir *The Third Man*? Fabulous historical epics like *Zulu*, *Elizabeth*, or *Braveheart*? Comedies from *The Ladykillers* to the unclothed Sheffield steelworkers of *The Full Monty*? The tale of football of multicultural Britain that is *Bend It Like Beckham*? This course will study the historical development of British cinema, tracing its roots from music halls at the turn of century to the multiplexes of a globalized culture dominated by Hollywood. We will also explore the different types and genres of film to be found in British cinema: realism and expressionism, cinema as national popular culture, humor and horror, constructions of Britishness, film as an ideological medium, films that pushed the boundaries of sex and orientation, epics, and imperial and post-colonial themes that played out on the screen. By the end of this course you will understand the complex and diverse character of British cinema through the analysis of actual films and engagement with critical studies of them. This is a course for advanced students taught in an intensive seminar format; you will be expected to view films outside of class time. **Prereq/Corequisite(s):** Any 100-level or 200-level history or film studies course or permission of the instructor.

HST 367 - (361) The British Empire

Course Units: 1

(Not offered this Academic Year) How did the peoples of two windswept, rainy islands - Britain and Ireland - off the northwest corner of Europe create the world's greatest modern empire? Through an analysis of history, literature, and film, this course analyzes the process of empire-building in the eighteenth and nineteenth centuries, the interaction with and impact on the colonial peoples of North America, Asia, and Africa, and the "end" of empire in the twentieth century. This is a course for advanced students taught in an intensive seminar format that emphasizes the creative and critical examination of topics through scholarly reading and active discussion. **Prerequisite:** any 100-level or 200-level history course or permission of the instructor. **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor. **CC:** LCC

HST 370 - Special Topics in Latin American History

Course Units: 1

(Not offered this Academic Year) Prerequisite(s): Any 100-level or 200-level history course or permission of the instructor. **CC:** LCC

HST 372 - Sex and Race in Latin America

Course Units: 1

(Not offered this Academic Year) This course examines the history of the intersection of race, sex and gender in Latin America from the pre-colonial period to the present, especially as evidenced in the changing status of women and the patriarchal order. This history traces the effect of broader societal transformations such as colonialism, imperialism, and economic and political developments on the gender division of labor and the

construction of class, race and national identity. **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor. **CC:** LCC

HST 380 - Special Topics in East Asian History

Course Units: 1

(Not offered this Academic Year) **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor. **CC:** LCC

HST 383 - The Last Dynasty: The Glory and Fall of the Qing Empire, 1644-1911

Course Units: 1

(Winter; Madancy) For 250 years, the Qing Dynasty ruled China, but when it fell in the dramatic 1911 Revolution, the entire imperial system fell with it. This course will focus on the enormous social, political, and economic changes that shaped China during the reign of the Manchu dynasty and changed China forever. **Prerequisite(s):** any 100-level or 200-level history course or permission of the instructor. **CC:** LCC

HST 384 - Historical Foundations of South Asian Religions

Course Units: 1

(Not offered this Academic Year) South Asia is garnering intense interest in the 21st century. This course is designed to open our eyes to the region of South Asia; to learn more about this developing region in terms of its society, culture, economy, religion, and politics. Did you know that Buddhism and Islam are the fastest growing religions in the world? There are more Muslims in South Asia than any other region of the world. Buddhism, Hinduism, and Islam have remained religious forces that have continued to exert a strong influence on political, social, and economic life. Contrary to their 'spiritualistic' image, violence and conflict have been an integral aspect of these religions. We will examine how South Asian traditions have commonly been an important element in sectarian politics, nationalism and war. We will assess their adaptations in light of the problems in the modern world using media and literary sources. **CC:** LCC

HST 401 - Seminar in Africa/Middle East

Course Units: 1

(Not offered this Academic Year) **CC:** LCC

HST 402 - Seminar in Africa/Middle East: French Empire

Course Units: 1

(Winter; Peterson) This course examines the history of the French empire in West Africa, North Africa and Southeast Asia. The aim of the course is to introduce students to the history of the wider Francophone world. Three main phases in the long history are explored: colonialism, decolonization and immigration. The course moves chronological through these phases exploring each in diverse geographical settings, and drawing on readings pertaining to particular themes such as the culture of empire, political economy of colonialism, women and gender, literature and expressive culture, colonial violence, and resistance. **CC:** LCC

HST 411 - Seminar in US History: History of New York City

Course Units: 1

(Spring; Feffer) New York has occupied the center of American financial, cultural, and political life since the Civil War. This course will trace the

history of New York City from the early 19th century to the end of the 20th, as it rose to become the preeminent urban center of the United States and, for some, the world. We will look at the city's political, social, and cultural history in all its dimensions, including its service as the primary port of disembarkation for European immigrants, its role as a cultural capital and its history as a center of political dissent.

HST 412 - Seminar in US History: The Old South

Course Units: 1

(Not offered this Academic Year) This class examines the history of the Old South, focusing on the period from 1800 to 1861. The lectures and readings cover a variety of topics, including myths and facts about southern society and culture, slavery and the strengthening of southern distinctiveness, and political events that eventually lead to the creation of a separate (short-lived) southern nation in 1861.

HST 413 - Seminar in US History: Disasters in American History

Course Units: 1

(Not offered this Academic Year) This research seminar will examine the American experience with disasters over the course of the past three centuries. We will study how natural and technological disasters have impacted American society in different eras; how explanations for the cause of disasters have changed over time; how factors such as race and class have influenced vulnerability to disaster; and how charitable and governmental responses to disaster have evolved over the course of American history.

HST 414 - Seminar in US History: Lincoln: Politician to Pop Icon

Course Units: 1

(Not offered this Academic Year) Abraham Lincoln has received perhaps the most attention of any U.S. president in both scholarly studies and popular portrayals. Why? This course examines Lincoln during his lifetime: as a man coming of age in Jacksonian America, as an itinerant lawyer, as a fond father and troubled husband, as a politician during a major change in the party system, and as a wartime president. Furthermore, we consider Lincoln's post-assassination career from martyred president to memorialized and criticized symbol of civil rights to motion picture subject. Students will propose, research, and write a seminar paper that examines an aspect of Abraham Lincoln as a major figure in American history and culture.

CC: WAC

HST 431 - Seminar in European History: The Discovery of Britain and Ireland, 1450-1800

Course Units: 1

(Not offered this Academic Year) The topic of this seminar is the 'discovery' of early-modern Britain and Ireland by its own people. When we think of discovery in the early modern period, what comes to mind are often images of intrepid explorers pushing the boundaries of geography and scientific knowledge, merchants eager to tap the exotic wealth of 'the East', or religious fanatics bent on the conquest of bodies and souls in the Americas. Yet for the peoples of Britain and Ireland, their respective islands were undiscovered countries in 1500. Only a tiny number of people could claim to have seen some or all of the country outside their own valley or village. By contrast, travel and tourism were commonplace in Britain and Ireland by 1800. What was the experience like for those British and Irish men and women who explored the undiscovered country at home in the three hundred years between? What did they have to say about the people and places they encountered? How did their works "construct" their fellow inhabitants? In this seminar you will learn methods of inquiry that can be applied to answer such questions, conduct original research using early-printed books and manuscript travel narratives, and complete a research paper of your findings.

HST 471 - Seminar in Latin America: Individual in Latin America

Course Units: 1

(Not offered this Academic Year) This seminar examines the role of the individual in the making of Latin American history. The intention of this

course is to study both the individual and the historical context that produced the individual and the actions she or he chose to make. Some of these women and men are well-known, while others are ordinary people who distinguished themselves and made their way into the recorded account. Students will produce a seminar paper examining the life and historical background of an individual. **CC:** LCC

HST 481 - Seminar in East Asian History: Remembering World War II in Asia

Course Units: 1

(Not offered this Academic Year) World War II was the most destructive conflict of the twentieth century, but many students in America are unfamiliar with the toll it took on Asia and why residual tensions between Japan, China, and Korea remain so real and so raw today. This course examines how the war came about, how it is remembered, and how its complex legacy still affects the region. **Prerequisite(s):** Any 100-level or 200-level history course or permission of the instructor. **CC:** LCC

HST 490 - History Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff)

HST 491 - History Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff)

HST 492 - History Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff)

HST 493 - History Independent Study 4

Course Units: 1

(Fall, Winter, Spring; Staff)

HST 498 - History Senior Thesis 1

Course Units: 0

(Fall, Winter, Spring; Staff)

HST 499 - History Senior Thesis 2

Course Units: 2

(Fall, Winter, Spring; Staff)

Interdepartmental

Courses that take multidisciplinary approaches to entrepreneurship

IDM 295H - Interdepartmental Honors Independent Project 1

Course Units: 0

First part of the two term scholars independent project. The first part is graded Pass or Fail.

IDM 296H - Interdepartmental Honors Independent Project 2

Course Units: 1

Second part of the two term scholars independent project. **Prerequisite(s):** IDM 295H

IDM 487 - Double Major Thesis 1

Course Units: 0

First part of a three term thesis for students pursuing a double major. The first part is graded Pass or Fail.

IDM 488 - Double Major Thesis 2

Course Units: 2

Second part of a three term thesis. **Prerequisite(s):** IDM 487

IDM 489 - Double Major Thesis 3

Course Units: 1

Third part of a three term thesis. **Prerequisite(s):** IDM 488

IDM 490 - Interdepartmental Independent Study

Course Units: 1

For independent studies that span two departments. By permission of instructor only.

IDM 498 - Interdepartmental Senior Thesis 1

Course Units: 0

For interdepartmental majors who are pursuing a two term senior thesis. The first half is graded Pass or Fail.

IDM 499 - Interdepartmental Senior Thesis 2

Course Units: 2

Second half of a two term senior thesis. **Prerequisite(s):** IDM 498

Integrated Math-Physics

IMP 120 - Integrated Math/Physics

Course Units: 2

(Winter, Spring; Staff) An introductory team-taught, two-term-long sequence of integrated courses, two in mathematics and two in physics, roughly spanning the content of MTH 115, MTH 117, PHY 120 and PHY 121. Designed for engineering students as well as other interested students.

Prerequisite(s): MTH 113, by invitation. **CC:** QMR, SCLB

IMP 121 - Integrated Math/Physics

Course Units: 2

(Winter, Spring; Staff) An introductory team-taught, two-term-long sequence of integrated courses, two in mathematics and two in physics, roughly spanning the content of MTH 115, MTH 117, PHY 120 and PHY 121. Designed for engineering students as well as other interested students.

Prerequisite(s): MTH 113, by invitation. **CC:** QMR, SCLB

Interdisciplinary

ISC 008 - (IDM-008) Internship

Course Units: 0.3

Students who have secured an internship that meets College guidelines may apply for an Internship Transcript Notation. "ICS 008 Internship Transcript Notation" is 0.3 course credits and is graded Pass/Fail. For more information please contact Director of Academic Internships Maggie Graham.

ISC 080 - (IDM-080) Practicum in Hospital Health Care

Course Units: 1

(Fall, Winter, Spring; Beaton, Off Campus Site Staff) A field course combining supervised observation and/or community based learning experiences in various health care settings with the study of problems and means of health care delivery. **Note:** On campus seminar meetings are required. Does not fulfill CC science credit.

ISC 260 - (IDM-260) Social Entrepreneurship

Course Units: 1

Entrepreneurs identify opportunities, mobilize resources and make things happen. This course applies the active mindset of the entrepreneur to social organizations. The measure of success is not profit, but change. Passion and mission are the motivators. Examples include feeding the hungry, improving the environment, educating the destitute, housing the poor, training the unskilled, caring for the disenfranchised sick, and much more. Jeroo Billimoria founded Child line in Mumbai, India that provides services to street children. Veronica Khosa founded Tateni that works with aids victims in South Africa. Jacob Schramm founded College Summit to make college accessible to low-income students in the U.S. And the list goes on. In the course, we will study many examples of social entrepreneurship, identify best and worst practices, work with local social entrepreneurial organizations and identify opportunities to make the world a better place. **CC: LCC**

ISC 299 - Developing a Vision

Course Units: 1

Throughout history, leaders in many contexts have used "vision" as a means to not only communicate their desires for the future but also to motivate their followers and supporters to great achievements. This course focuses on developing skills in creating, articulating and planning a vision that will inspire the students (and their supporters) to achieve their goals. This class is intended for mature students who want to learn skills that will help them understand and shape the world around them.

ISC 325 - (IDM-325) Entrepreneurship Seminar

Course Units: 1

The object of the course is to develop business/ marketing plans for senior projects in engineering that will explore the potential for commercialization. Interdisciplinary teams are organized around each senior project. In order to be successful, the engineers have to communicate the value of their innovative project to liberal arts students; liberal arts students have to communicate the marketing and business strategy to engineers. Engineering senior projects with elements of social responsibility are preferred. This course is about interdisciplinary communication, teamwork, social responsibility, creativity and entrepreneurship.

ISC 360 - (IDM-360) Humanities Super Seminar

Course Units: 1

(Spring; Henseler) A multidisciplinary course taught by three different humanities faculty. Based on a different overarching topic every year, students from all disciplines across campus engage in the reading and analysis of visual and written material, in deeply challenging conversations, in the synthesizing of ideas, and in the creation of a host of different projects, such as podcast interviews, photographic journals, webpage designs, video projects, set designs, sculptures, visual installations, debates and presentations. Each Humanities Super Seminar includes speakers or workshops open to the larger Union and Schenectady community. Course syllabi, student blog discussions, and class projects will be showcased every year on the class website.

Italian

ITL 100 - Basic Italian 1

Course Units: 1

(Winter; Staff) A foundation course in Italian, open only to students who have been accepted for specific International Programs. **CC: HUM**

ITL 104T - The Italian Language Studied Abroad

Course Units: 1

(Spring; Staff) A continuation of Basic Italian I. **Prerequisite(s):** ITL 100. See International Programs. **Note:** Spring term in Florence.

ITL 250T - The Italian Language Studied Independently Abroad

Course Units: 1

ITL 251T - The Italian Language Studied Independently Abroad

Course Units: 1

Japanese

JPN 100 - Basic Japanese 1

Course Units: 1

(Winter; Staff) This is the first series of courses in Japanese designed for students with no knowledge of the language. The emphasis is on speaking, listening, reading, writing, and culture supported by communicative practice.

JPN 101 - Basic Japanese 2

Course Units: 1

(Spring; Staff) A continuation of JPN-100. **Prerequisite(s):** JPN 100 or equivalent. **CC:** LCCJ

JPN 102 - Basic Japanese 3

Course Units: 1

(Fall; Staff) A continuation of JPN-101. **Prerequisite(s):** JPN 101 or equivalent. **CC:** LCCJ

JPN 200 - Intermediate Japanese 1

Course Units: 1

(Winter; Staff) This course will further develop the student's Japanese proficiency by introducing more complex grammatical structures, idiomatic expressions, and additional kanji characters. Lesson materials incorporate various forms of Japanese culture. **Prerequisite(s):** JPN 102 or equivalent. **CC:** LCCJ

JPN 201 - Intermediate Japanese 2

Course Units: 1

(Spring; Staff) A continuation of JPN-200. **Prerequisite(s):** JPN 200 or equivalent. **CC:** LCCJ

JPN 202 - Intermediate Japanese 3

Course Units: 1

(Fall; Staff) A continuation of JPN 201. **Prerequisite(s):** JPN 201 or equivalent. **CC:** LCCJ

JPN 204T - The Japanese Language Studied Abroad

Course Units: 1

(Fall; Staff) Emphasis on communicative skills. See International Programs. **Note:** Fall term in Japan.

JPN 205T - Written Japanese Abroad

Course Units: 1

(Fall; Staff) Emphasis on communicative skills. See International Programs. **Note:** Fall term in Japan.

JPN 250T - The Japanese Language Studied Independently Abroad 1

Course Units: 1

JPN 251T - The Japanese Language Studied Independently Abroad 2

Course Units: 1

JPN 252T - The Japanese Language Studied Independently Abroad 3

Course Units: 1

JPN 300 - Advanced Intermediate Japanese 1

Course Units: 1

(Winter; Staff) The primary goal of this course is the development of a broad competency in speaking listening, reading, and writing in a culturally coherent way. Materials will cover a wide range of academic and cultural interests. **Prerequisite(s):** JPN 202 or equivalent. **CC:** LCCJ

JPN 301 - Advanced Intermediate Japanese 2

Course Units: 1

(Spring; Staff) Continuation of JPN 300. **Prerequisite(s):** JPN 300 or equivalent. **CC:** LCCJ

JPN 302 - Advanced Intermediate Japanese 3

Course Units: 1

(Not offered this Academic Year) Continuation of JPN 301. **Prerequisite(s):** JPN 301 or equivalent. **CC:** LCCJ

JPN 490 - Japanese Independent Study 1

Course Units: 1

Prerequisite(s): Permission of the instructor.

JPN 491 - Japanese Independent Study 2

Course Units: 1

Prerequisite(s): Permission of the instructor.

JPN 492 - Japanese Independent Study 3

Course Units: 1

Prerequisite(s): Permission of the instructor.

MLT 250 - Language, Identity, and Power in Japan

Course Units: 1

(Not offered this Academic Year) This course will focus on societal aspects which are represented in the characteristics of language. Discussions will include gender differences, formality, and communication strategies. This course will be taught in English and no prior Japanese language knowledge is required. **CC:** HUM, LCC

MLT 254 - Explore Japanese Manga and Anime

Course Units: 1

(Not offered this Academic Year) This course examines the rich world of Japanese manga (comic books) and anime (animation), one of the most significant cultural products in Japan and a dominant global media export. The topics include the issues of the relationship between humans and nature; gender relations; humans and technology; "Japaneseness" of anime; and globalization of manga. This course will be taught in English and no prior Japanese language knowledge is required. **CC:** HUM, LCC

Latin American and Caribbean Studies

LAS 295H - Latin American and Caribbean Studies Honors Independent Study 1

Course Units: 1

LAS 296H - Latin American and Caribbean Studies Honors Independent Study 2

Course Units: 1

LAS 490 - Latin American and Caribbean Studies Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff)

LAS 491 - Latin American and Caribbean Studies Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff)

LAS 497 - Latin American and Caribbean Studies One Term Senior Project

Course Units: 1

(Fall, Winter, Spring; Staff)

LAS 498 - Latin American and Caribbean Studies Two Term Senior Thesis 1

Course Units: 0

(Fall, Winter, Spring; Staff)

LAS 499 - Latin American and Caribbean Studies Two Term Senior Thesis 2

Course Units: 2

(Fall, Winter, Spring; Staff)

Latin

LAT 101 - Beginning Latin 1

Course Units: 1

(Fall; Gazzarri) An elementary course introducing all major forms and syntax, with some easy reading from classical authors. **CC: HUM**

LAT 102 - Beginning Latin 2

Course Units: 1

(Winter; Gazzarri) Continuation of LAT 101. **Prerequisite(s):** LAT 101 or one year of secondary school Latin. **CC: LCCL**

LAT 103 - Latin Reading

Course Units: 1

(Spring; Gazzarri) Reading in a wide variety of classical Latin poetry and prose. **Prerequisite(s):** LAT 102 or its equivalent. **CC: LCCL**

LAT 230 - Catullus and Horace

Course Units: 1

(Not offered this Academic Year) Readings in Catullus and Horace, emphasizing vocabulary and syntax review. Traditions and social context of lyric poetry are also studied. **Prerequisite(s):** LAT 103 or two years of secondary school Latin. **CC: HUL, LCC**

LAT 237 - Latin Epic

Course Units: 1

(Not offered this Academic Year) Readings in Ovid's *Metamorphoses*, Lucan, and others. May be repeated with change in author. The genre, its development and history will be studied. **Prerequisite(s):** LAT 103 or two years of secondary school Latin. **CC: HUL, LCC**

LAT 240 - Vergil's Aeneid

Course Units: 1

(Winter; Toher) The purpose of this course is twofold. Our first objective will be to obtain greater proficiency in reading Latin. Through primary readings in their original Latin, students will increase their knowledge of vocabulary, grammar, and syntax. Our second objective will be to read Vergil's *Aeneid* with a critical eye. What is epic? What is Rome's answer to Homer trying to accomplish? We will consider the political implications of the *Aeneid*. In addition to close study of selections in Latin, we will read the entire work in English. **Prerequisite(s):** LAT 103 or two years of secondary school Latin. **CC: HUL, LCC**

LAT 245 - Lucan's Bellum Civile

Course Units: 1

(Not offered this Academic Year) After a review of the representation of Caesar in Vergil's *Aeneid* and Ovid's *Metamorphoses*, we will proceed directly to the *Pharsalia* (now more commonly called the *Bellum Civile*), Lucan's dark epic of the bitter war Julius Caesar waged against Rome in his successful quest to topple republican government, seize power, and establish a personal dictatorship. In addition to the study of the epic genre, its

development, and its history, students will scan dactylic hexameter, learn about ancient Rome, review Latin grammar, and write a seminar report based on the evidence that they gather from Lucan's text. **CC:** HUL, LCC

LAT 338 - Lyric and Elegiac Poetry

Course Units: 1

(Fall; Raucci) Extensive readings from the poems of Catullus, Horace, Propertius, Tibullus, and Ovid. May be repeated with change in author.

Prerequisite(s): LAT 103 or two years of secondary school Latin. **CC:** HUL, LCC

LAT 339 - Roman Satire

Course Units: 1

(Not offered this Academic Year) Readings in Horace, Petronius, and Juvenal. The origins and development of the genre will also be studied. May be repeated with change in author. **Prerequisite(s):** LAT 103 or two years of secondary school Latin. **CC:** HUL, LCC

LAT 341 - Roman Historiography

Course Units: 1

(Not offered this Academic Year) Readings in Sallust, Livy, Tacitus, and others to accompany study of the origins and development of Roman historiographical literature. May be repeated with change in author. **Prerequisite(s):** LAT 103 or two years of secondary school Latin. **CC:** HUL, LCC

LAT 343 - Roman Drama

Course Units: 1

(Not offered this Academic Year) Readings in Plautus and Terence along with selections from Seneca. May be repeated with change in author or texts. **Prerequisite(s):** LAT 103 or two years of secondary school Latin. **CC:** HUL, LCC

LAT 345 - Cicero

Course Units: 1

(Spring; Raucci) A selection from Cicero's massive literary output, with emphasis on his speeches and letters. May be repeated with changes in texts. **Prerequisite(s):** LAT 103 or two years of secondary school Latin. **CC:** HUL, LCC

LAT 358 - Medieval Latin Literature and Culture

Course Units: 1

(Not offered this Academic Year) Latin in the Middle Ages was Western Europe's international language of ideas, politics, and literature. It was the language not only of the Bible and the Church, but also of satirists and historians, heretics and mystics, poets and storytellers. Their writings are the vital link between Classical antiquity and the modern literatures of Europe. Students sample this vast literature through readings in the original and become acquainted with the social, intellectual, and cultural climate that produced it. Throughout the course, students develop their Latin reading skills (with attention to the differences between Classical and later Latin). Readings cover a range of authors from St. Augustine to the Arch-poet and may include autobiography, letters, history, visionary literature, philosophy, lyric poetry, hymns, drinking songs, Bible texts and interpretations, legends, encyclopedias, allegorical poetry, and political theory. **Prerequisite(s):** LAT 103 or two years of secondary school Latin. **CC:** HUL, LCC

LAT 371 - Reading Rome: Textual Approaches to the City

Course Units: 1

(Not offered this Academic Year) The purpose of this course is twofold. Our first objective will be to obtain greater proficiency in reading Latin. Through primary readings in their original Latin, you will increase your knowledge of vocabulary, grammar, and syntax. The second objective will be to study the literary topography of ancient Rome. We will consider Rome as a palimpsest, tracing the city's changes. Through our examination of sites-in-ink, we will consider how Roman identity and power relations are constructed through the city and its monuments. **CC:** HUM, LCC

LAT 447 - Latin Prose Composition

Course Units: 1

(Not offered this Academic Year) Practice in composing Latin prose, based on classical authors, and the study of prose style through a wide variety of texts from archaic to vulgar Latin. **Prerequisite(s):** At least one Latin course above 103, four years of secondary school Latin, or permission of the instructor. **CC:** HUM, LCC

LAT 490 - Latin Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study of a special author or subject, or of Latin prose composition. **Prerequisite(s):** Six courses in Latin or the equivalent.

LAT 491 - Latin Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study of a special author or subject, or of Latin prose composition. **Prerequisite(s):** Six courses in Latin or the equivalent.

LAT 492 - Latin Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Advanced individual study of a special author or subject, or of Latin prose composition. **Prerequisite(s):** Six courses in Latin or the equivalent.

LAT 498 - Latin Senior Thesis 1

Course Units: 0

(Fall-Winter or Winter-Spring; Staff) Independent reading and thesis in the field of Latin language and/or literature. **Prerequisite(s):** Permission of the chair. **Corequisite(s):** LAT 499

LAT 499 - Latin Senior Thesis 2

Course Units: 2

(Fall-Winter or Winter-Spring; Staff) Advanced individual study of a special author or subject, or of Latin prose composition. **Prerequisite(s):** Permission of the chair. **CC:** WS

Master of Business Administration

AC 604 - Financial and Managerial Accounting for Decision Making

Course Units:

Contact Clarkson University Capital Region Campus for course description

MK 610 - Marketing Management

Course Units: 1

Contact Clarkson University Capital Region Campus for course description

OM 607 - Global Supply Chain Management

Course Units: 1

Contact Clarkson University Capital Region Campus for course description

OS 603 - Leadership and Organizational Behavior

Course Units: 1

Contact Clarkson University Capital Region Campus for course description

Mechanical Engineering

Elective Courses

These may be taken to satisfy the engineering depth or free elective requirements. Consult Mechanical Engineering Department chair and course listing for additional MER, BNG, ESC, CSC, ECE, and GCUU courses that satisfy the engineering elective requirement.

MER 010 - ME Senior Seminar

Course Units: 0

(Fall, Winter, Spring; Staff) Discussion of special topics in mechanical engineering important to professional development such as current engineering practices, engineering ethics, codes and standards and intellectual property. Required for all ME Majors during the Spring term of their Junior year (as part of the process of selecting their senior writing experience) and Fall and Winter terms of their Senior year.

MER 101 - Engineering Graphics

Course Units: 1

(Winter, Spring; Staff) Engineering graphics with emphasis on engineering drawings, introduction to solid modeling, and manufacturing. Topics include sketching, descriptive geometry, tolerances, sectioning, auxiliary views, assembly drawings, CAD, and manufacturing techniques.

Corequisite(s): MER-101L CC: SET

MER 201 - Statics

Course Units: 1

(Fall, Winter; Staff) A basic engineering mechanics course concerned with the equilibrium of non-deformable bodies at rest or moving with a constant velocity on a straight path. Free body diagrams, Newtonian mechanics, vectors and calculus are used to solve problems throughout the course. Topics include force vectors and systems, equilibrium, trusses, frames, friction, center of gravity, centroids, moments of inertia and fluid hydrostatics. **Prerequisite(s):** [PHY 120 & (MTH 112 or MTH 113)] or IMP 120

MER 212 - Dynamics

Course Units: 1

(Winter, Spring; Staff) A basic engineering mechanics course concerned with the kinematics and kinetics of non-deformable particles and two dimensional bodies undergoing acceleratory motion. D'Alembert free body diagrams, Newtonian mechanics, energy approaches, vectors and the calculus are used to solve problems throughout the course. Topics include kinematics, force and acceleration, work and energy principles and impulse and momentum principles. Includes a design component. **Prerequisite(s):** MER 201 & (MTH 115 or IMP 121)

MER 213 - Material Science

Course Units: 1

(Fall, Winter; Staff) A basic engineering science course dealing with crystal structure, imperfections in solids, diffusion, mechanical properties of metals, dislocations and strengthening mechanisms, phase diagrams, phase transformations in metals, structure and properties of ceramics, and polymeric structures. The principles formulated in materials science allow engineers to understand the nature and behavior of a wide variety of engineering materials. Includes a laboratory component. **Prerequisite(s):** CHM 101

MER 214 - Strength of Materials

Course Units: 1

(Winter, Spring; Staff) A branch of applied mechanics that deals with the behavior of solid bodies subjected to various types of loading. The solid bodies considered in this course include axially-loaded members, shafts in torsion, thin shells, beams, columns, and structures that are assemblies of these components. Strength of materials analysis determines the stresses, strains, and displacements produced by the loads. Includes a laboratory component. **Prerequisite(s):** MER 201 **Corequisite(s):** MER 214L

MER 231 - Thermodynamics 1

Course Units: 1

(Fall, Winter; Staff) A basic engineering science course dealing with relations between heat and other forms of energy. Topics include: basic thermodynamic principles, properties of simple substances, energy and the first law of thermodynamics, entropy and the second law of thermodynamics, ideal cycle analysis. Elementary environmental economic and sustainability considerations related to thermodynamic processes. **Prerequisite(s):** PHY 120 & (MTH 112 or MTH 113) or IMP 120. **Corequisite(s):** CHM 101

MER 232 - Thermodynamics 2

Course Units: 1

(Winter, Spring; Staff) Application of the fundamental laws of thermodynamics to the analysis of energy conversion devices, systems, and processes. The course moves beyond MER 231 through the analyses of more realistic power-producing and refrigeration systems, systems in which there are more than one substance present, and reactive systems. Factors that govern energy conversion processes and impact on the efficiency of those processes are studied with attention given to environmental and sustainability implications. **Prerequisite(s):** MER 231, CHM 101.

MER 291 - Mechanical Engineering Practicum 1

Course Units: 0

Any mechanical engineering undergraduate can practice their profession on a part-time basis, for credit, through participation in either (1) undergraduate research or (2) a design project sanctioned by the department. To receive Pass/Fail credit equivalent to one free elective course, the student must earn 3 terms worth of passing grades for the practicum experience. Credit for up to two free elective courses may be earned in this way.

MER 292 - Mechanical Engineering Practicum 2

Course Units: 0

Any mechanical engineering undergraduate can practice their profession on a part-time basis, for credit, through participation in either (1) undergraduate research or (2) a design project sanctioned by the department. To receive Pass/Fail credit equivalent to one free elective course, the student must earn 3 terms worth of passing grades for the practicum experience. Credit for up to two free elective courses may be earned in this way.

Prerequisite(s): Take MER-291

MER 293 - Mechanical Engineering Practicum 3

Course Units: 1

Any mechanical engineering undergraduate can practice their profession on a part-time basis, for credit, through participation in either (1) undergraduate research or (2) a design project sanctioned by the department. To receive Pass/Fail credit equivalent to one free elective course, the student must earn 3 terms worth of passing grades for the practicum experience. Credit for up to two free elective courses may be earned in this way.

Prerequisite(s): Take MER-292

MER 295H - Mechanical Engineering Honors Independent Project 1

Course Units: 0

Note: By permission of instructor.

MER 296H - Mechanical Engineering Honors Independent Project 2

Course Units: 1

Note: By permission of instructor

MER 301 - Engineering Reliability

Course Units: 1

(Fall, Spring; Staff) Engineering statistics; uncertainty analysis, data collection, computational statistics, probability, statistical inference, confidence limits, tolerance intervals, analysis of variance, least squares regression, introduction to design of experiments. STA 104, STA 164 or STA 264 are acceptable substitutes for MER 301. **Prerequisite(s):** MTH 115 or IMP 121.

MER 302 - Optimal Design

Course Units: 1

(Spring; Staff) Introduction to theory and application of computational (and experimental) methods used to optimize performance of engineering systems. These methodologies will be discussed in the context of practical applications ranging from structural shape optimization and robotics to material selection and design for assembly. Special emphasis will be given to translating the design into mathematical terms addressable by these general methods. **Prerequisite(s):** MER 214, CSC 109

MER 311 - Advanced Mechanics

Course Units: 1

(Winter, Spring; Staff) Advanced topics in stress analysis, deflection and stiffness, energy methods, failure analysis, fracture mechanics, statistical considerations, impact, fatigue, introduction to finite element methods. **Prerequisite(s):** MER 214

MER 312 - Dynamics and Kinematics

Course Units: 1

(Fall, Winter, Spring; Staff) Linkage analysis and synthesis, cam design, machine dynamics, computer aided kinematic design, kinetics and balancing. Includes a design component **Prerequisite(s):** MER 212

MER 322 - Dynamics of Physical Systems

Course Units: 1

(Fall, Spring; Staff) Time and frequency response of lumped-parameter mechanical, electrical, and fluid systems. Includes a lab component. **Prerequisite(s):** CSC 109 (or equivalent), MER 212, (ECE 222 or ECE 225) & (MTH 130 or MTH 234). **Corequisite(s):** MER 322L

MER 331 - Fluid Mechanics 1

Course Units: 1

(Fall, Winter; Staff) Analysis of fluid systems according to the control volume formulations of Newton's second law and the conservation laws of mass and energy. Both differential and integral analysis approaches are taught. Includes study of hydrostatics, dimensional analysis, boundary layers, Bernoulli's equation, head loss and piping systems, and lift and drag forces. Includes a laboratory component. **Prerequisite(s):** MER 231, MTH 117 or IMP 121 **Corequisite(s):** MER 212 (or BNG 202 for BNG majors only) and MER 331L

MER 332 - Fluid Mechanics 2

Course Units: 1

(Spring; Staff) This course will build upon knowledge learned in the introductory fluid mechanics course by providing a survey of several important areas of fluid mechanics not covered in MER 331. Topics covered in this course may include: differential analysis of fluid flow (Navier-Stokes

equations), potential flow analysis, microfluidics, compressible flow analysis and computational fluid dynamics. As part of the course students will complete a project on a fluids topic of their choice. **Prerequisite(s):** MER 331

MER 333 - Heat Transfer Analysis and Design

Course Units: 1

(Winter, Spring; Staff) Study of the different modes of heat transfer through the development and application of rate equations for quantifying conduction, convection, and thermal radiation heat transfer. Theory and applications are reinforced and complemented by a laboratory component of the course. **Prerequisite(s):** MER 331 & (MTH 130 or MTH 234) **Corequisite(s):** MER 333L

MER 354 - Advanced Materials

Course Units: 1

(Not offered this Academic Year) Advanced materials for engineers are introduced with a focus on the properties and applications of the materials. Several advanced materials currently in the research and development stage will also be introduced with a discussion of the needed infrastructure to bring the materials to production. Topics include composites, engineering alloys, microelectromechanical systems (MEMS) devices, nanomaterials, semiconductors and microelectronic fabrication, and superconductors. **Prerequisite(s):** Prerequisite: MER 213 or by permission of the instructor.

MER 362 - Manufacturing Processes

Course Units: 1

(Fall; Staff) This course aims to provide students with fundamentals of manufacturing processes and their strong interrelationships with product design and material properties. It will incorporate computer-aided manufacturing tools while covering materials behavior and selection for manufacturing, traditional manufacturing processes such as casting, forming, lathing, milling, polymer injection molding, emerging manufacturing processes such as layer manufacturing and micro-fabrication methods, GD&T (Geometric Dimensioning and Tolerancing). **Prerequisite(s):** MER 101, MER 213

MER 371 - Internal Combustion Engines

Course Units: 1

(Not offered this Academic Year) This course provides a basic introduction to reciprocating Internal Combustion (IC) Engines. Idealized underlying thermodynamic cycles (Otto, Diesel, Miller, etc.) and the mechanisms used to produce them will be covered. Deviations from the ideal cycles will be discussed in depth. Introductory coverage of petroleum based fuel chemistry, combustion, and emissions is included. **Corequisite(s):** MER 232

MER 419 - Design of Mechanical Systems

Course Units: 1

(Winter, Spring; Staff) A capstone design experience for the mechanics area of mechanical engineering program. Students work in teams on challenging design projects with special focus on the design of mechanical devices and systems. **Prerequisite(s):** MER 311, MER 312.

MER 421 - Mechatronics Design

Course Units: 1

(Not offered this Academic Year) This course emphasizes the fundamental technologies on which contemporary mechatronic designs are based; sensors and actuators, system dynamics and control, analog and digital electronics, microcontroller technology, interface electronics and real-time programming. The laboratory sessions focus on, hands-on design projects in which small teams of students configure, design, and implement a succession of mechatronic subsystems, leading to system integration in a final project. **Prerequisite(s):** MER 212 , ECE 222 or ECE 225 ,& CSC 109 or equivalent .

MER 439 - Design of Thermal/Fluid Systems

Course Units: 1

(Fall, Winter, Spring; Staff) A capstone, project-oriented course in the thermal-fluids area of mechanical engineering that applies design techniques to the design of thermal/fluid processes and systems. Students work in teams on projects that involve the design of piping systems, heat exchangers, thermodynamic cycles, and other thermal/fluid systems. **Prerequisite(s):** MER 232, MER 333.

MER 452 - Composite Materials Technology

Course Units: 1

(Fall; Staff) A comprehensive introduction to composite materials and motivation for their use in modern applications. Topics include selection and availability of composite materials, manufacturing processes, usable theoretical concepts, testing and characterization of composites, and strength theories. **Prerequisite(s):** Take MER 213 and MER 311

MER 471 - Solar Energy Analysis and Design

Course Units: 1

(Not offered this Academic Year) Analysis and design applicable to the use of solar energy for heating, cooling, and electric power generation. Solar geometry, solar collector positioning, energy storage, component and system design. **Prerequisite(s):** MER 333 or by permission of instructor.

MER 486 - Senior Competition Design

Course Units: 1

Students participating at the level of senior designer and/or system design lead on a departmentally approved engineering design competition team (e.g. SAE Aero, SAE Baja, ASME Human Powered Vehicle). The student must have senior standing. The student's specific design responsibilities must be approved by the team's faculty adviser prior to registration. Weekly meetings with faculty advisor are required, as is travel to and participation in the design competition. Registration requires approval of the selected team's faculty adviser who will grade the student.

Corequisite(s): Students must also register for MER 311 and MER 333, plus senior standing in Mechanical Engineering.

MER 487 - Mechanical Engineering Senior Writing Seminar

Course Units: 1

(Spring; Staff) This course is required of and limited to seniors who are not satisfying their WS requirement through MER 498. The course will focus on topics in mechanical engineering of current interest and importance. Students will make oral presentations, write reports on scholarly publications and critically evaluate these publications and the written work of their peers. A final thesis is required to fulfill the WS requirement.

Prerequisite(s): MER 311 and MER 333 **CC: WS Note:**

MER 490 - Independent Study

Course Units: 1

(Fall, Winter, Spring; Staff) Offered with department approval only.

MER 491 - Mechanical Engineering Practicum 1

Course Units: 0

(Fall, Winter, Spring; Staff) Any mechanical engineering undergraduate can practice their profession on a part-time basis, for credit, through participation in either (1) undergraduate research or (2) a design project sanctioned by the department. To receive Pass/Fail credit equivalent to one free elective course, the student must earn 3 terms worth of passing grades for the practicum experience. Credit for up to two free elective courses may be earned in this way.

MER 492 - Mechanical Engineering Practicum 2

Course Units: 0

(Fall, Winter, Spring; Staff) Any mechanical engineering undergraduate can practice their profession on a part-time basis, for credit, through participation in either (1) undergraduate research or (2) a design project sanctioned by the department. To receive Pass/Fail credit equivalent to one free elective course, the student must earn 3 terms worth of passing grades for the practicum experience. Credit for up to two free elective courses may be earned in this way.

MER 493 - Mechanical Engineering Practicum 3

Course Units: 1

(Fall, Winter, Spring; Staff) Any mechanical engineering undergraduate can practice their profession on a part-time basis, for credit, through participation in either (1) undergraduate research or (2) a design project sanctioned by the department. To receive Pass/Fail credit equivalent to one free elective course, the student must earn 3 terms worth of passing grades for the practicum experience. Credit for up to two free elective courses may be earned in this way.

MER 497 - Mechanical Engineering Senior Project

Course Units: 1

(Fall, Winter, Spring; Staff) Capstone design project or research project, performed either independently or in a team under the supervision of one or more of the department faculty. Minimum requirements include one oral report, one written progress report, and development of a web page for the project. Consult the Mechanical Engineering department for additional minimum requirements. **Prerequisite(s):** MER 311 and MER 333 and concurrent registration and participation in senior seminar MER 010. **Corequisite(s):** MER 010 **CC:** WS

MER 498 - Mechanical Engineering Senior Project Continuation

Course Units: 1

(Fall, Winter, Spring; Staff) Continuation of MER 497. Minimum requirements include one oral report, one written final project report, and development of a web page for the project. Consult the Mechanical Engineering department for additional minimum requirements.

Prerequisite(s): MER 497 and concurrent registration and participation in senior seminar MER 010. **Corequisite(s):** MER 010 **CC:** WS

MER 499 - Mechanical Engineering Senior Project Continuation

Course Units: 1

(Spring; Staff) Optional follow-on to MER 497, MER 498, for students who wish to go above and beyond their completed objectives for MER 497, MER 498. Can be counted as a free elective in the Mechanical Engineering curriculum. **Prerequisite(s):** MER 498, permission of the MER 498 project advisor and the department chair. Consult the Mechanical Engineering Department Chairman for additional requirements.

Corequisite(s): MER 010

Modern Languages & Literatures

MLL 490 - Academic Training Practicum 1

Course Units: 0

(Fall, Winter, Spring; Staff) Language Assistants will receive direct supervision from their faculty mentors in becoming effective and skilled language assistants and instructors. Students will also learn from observation and practice how to design and implement curriculum, lessons, and assignments. Course is open only to non-Fulbright Language Assistants. MLL 490 and MLL 491 must be taken simultaneously over 3 terms to receive 2 credits.

MLL 491 - Academic Training Practicum 2

Course Units: 0

(Fall, Winter, Spring; Staff) Language Assistants will receive direct supervision from their faculty mentors in becoming effective and skilled language assistants and instructors. Students will also learn from observation and practice how to design and implement curriculum, lessons, and assignments. Course is open only to non-Fulbright Language Assistants. MLL 490 and MLL 491 must be taken simultaneously over 3 terms to receive 2 credits.

Mathematics

MTH 051 - Cryptology: The Mathematics of Secrecy

Course Units: 1

(Not offered this Academic Year) The course will focus on the mathematical aspects of public-key cryptography, the modern science of creating secret ciphers (codes), which is largely based on number theory. Additional topics will be taken from cryptanalysis (the science of breaking secret ciphers) and from contributions that mathematics can make to data security and privacy. **CC: QMR**

MTH 053 - Visualizing the Fourth Dimension

Course Units: 1

(Not offered this Academic Year) An investigation of the idea of higher dimensions and some of the ways of understanding them. The classic novel, Flatland, is the starting point; discussions, writing, projects and interactive computer graphics are used to extrapolate ideas from two and three dimensions to their analogues in four dimensions and higher. **CC: QMR**

MTH 054 - Number Theory: From Clock Arithmetic to Unbreakable Codes

Course Units: 1

(Spring; Staff) An introduction to the beauty and use of numbers. Topics chosen from divisibility tests, prime numbers, perfect numbers, unbreakable codes, Fermat's theorem, the golden section, calendars, magic squares, and others. **CC: QMR**

MTH 055 - Ancient Greek Mathematics

Course Units: 1

(Not offered this Academic Year) Ancient Greek mathematicians invented the notion of abstraction (in mathematics and other fields), absolute precision, and proof. The approach to mathematics that we take today can be traced back to these Greek mathematicians. After examining some pre-Greek mathematical traditions, we study Greek mathematics, beginning with Thales and Pythagoras. Topics include the intellectual crisis caused by the discovery that not all magnitudes are commensurable; Plato and his academy; Euclid and his Elements; the three special construction problems (trisecting an angle, squaring a circle, doubling a cube); and the greatest of the Greek mathematicians, Archimedes. **CC: QMR**

MTH 056 - History of Mathematics

Course Units: 1

(Not offered this Academic Year) Traces the development of mathematical ideas and methods in literate cultures from ancient Egypt and Mesopotamia, to Hellenistic Greece and medieval China, India and the Islamic world, up through the dawn of calculus at the start of the Scientific Revolution in early modern Europe. Topics include the interlinked changes and intercultural transmission of basic numeracy, arithmetic, geometry, trigonometry, algebra, practical computation and approximation, and concepts of the infinitely large and small. **CC: QMR**

MTH 057 - Game Theory and its Applications in the Humanities and Social Sciences

Course Units: 1

(Not offered this Academic Year) A self-contained introduction to the mathematical theory of conflict. Examples and applications include parlor games, auctions, games from the Bible and games commenting on the existence of superior beings, game-theoretic analyses in literature, philosophical questions and paradoxes arising from game theory, and game-theoretic models of international conflict. **CC: QMR Note:** Not open to students who have passed MTH 199.

MTH 058 - Applications of Mathematics to Economics 1

Course Units: 1

(Not offered this Academic Year) Linear and exponential functions, matrix algebra and linear programming with applications to the social sciences. Some sections include the use of computer spread-sheets for computations and graphical analysis. **CC: QMR Note:** Not open to students who have passed a college calculus course.

MTH 059 - Applications of Mathematics to Economics 2

Course Units: 1

(Not offered this Academic Year) Differential and integral calculus with applications in the social sciences. Students who wish to continue the calculus after MTH 059 should enroll in MTH 112. **Prerequisite(s):** MTH 058. **CC: QMR Note:** Not open to students who have passed a college calculus course.

MTH 060 - Mathematics and Politics

Course Units: 1

(Same as PSC 123). **(Not offered this Academic Year)** A mathematical treatment (not involving calculus or statistics) of escalation, political power, social choice, and international conflict. No previous study of political science is necessary, but PSC 111 or PSC 112 would be relevant. **CC:** QMR

MTH 061 - Math in the Public Interest

Course Units: 1

(Not offered this Academic Year) In what ways do advertisers, politicians, and other propagandists try to trick the public by exploiting our ignorance of or aversion to mathematical reasoning? This course explores key mathematical topics including statistics, probability, exponential and logarithmic functions, and visual/graphical representation of numbers, in the context of contemporary public policy issues such as the 2008 financial crisis, gaming institutions, population demographics, and climate change. **Courses CC:** QMR

MTH 100 - Calculus with Precalculus 1

Course Units: 1

(Fall; Staff) This sequence covers the same material as MTH 110 and MTH 112, but it is spread out over three terms. There is an additional emphasis placed on review of fundamental precalculus concepts. Math 100 alone does not fulfill the Quantitative and Mathematical Reasoning requirement.

MTH 101 - Calculus with Precalculus 2

Course Units: 1

(Winter; Staff) This sequence covers the same material as MTH 110 and MTH 112, but it is spread out over three terms. There is an additional emphasis placed on review of fundamental precalculus concepts. MTH 100 alone does not fulfill the Quantitative and Mathematical Reasoning requirement. **Prerequisite(s):** MTH 100 **CC:** QMR

MTH 102 - Calculus with Precalculus 3

Course Units: 1

(Spring; Staff) This sequence covers the same material as MTH 110 and MTH 112, but it is spread out over three terms. There is an additional emphasis placed on review of fundamental precalculus concepts. MTH 100 alone does not fulfill the Quantitative and Mathematical Reasoning requirement. **Prerequisite(s):** MTH 101 **CC:** QMR

MTH 110 - Calculus 1: Differential Calculus

Course Units: 1

(Fall, Winter; Staff) Calculus of one real variable. Differentiation of algebraic functions, and applications. Not intended for students who have passed a calculus course or MTH 059. **CC:** QMR

MTH 112 - Calculus 2: Integral Calculus

Course Units: 1

(Winter, Spring; Staff) Integral calculus of functions of a single variable, the fundamental theorem, formal integration and applications, calculus of logarithmic, exponential, and inverse trigonometric functions. **Prerequisite(s):** MTH 110. **CC:** QMR

MTH 113 - AP Calculus

Course Units: 1

(Fall; Staff) Self-contained treatment of the main topics in MTH 110 and MTH 112. Intended for first-year students who have been introduced to (but have not yet mastered) the basics of differential and integral calculus. **CC:** QMR

MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory

Course Units: 1

(Fall, Winter, Spring; Staff) Geometry of 3-space, differential calculus of functions of several variables, linear systems, matrices. **Prerequisite(s):** MTH 102, MTH 112, or MTH 113.

MTH 117 - Calculus 4: Integral Vector Calculus

Course Units: 1

(Fall, Winter, Spring; Staff) Double and triple integrals, line integrals and Green's theorem, divergence and curl, divergence theorem and Stokes' theorem. **Prerequisite(s):** MTH 115.

MTH 127 - Numerical Methods

Course Units: 1

(Not offered this Academic Year) Newton's method, numerical differentiation and integration, solution of ordinary differential equations, error estimates. **Prerequisite(s):** MTH 115 and fluency in some mathematical programming language.

MTH 128 - Probability

Course Units: 1

(Same as STA 128) **(Winter; Staff)** Probability theory and applications. **Prerequisite(s):** MTH 102, MTH 112, or MTH 113.

MTH 130 - Ordinary Differential Equations

Course Units: 1

(Winter, Spring; Staff) Linear differential equations and power series. **Prerequisite(s):** MTH 115. **Note:** Not open to students who have passed MTH 234.

MTH 140 - Applied Linear Algebra

Course Units: 1

(Fall; Staff) Linear algebra has an enormous number of applications to the sciences and engineering. This course will cover the basics of linear algebra in Euclidean n -space, including linear systems, linear transformations, determinants, eigenvalues and eigenvectors, orthogonality, and the singular value decomposition. An emphasis will be placed on applications, chosen from least-squares fitting, linear programming, image compression, Markov chains and discrete dynamical systems, computer graphics, principal component analysis, the Google PageRank algorithm, and others. Computer software such as MATLAB or Mathematica will be used in this course to perform numerical calculations. **Prerequisite(s):** MTH 115 . Credit will not normally be given for both MTH 140 and MTH 340 . Exceptions require approval of a proposal from the student to the department chair.

MTH 197 - Discrete Mathematics for Computer Science

Course Units: 1

(Winter; Staff) An introduction to fundamental concepts and methods of proof in mathematics and computer science. Topics include elementary logic, functions, relations, sets, and basic combinatorics. Not open to students who have passed MTH-199. **CC:** QMR

MTH 199 - Introduction to Logic and Set Theory

Course Units: 1

(Fall, Winter, Spring; Staff) Designed to enable the student to develop the ability to understand and communicate mathematical arguments. Logic and set theory form the core. Selected topics are covered at the discretion of the instructor. For those considering any form of mathematics major, the department recommends that Math 199 be taken by fall term of the sophomore year, if possible. MTH 115 is usually taken before MTH 199. Credit is not normally given for both MTH-197 and MTH-199. Exceptions require the approval of the department chair. **Prerequisite(s):** MTH 102, MTH 112, or MTH 113.

MTH 219 - Topics in Discrete Mathematics

Course Units: 1

(Fall; Staff) Topics may include graph theory, partially ordered sets, algebraic coding theory, computational complexity, number theory. **Prerequisite(s):** MTH 199 or permission from the Chair.

MTH 221 - Mathematical Cryptology

Course Units: 1

(Not offered this Academic Year) An in-depth look at the mathematical theory underlying modern methods to accomplish the secret transmission of messages, as well as other tasks related to data security, privacy, and authentication. MTH-221 normally is closed to students who have passed MTH 235 or MTH 051. **Prerequisite(s):** MTH 199 or permission from the Chair.

MTH 224 - Geometry

Course Units: 1

(Spring; Staff) Topics in transformation geometry, or projective, affine, Euclidean, and/or non-Euclidean geometries. **Prerequisite(s):** MTH 199 or permission from the Chair.

MTH 234 - Differential Equations

Course Units: 1

(Winter; Staff) Topics include systems of ordinary differential equation, series solutions, asymptotic solutions, integral equations. **Prerequisite(s):** MTH 115 and MTH 199, or permission from the Chair. **Note:** Not open to students who have passed MTH 130.

MTH 235 - Number Theory

Course Units: 1

(Winter; Staff) Properties of natural numbers including divisibility, prime numbers, congruences, special number theoretic functions and quadratic reciprocity. Math 235 normally is closed to students who have passed MTH-221. **Prerequisite(s):** MTH 199 or permission from the Chair.

MTH 238 - Methods of Applied Mathematics

Course Units: 1

(Spring; Staff) An introduction to the mathematical techniques and analysis of ordinary differential equations, partial differential equations, and complex variables. The emphasis is on the equations arising from physical, biological, and economic phenomena. **Prerequisite(s):** MTH 130 or MTH 234 and MTH 197 or MTH 199.

MTH 295H - Mathematics Honors Independent Project 1

Course Units: 0

MTH 296H - Mathematics Honors Independent Project 2

Course Units: 1

MTH 325 - Knot Theory

Course Units: 1

(Not offered this Academic Year) An introduction to the mathematical study of knots, including colorability, chirality, genus, and the Jones polynomial. Course will also explore the relationship between mathematical knots and structures in molecular chemistry and biology, and physics. **Prerequisite(s):** MTH 221, MTH 235, MTH 332, or MTH 340, or permission of the Chair. **Note:** Not open to students who have passed MTH-225.

MTH 332 - Abstract Algebra 1

Course Units: 1

(Spring; Staff) Algebraic structures including groups, rings and fields. **Prerequisite(s):** One of MTH 219 , MTH 221 , MTH 224 , MTH 235 or permission from the Chair.

MTH 336 - Real Variable Theory

Course Units: 1

(Fall; Staff) A study of point sets on the real line and of real functions defined on these sets. **Prerequisite(s):** MTH 332 or MTH 340 or permission from the Chair.

MTH 340 - Linear Algebra

Course Units: 1

(Winter; Staff) Vector spaces, linear transformations, inner product and dual spaces, eigenvalues and eigenvectors, special topics. **Prerequisite(s):** MTH 115 and one of MTH 219 , MTH 221 , MTH 224 , MTH 235 , or permission from the Chair. Credit will not normally be given for both MTH 140 and MTH 340. Exceptions require approval of a proposal from the student to the department chair.

MTH 430 - Complex Analysis

Course Units: 1

(Spring; Staff) An introduction to analytic functions of a complex variable. **Prerequisite(s):** One 300-level course or permission from the Chair.

MTH 432 - Abstract Algebra 2

Course Units: 1

(Fall; Staff) Continuation of MTH 332 . Certain topics will be selected for more intensive study. **Prerequisite(s):** MTH 332.

MTH 436 - Topology

Course Units: 1

(Not offered this Academic Year) Topological spaces, connectedness, compactness, continuous mappings and homeomorphisms. **Prerequisite(s):** One 300-level course or permission from the Chair.

MTH 448 - Differential Geometry

Course Units: 1

(Not offered this Academic Year) A study of curves and surfaces in 3-space. Topics include arc length, curvature, torsion, the Frenet trihedron, the first and second fundamental forms, normal curvature, and Gaussian curvature. **Prerequisite(s):** MTH 117 and MTH 340, or permission from the Chair.

MTH 480 - Foundations of Mathematics

Course Units: 1

(Same as PHL 480) **(Not offered this Academic Year)** Propositional and predicate logic, Godel completeness theorem, introduction to recursion theory. **Prerequisite(s):** MTH 332 or permission from the Chair. **CC:** HUM

MTH 490 - Mathematics Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Independent study in a particular area of mathematics under the supervision of a faculty member.

MTH 491 - Mathematics Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Independent study in a particular area of mathematics under the supervision of a faculty member.

MTH 492 - Mathematics Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Independent study in a particular area of mathematics under the supervision of a faculty member.

MTH 493 - Mathematics Independent Study 4

Course Units: 1

(Fall, Winter, Spring; Staff) Independent study in a particular area of mathematics under the supervision of a faculty member.

MTH 494 - Mathematics Independent Study 5

Course Units: 1

(Fall, Winter, Spring; Staff) Independent study in a particular area of mathematics under the supervision of a faculty member.

MTH 495 - Mathematics Independent Study 6

Course Units: 1

(Fall, Winter, Spring; Staff) Independent study in a particular area of mathematics under the supervision of a faculty member.

MTH 496 - Mathematics Independent Study 7

Course Units: 1

(Fall, Winter, Spring; Staff) Independent study in a particular area of mathematics under the supervision of a faculty member.

MTH 497 - Mathematics One Term Senior Thesis

Course Units: 1

(Fall, Winter; Staff)

MTH 498 - Mathematics Senior Thesis 1

Course Units: 0
(Fall-Winter; Staff)

MTH 499 - Mathematics Senior Thesis 2

Course Units: 2
(Fall-Winter; Staff)

Philosophy

PHL 100 - Introduction to Philosophy

Course Units: 1
(Fall; Baker, Spring; Baker, Scheiter) An introduction to some of the most enduring questions of philosophy: Does God exist? Might the external world be an illusion? Is science rational? What is the relationship between the mind and the body? What is it to be moral, and why should one bother? CC: HUM

PHL 105 - Introduction to Ethics

Course Units: 1
(Spring; Zaibert) An introduction to traditional normative ethical theories, which attempt to provide a rationally defensible account of morally right and wrong conduct and morally good and bad character, and consideration of the challenges posed to these theories by ethical relativism and feminist ethics. CC: HUM

PHL 110 - Moral Controversies

Course Units: 1
(Spring; Baker) An introduction to ethics by considering how a wide variety of reality-based examples of complex and controversial ethical issues might be resolved in a rational manner. CC: HUM

PHL 120 - The Examined Life: A First-Year Philosophy Seminar

Course Units: 1
(Not offered this Academic Year) An introduction to some of the central problems of philosophy and to ways of approaching any issue philosophically, including the existence of God, conflicts between science and religion, free will, the nature of the mind, truth, and knowledge. CC: HUM

PHL 123 - Values, Norms, and Economic Justice

Course Units: 1
(Same as ECO 123) (Fall; S.J. Schmidt) This class considers the goals economic policy might pursue and how different theories of the good lead to particular choices about desirable or undesirable economic policies. We consider mainstream economic thinking, which has roots in utilitarianism

and liberalism, and alternative ideas such as libertarianism, Austrian economics, feminist, communitarian, and religious philosophy and economics. We apply these ideas to relevant policy issues, such as free trade, globalization, unemployment, income distribution, affirmative action, care of the environment, health care, and famine relief. **CC: HUM**

PHL 125 - Critical Thinking: An Introduction to Logic

Course Units: 1

(Fall; Tullman) A course in informal logic, with a very brief introduction to elementary formal logic. Students will learn to identify, analyze and evaluate English-language arguments in areas ranging from the sciences to current affairs to the law. **CC: HUM**

PHL 135 - Philosophy in Film

Course Units: 1

(Not offered this Academic Year) This course will be an exploration of the portrayal in film of philosophical issues, followed by a focused consideration of the issues themselves. The goal will be to stimulate students' philosophical imaginations through film and then use that energy as the springboard for philosophical study and discussion of such issues as appearance and reality, freedom and responsibility, the existence of god, the question of whether computers are sentient, rational, and moral agents, and our moral obligations to others and to the state. **CC: HUM**

PHL 150 - Ancient Philosophy

Course Units: 1

(Fall; Scheiter) An examination of issues debated by ancient Greek and Roman philosophers that became central to western philosophy, including the nature of reality, the criteria for knowledge, the difference between good and pleasure, and the principles of political justice. Discussion of readings from the Pre-Socratics, Plato, Aristotle, the Epicureans and the Stoics. **CC: HUM**

PHL 155 - Seventeenth and Eighteenth Century European Philosophy

Course Units: 1

(Spring; Davis) An introduction to philosophy by way of some of the most important European philosophical works of the Seventeenth and Eighteenth Centuries. **CC: HUM**

PHL 160 - Nineteenth and Twentieth Century Philosophy

Course Units: 1

(Not offered this Academic Year) An exploration of some of the major trends in the philosophy of the 19th and 20th centuries focusing especially on contemporary skepticism, cultural relativism, the crisis of faith and morality, language, and the metaphysics of truth, as reflected in the contemporary philosophical movements of existentialism, analytic philosophy, phenomenology, and postmodernism. **CC: HUM**

PHL 166 - Indian Philosophy

Course Units: 1

(Spring; Nowakowski) An introductory survey of Hinduism, Buddhism, Jainism and Carvaka. Over the centuries, Indian philosophers inquired into the nature of reality and mind, debated epistemological issues concerning the criteria for valid knowledge, proposed paths for attaining spiritual

liberation, and developed social theories for the welfare of people. Methods used by Indian philosophers include meditation, yoga, reasoning, logic, debate and observation. Some of these methods will be explored in class. **CC:** HUM, LCC

PHL 167 - Chinese Philosophy

Course Units: 1

(Not offered this Academic Year) An introductory survey of Confucianism, Daoism, Moism, Yin Yang, Legalism, Neo-Confucianism and Neo-Daoism. Among the theories covered in the course are Confucian theories of self-cultivation, the superior person and human nature, Menzi's theory of original human goodness, Xunzi's theory of evil human nature, Daoist theories of non-action, harmony with nature, and law of reversion, and Moist theories of universal love and non-discrimination. Many of these Chinese theories shaped Chinese civilization for over two millennia. **CC:** HUM, LCC

PHL 180 - Theories of the Good Life

Course Units: 1

(Not offered this Academic Year) This course takes a crosscultural approach to theories of the good life by studying ancient Greek, Chinese, African and Hindu theories, as well as more modern versions of these theories. In class, we shall analyze and debate these theories in terms of their underlying beliefs about human nature and in terms of whether someone can actually live by these theories. **CC:** HUM, LCC

PHL 231 - Symbolic Logic

Course Units: 1

(Spring; Nowakowski) An introduction to modern symbolic logic, focusing on translation, semantics and syntax for propositional and predicate logic. You will learn to translate natural language into the language of logic and vice versa, and study key concepts such as validity, consistency, proof, soundness and completeness. **CC:** HUM, QMR

PHL 232 - Philosophy of Science

Course Units: 1

(Spring; Wegter-McNelly) An introduction to philosophy of science. What are scientific theories, and how are they tested? What is scientific method? What counts as evidence for a scientific theory? What is scientific explanation? We will approach these questions both philosophically and through formal techniques. **CC:** HUM

PHL 233 - Reason, Science, and Humanity

Course Units: 1

(Fall; Tullmann) An examination of some of philosophy's "Greatest Hits," from some of the 17th and 18th centuries' greatest thinkers: Descartes, Leibniz, Locke, Berkeley, Hume, and Kant. We will consider questions like: Is there a God, and how could we know? Is your mind just your brain, or do you have an immaterial soul? What is free will, and are we just fooling ourselves when we think we have it? Does your subjective perception of the world correspond to how it is in reality, and how can you possibly know? Are there universal moral duties, which everyone has an obligation to follow regardless of their personal inclinations? **CC:** HUM

PHL 235 - Reasoning and the Law

Course Units: 1

(Not offered this Academic Year) A non-technical introduction to legal reasoning. We will consider the nature of arguments in general and learn how to distinguish good arguments from bad ones, and then consider a variety of issues that arise in the context of the law, including arguments whose force turns on a proper understanding of men's real and proximate cause. The arguments that we will consider are drawn primarily from judicial decisions. We shall also examine the relationship between morality and the law. **CC: HUM**

PHL 237 - Introduction to Political Philosophy

Course Units: 1

(Not offered this Academic Term) An historical introduction to issues in political philosophy. The texts that we will consider address questions such as: Why should individuals live in society at all? Why should individuals obey any government at all? What are the sources, limits and purposes of political power? **CC: HUM**

PHL 242 - The Philosophy of Aristotle

Course Units: 1

(Winter; Scheiter) (Same as CLS 242) **CC: HUM**

PHL 245 - Buddhist Ethics

Course Units: 1

(Fall, Nowakowski) Ethics is one of the three main components of the Buddhist path, the others being meditation and wisdom. In the centuries following the Buddha's death, two main branches of Buddhism developed: Theravada Buddhism and Mahayana Buddhism. The older school, Theravada, emphasized moral guidelines and meditation practices that culminate in nirvana; the Mahayana school emphasized a morality of compassion and a metaphysical theory of emptiness. In the contemporary period, Buddhists are concerned about issues relating to the environment, social justice, war, medicine and health, gender, and race. Buddhist ethical theories emphasize selflessness, moral discipline, compassion, karma and awareness. This course draws from ancient ethical texts as well as contemporary works on applying basic Buddhist principles to today's moral problems. **CC: HUM, LCC**

PHL 246 - Art, Media, and Society

Course Units: 1

(Not offered this Academic Year) An examination of the traditional aesthetic theories of philosophers such as Plato, Aristotle, Burke, Hume, Schopenhauer, and Nietzsche, as well as more recent theories. Among the issues considered will be how art is different from everyday objects and the impact of technology on art. **CC: HUM**

PHL 248 - Philosophy and Current Affairs

Course Units: 1

(Not offered this Academic Year) "Public philosophy" tests the prospects and limits of philosophy as a means of analyzing events and conditions of current interest. We will select an issue, such as affirmative action, the politics of religion, minority rights, the entertainment industry, etc., and track it both in the scholarly and the popular media (newspapers, television, etc.). **CC: HUM**

PHL 250 - Ethical Theory

Course Units: 1

(Not offered this Academic Year) Theories such as utilitarianism, pure obligation theory, virtue-ethics, and enlightened self-interest theory propose to provide defensible methods for answering questions about right and wrong. The course examines traditional theories (Aristotle, Hobbes, Kant, Mill, etc.) and contemporary theories (Harman, Rawls, Wolf, Nagel, Gauthier) on issues such as moral skepticism and truth, rational self-interest, care as the basis of ethics, the diversity of moral beliefs, moral trump cards, etc. **CC: HUM**

PHL 255 - On War and Killing

Course Units: 1

(Not offered this Academic Year) The central goal of this course is to develop and apply some useful tools for critical reflection upon the morality of war. In considering this issue we will focus on two main questions: (i) that of *jus ad bellum* - what, if anything, makes it right to go to war?, and (ii) that of *jus in bello* - what kinds of actions are, and are not, justified in carrying out a war? **CC: HUM**

PHL 261 - Philosophy of Religion

Course Units: 1

(Winter; Davis) Current research in philosophical theology about language, possible worlds, and evidence used to address issues such as whether moral obligation can depend upon God's will, whether God's power is limited by the possible, whether God owns us, whether it is reasonable to bet on the existence of God. **CC: HUM**

PHL 263 - Feminism

Course Units: 1

(Not offered this Academic Year) An examination of the central normative issues related to the gender equality and discrimination.

PHL 265 - Minds and Machines

Course Units: 1

(Winter; Tullmann) Is it possible to build a computer that effectively simulates human intelligence? If we did so, would the computer really be intelligent, or would it merely seem to be: Would the computer have free will? Do we have free will, or is human freedom merely an illusion? Do we have immaterial souls that can survive the deaths of our bodies and brains? In this advanced introduction to the philosophy of mind, we will consider these and other questions about what it means to have a mind, and about the relationship between mind and the brain.

PHL 266 - Philosophy in Literature

Course Units: 1

(Not offered this Academic Year) An examination of the connections between the two disciplines. **CC: HUM**

PHL 273 - Environmental Ethics

Course Units: 1

(Spring; Vitek) An exploration of the ethical and philosophical ideas that have shaped attitudes toward the environment and toward non-human species. **CC: HUM**

PHL 274 - Environmental History and Literature

Course Units: 1

(Not offered this Academic Year) An examination of American environmentalism from 1850 to the present, including the writings of Black Elk, John Muir, Aldo Leopold, Rachel Carson, E.F. Schumacher, and Gary Snyder. Emphasis will be given to the social implications of environmental issues and the ways in which an historical perspective can enhance understanding of current environmental policies and practices. **CC: HUM**

PHL 295H - Philosophy Honors Independent Project 1

Course Units: 0

PHL 296H - Philosophy Honors Independent Project 2

Course Units: 1

PHL 297 - The Ethics of Forgiveness and Revenge

Course Units: 1

(Spring; Scheiter, Zaibert) Examination of different ways of responding to wrongdoing. When is revenge appropriate and why? When is forgiveness appropriate and why? **CC: HUM**

PHL 305 - Relativism

Course Units: 1

(Not offered this Academic Year) Relativism is not just a 'theoretical' issue: the Events of 9/11 have pitted those who demand 'moral clarity' against those who urge 'more understanding'. Moral disagreement is not limited to conflicts between cultures: democratic societies attempt to accommodate points of view which conflict and diverge, sometimes nearly to the point of violence, as debates on abortion or gay marriage or the separation of church and state, or even taxation, show. But relativism is also an important theoretical issue as it raises questions about truth, justification of belief and moral skepticism. We explore these theoretical, moral and political dimensions through reading of theorists such as Rawls, Nagel, Harman, Thomson, Gutmann, and others. One philosophy course prerequisite or permission of the instructor. **CC: HUM**

PHL 338 - Zen and Tibetan Buddhism

Course Units: 1

(Not offered this Academic Year) Mahayana Buddhist philosophy explains the nature of reality as emptiness, which means that the nature of reality is beyond (and thus empty of) words, concepts and characteristics. Mahayana Buddhism also regards compassion as the primary motivation for ethics. This course focuses on the metaphysical theories of two schools of Mahayana Buddhist philosophy: Chinese/Japanese Zen Buddhism and Tibetan Buddhism. The course examines Zen Buddhist theories of No-Self and the nature of mind that makes sudden enlightenment possible, as well as Tibetan Buddhist theories of interdependent arising and emptiness. This course is applicable to the Asian Studies and Religious Studies majors. **CC: HUM, LCC**

PHL 341 - The Contemporary Crisis of Truth

Course Units: 1

(Not offered this Academic Year) A study of 20th century European or American philosophies: phenomenology, existentialism, or analytic philosophy. **CC:** HUM

PHL 359 - Postmodernism

Course Units: 1

(Cross listed with WGS 359) **(Not offered this Academic Year)** Do some groups control the way we use language? Is discourse male-dominated or Euro-centric? Postmodern theories investigate the nature of language, as well as questions concerning power and language: How is power gained and controlled through discourse, the media and other cultural institutions? Postmodern theories have had an impact on contemporary literature, art, and media theory. Readings by Structuralist and Postmodern thinkers, such as Saussure, Barthes, Foucault, Cixous, Irigaray, and Derrida will be discussed. **Prerequisite(s):** one philosophy course or permission of the instructor. **CC:** HUM

PHL 365 - Philosophy of Mind

Course Units: 1

(Not offered this Academic Year) Critical examination of some central issues in the philosophy of mind, including the mind/body problem, the problem of other minds, "intelligent" machines, and animal minds. **CC:** HUM

PHL 366 - Epistemology

Course Units: 1

(Not offered this Academic Year) Philosophical examination of problems and issues surrounding our concepts of knowledge, justification, memory, and perception. **CC:** HUM

PHL 375 - Biomedical Ethics

Course Units: 1

(Not offered this Academic Year) An introduction to ethical problems in biology and medicine, touching on such issues as reproductive ethics (abortion, cloning), research ethics, the ethics of death and dying (assisted suicide, euthanasia) and similar subjects. **CC:** HUM

PHL 408 - New Directions in Philosophy

Course Units: 0

(Fall, Winter; Davis) Preparation for biweekly talks by visiting philosophers and development of writing skills. This course extends over two terms. Only one course credit is given. Required of philosophy and interdepartmental majors. During the first term, students sign up for 408; during the second, for 418. Both 408 and 418 may be taken during any year. Because 408 carries no credit, students should register for it in conjunction with three other full-credit courses. Seniors who have not otherwise satisfied their Senior Writing Requirement may do so by taking this course.

PHL 411 - Writing Philosophy Workshop

Course Units: 0

(Fall, Winter; Baker) Two-term workshop on argumentative writing skills. Students will learn how to write philosophy papers. Honors thesis in Philosophy will be written in the course of participating in this workshop. The course will be required of all philosophy majors.

PHL 412 - Writing Philosophy Workshop

Course Units: 1

(Fall, Winter; Baker) Two-term workshop on argumentative writing skills. Students will learn how to write philosophy papers. Honors thesis in Philosophy will be written in the course of participating in this workshop. The course will be required of all philosophy majors. **CC:** HUM

PHL 418 - New Directions in Philosophy

Course Units: 1

(Fall, Winter; Davis) Preparation for biweekly talks by visiting philosophers and development of writing skills. This course extends over two terms. Only one course credit is given. Required of philosophy and interdepartmental majors. During the first term, students sign up for 408; during the second, for 418. Both 408 and 418 may be taken during any year. Because 408 carries no credit, students should register for it in conjunction with three other full-credit courses. Seniors who have not otherwise satisfied their Senior Writing Requirement may do so by taking this course. **CC:** HUM

PHL 443 - On What There Is

Course Units: 1

(Not offered this Academic Year) An examination of such topics as determinism and free will, causation, time, personal identity, necessity and possibility, objectivity, and God. **Prerequisite(s):** two philosophy courses or permission of the instructor. **CC:** HUM

PHL 444 - Power, Authority, and the State

Course Units: 1

(Not offered this Academic Year) This course concentrates on issues in contemporary political theory. **Prerequisite(s):** two philosophy courses or permission of the instructor. **CC:** HUM

PHL 445 - Topics in Metaphysics

Course Units: 1

(Winter; Nowakowski) May be repeated, if topic changes. **Prerequisite(s):** two philosophy courses or permission of the instructor. **CC:** HUM

PHL 446 - Topics in Epistemology

Course Units: 1

(Not offered this Academic Year) May be repeated, if topic changes. **Prerequisite(s):** two philosophy courses or permission of the instructor. **CC:** HUM

PHL 447 - Topics in Logic

Course Units: 1

(Not offered this Academic Year) May be repeated, if topic changes. **Prerequisite(s):** PHL 231 or permission of instructor. **CC:** HUM

PHL 448 - Topics in Ethics or Value Theory

Course Units: 1

(Not offered this Academic Year) **Prerequisite(s):** Two PHL-courses or permission of the instructor. **CC:** HUM **Note:** Course may be repeated, if topic changes.

PHL 450 - Topics in the History of Philosophy

Course Units: 1

(Fall; Scheiter, Spring; Tullmann) **CC:** HUM

PHL 462 - Philosophy of Language

Course Units: 1

(Not offered this Academic Year) An examination of key concepts in the philosophy of language, such as truth, meaning, reference, definite descriptions, names, demonstratives, and propositional attitudes. The fundamental question: How does language connect us to the world?

Prerequisite(s): two philosophy courses or permission of the instructor. **CC:** HUM

PHL 474 - Advanced Biomedical Ethics

Course Units: 1

(Spring; Baker) An advanced historically based introduction to biomedical ethics. Among the subjects treated will be the relationship between bioethics and traditional medical ethics, the evolution of the discourse, core concepts, models, theories and organizational infrastructure of bioethics, including IRBs and ethics committees. The course is designed to serve as a foundation for graduate work in bioethics and to fulfill the required knowledge competencies recommended by the American Society of Bioethics and Humanities in its 1998 report Core Competencies for Health Care Ethics Consultation. **Prerequisite(s):** two philosophy courses or permission of the instructor. **CC:** HUM

PHL 476 - Philosophy of Law

Course Units: 1

(Not offered this Academic Year) An advanced course in jurisprudence. Primary topics include: the nature of law and legal reasoning in general; the nature of criminal law, including both the role of excuses in the criminal law and the aims and justification of criminal punishment; and the nature of tort law, including both the relationship between negligence and liability and the relationship between causation and liability. **Prerequisite(s):** One philosophy course or permission of the instructor. **CC:** HUM

PHL 490 - Philosophy Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Selected topics in philosophy. **Prerequisite(s):** Permission of the instructor.

PHL 491 - Philosophy Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Selected topics in philosophy. **Prerequisite(s):** Permission of the instructor.

PHL 492 - Philosophy Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Selected topics in philosophy. **Prerequisite(s):** Permission of the instructor.

PHL 493 - Philosophy Independent Study 4

Course Units: 1

(Fall, Winter, Spring; Staff) Selected topics in philosophy. **Prerequisite(s):** Permission of the instructor.

PHL 498 - Philosophy Honors Thesis 1

Course Units: 0

(Fall, Winter; Staff) Substantial two-term written project on a specific philosophical topic, under the direction of an advisor, culminating in an honors thesis. Philosophy 498 carries 0 credits. Upon completion of PHL 499 the student receives two course credits. Normally taken in the senior year.

PHL 499 - Philosophy Honors Thesis 2

Course Units: 1

(Fall, Winter; Staff) Substantial two-term written project on a specific philosophical topic, under the direction of an advisor, culminating in an honors thesis. PHL 498 carries 0 credits. Upon completion of PHL-499 the student receives two course credits. Normally taken in the senior year.

Physics

Physics Courses

Common Curriculum Courses

Courses numbered in the 050's are designed particularly for non-science majors seeking to satisfy Common Curriculum requirements, and all of these courses carry Common Curriculum credit. They may not be counted toward the major in physics or toward any other science or engineering major, but may count toward an interdepartmental major (see requirements for [Physics, B.S.](#)).

PHY 051 - Seeing the Light: Concepts of Vision

Course Units: 1

(Same as BIO 051) **(Not offered this Academic Year)** An introduction to the biology and physics of vision. Topics include the workings of the eye and brain, the properties of light, and recent advances in the development of robotic vision. Closed to physics and biology majors. No mathematics or science background is required. **Corequisite(s):** PHY 051L **CC:** SCLB

PHY 053 - Physics and Politics

Course Units: 1

(Same as HST 253) **(Not offered this Academic Year)** This class will introduce students to some of the most important developments during the twentieth century in modern physics, the theory of relativity, quantum mechanics, and nuclear physics, set in a comparative context of the capitalist democratic United States, fascist National Socialist Germany, and communist Soviet Union. Along with an explanation of how the science works, this class will examine how the political, social, and ideological context can influence science and scientists. No background in mathematics or physics required. **CC:** SET

PHY 054 - Laser Technology and Modern Optics

Course Units: 1

(Not offered this Academic Year) An introduction to lasers and their applications in today's technological society. The special properties of laser light, various types of lasers and how they function, and laser applications including holography, medical uses of lasers, communications, and spectroscopy. Laboratory provides hands-on experiences with lasers. Not open to physics majors. No background in mathematics or physics required. **Corequisite(s):** PHY 054L **CC:** SCLB

PHY 100 - First-Year Seminar

Course Units: 1

(Fall; Staff) Team-taught course introducing physics at Union. Topics covered may include astronomy, astrophysics, atomic and molecular physics, biophysics, computational physics, laser physics, quantum measurement, nuclear and particle physics, solid-state physics, and statistical physics.

Prerequisite(s): By invitation. **CC:** SET

PHY 110 - Physics for the Life Sciences 1

Course Units: 1

(Fall, Spring; Staff) An introduction to classical mechanics, fluids, and thermodynamics with applications in the life sciences. Students must major in a life science or be admitted by permission of the instructor. **Prerequisite(s):** MTH 102 or MTH 112 or MTH 113 (may be taken concurrently).

Corequisite(s): PHY 110L **CC:** SCLB **Lecture/Lab Hours** Three lab hours each week.

PHY 111 - Physics for the Life Sciences 2

Course Units: 1

(Fall, Winter; Staff) An introduction to electromagnetism, optics, and the structure of matter with applications in the life sciences. **Prerequisite(s):** PHY 110 or PHY 120 or IMP 112 or IMP 120. **Corequisite(s):** PHY 111L **Lecture/Lab Hours** Three lab hours each week.

PHY 120 - Matter in Motion

Course Units: 1

(Fall, Winter, Spring; Staff) Calculus-based introduction to classical mechanics; Newtonian dynamics and energetics of a single particle and of systems of particles. Integrated class and lab meets four times each week. **Prerequisite(s):** MTH 102 or MTH 112 or MTH 113 (may be taken concurrently). **CC:** SCLB

PHY 121 - Principles of Electromagnetics

Course Units: 1

(Fall, Winter, Spring; Staff) Calculus-based introduction to waves, electro and magneto statics, and electrodynamics through Maxwell's equations. Integrated class and lab meets four times each week. **Prerequisite(s):** PHY 120 or IMP 112 or IMP 120 **and** MTH 102 or MTH 112 or MTH 113 (may be taken concurrently)

PHY 122 - Relativity, Quantum, and Their Applications

Course Units: 1

(Winter; Staff) Calculus-based introduction to the structure of matter, including quantum effects, particle, nuclear, atomic, molecular, and solid state physics, and applications to materials of interest to engineers and scientists. **Prerequisite(s):** PHY 121 or IMP-113 or IMP 121. **Corequisite(s):** PHY-122L **Lecture/Lab Hours** Three lab hours each week.

PHY 123 - Heat and Light

Course Units: 1

(Fall; Staff) Calculus-based introduction to thermodynamics, geometric and physical optics, and astrophysics. Integrated class and lab meets four times each week. **Prerequisite(s):** PHY 121 or IMP 113 or IMP 121.

PHY 200 - Molecular Biophysics

Course Units: 1

(Not offered this Academic Year) Selected topics in molecular biophysics including an overview of proteins, nucleic acids, viruses and bacteria, with an emphasis on molecular structure and functioning. Experimental techniques used in modern biophysical research included in the course are various optical spectroscopies and microscopies, as well as hydrodynamic methods (sedimentation, diffusion, viscosity, electrophoresis), NMR, and x-ray diffraction. **Prerequisite(s):** PHY 111 or PHY 121 or IMP 113 or IMP 121, and some exposure to biology or permission of the instructor.

PHY 210 - The Physics of Modern Medicine: Applications in Imaging, Surgery and Therapy

Course Units: 1

(Winter; Staff) This course introduces the technologies used in modern medicine and the basic physical principles that underlie them. Topics will include: laser surgery, ultrasound imaging, laparoscopic surgery, diagnostic x-ray imaging, nuclear medicine, computed tomography (CAT) scans, magnetic resonance imaging (MRI) scans, and radiation therapy. Safety issues involved in the use of each technique will be considered in depth, and discussions will include societal implications of the growing use of technology in medicine. Specific medical applications discussed will include (but are not limited to): colon cancer screening, arthroscopic knee surgery, laser eye surgery, dermatological laser surgery, obstetrical ultrasound, cardiovascular ultrasound, mammography, osteoporosis screening, cancer radiation therapy, and applications of PET and MRI brain scans in neuroscience. **Prerequisite(s):** PHY 111 or PHY 121 or IMP 113 or IMP 121, or permission of the instructor.

PHY 220 - Relativity and Introduction to Quantum Mechanics

Course Units: 1

(Spring; Staff) A second course in modern physics covering special relativity and an introduction to quantum mechanics. Topics include relativistic kinematics, relativistic dynamics, four-vector notation, relativistic collisions, origins of quantum mechanics, Schrodinger's equation and the

development of wave mechanics, applications of wave mechanics in one and three dimensions (step potential, square well, harmonic oscillator), angular momentum operators, the hydrogen atom, Dirac notation and matrix formulation of linear operators, Dirac Delta function, spin angular momentum, measurement theory, and time-independent perturbation theory. **Prerequisite(s):** PHY 111 or PHY 122. **Lecture/Lab Hours** One hour computational lab each week.

PHY 230 - Intermediate Classical Mechanics

Course Units: 1

(Fall; Staff) An analytical treatment of classical mechanics. Topics include motion of a particle in one, two, and three dimensions; planetary motion; collision theory; moving coordinate systems; dynamics of rigid bodies; and the Lagrangian form of the equations of motion. **Prerequisite(s):** PHY 110 or PHY 120 or IMP 112 or IMP 120, and MTH 117 **Prereq/Corequisite(s):** (pre- or co-requisite), or permission of the instructor. **Lecture/Lab Hours** One hour computational lab each week.

PHY 270 - Intermediate Electromagnetism

Course Units: 1

(Winter; Staff) Electric and magnetic fields and potentials; electric and magnetic properties of matter; Maxwell's field equations. **Prerequisite(s):** PHY 121 and MTH 117 or IMP 113 or IMP 121, or permission of the instructor. **Lecture/Lab Hours** One hour computational lab each week.

PHY 295H - Physics Honors Independent Project 1

Course Units: 0

(Fall, Winter, Spring; Staff) Topic to be chosen in consultation with a faculty member and the student's advisor.

PHY 296H - Physics Honors Independent Project 2

Course Units: 1

(Fall, Winter, Spring; Staff) Topic to be chosen in consultation with a faculty member and the student's advisor.

PHY 300 - Methods of Modern Experimental Physics

Course Units: 1

(Spring; Staff) A laboratory-based course dealing with contemporary techniques in experimental physics. **Prerequisite(s):** PHY 122 and one physics course at the 200-level or higher, or permission of the instructor.

PHY 310 - Advanced Topics in Physics 1

Course Units: 1

(Fall; Mann, N.)

Course topic for each year to be chosen from the following:

- Computational Physics: A laboratory-based course providing practical tools to solve computational physics problems drawn from a wide range of areas, including classical mechanics, electromagnetism, special relativity, and quantum mechanics. Algorithms include root-finders, integration techniques, Monte Carlo methods, ordinary and partial differential equation solvers, numerical Fourier transforms, minimization tools, and numerical linear algebra algorithms.
- Condensed Matter Physics: An introduction to the microscopic structures and to the electrical and thermal properties of metals, insulators, and semiconductors. Topics include the description of crystal lattices, electrons in a periodic potential, electronic band theory, phonons and their interactions with electrons, cohesive energy of solids, defect states, and superconductivity.
- Modern Physical Optics: Interference, diffraction and polarization of light, interaction of light and matter, classical and quantum description of optics, and lasers. Three-hour lab each week.
- Nuclear/Elementary Particle Physics: An introduction to both nuclear and particle physics covering basic nuclear structure and properties, nuclear models, nuclear decay and radioactivity, nuclear reactions, fission, fusion, accelerators, elementary particle physics, and the quark model.
- Statistical Mechanics: Probability theory, laws of thermodynamics, kinetic theory of gases and the statistical basis of thermodynamics, Bose Einstein and Fermi Dirac distributions, applications to simple fluids, magnetic systems, metals, photons, and superfluid helium.
- Advanced Electromagnetism: Relativistic electrodynamics, electromagnetic radiation and waves.
- Quantum Optics: The study of the interaction of light and matter in systems where the wave nature of matter and the particle nature of light must be taken into account. Topics may include single-photon interference, correlated photons and the EPR paradox, quantum computing, quantum cryptography and quantum teleportation, atom optics and atom interferometry, laser cooling and Bose-Einstein Condensation, and implications of quantum mechanics for nanomaterials and nanodevices.
- Electronics: A laboratory course in basic electronics and instrumentation for science majors. Topics include AC and DC circuits, diodes, rectifiers, transistors, operational amplifiers, binary logic, Boolean algebra, digital circuits, analog-digital conversion, transducers, and computer interfacing. Six hours of lab each week.

Others depending upon student interest. Course open to juniors and seniors only. Enrollment by permission of the instructor.

Note: Fall 2016 topic is Statistical Mechanics.

PHY 311 - Advanced Topics in Physics 2

Course Units: 1

(Winter; Vineyard) Course topic for each year to be chosen from those listed in Physics 310 depending upon student interest. Course open to juniors and seniors only. Enrollment by permission of the instructor. **Note:** Winter 2017 topic is Nuclear Physics.

PHY 312 - Advanced Topics in Physics 3

Course Units: 1

(Not offered this Academic Year) Course topic for each year to be chosen from those listed in Physics 310 depending upon student interest. Course open to juniors and seniors only. Enrollment by permission of the instructor.

PHY 350 - Advanced Quantum Mechanics

Course Units: 1

(Spring; Staff) A second course in quantum mechanics with applications to selected problems in atomic, nuclear, and solid state physics.

Prerequisite(s): PHY 220 and MTH 117, or permission of the instructor.

PHY 490 - Physics Research 1

Course Units: 0

(Fall, Winter, Spring; Staff) The student will normally begin a research project by the fall of the senior year under the supervision of a faculty member; interested students are encouraged to begin research projects earlier in their studies. All students involved in research will meet together once a week with a faculty member who will organize oral reports by the students based on their progress. A written report is required on completion of the project. **Note:** Completion of PHY 491 earns the total credits.

PHY 491 - Physics Research 2

Course Units: 2

(Fall, Winter, Spring; Staff) The student will normally begin a research project by the fall of the senior year under the supervision of a faculty member; interested students are encouraged to begin research projects earlier in their studies. All students involved in research will meet together once a week with a faculty member who will organize oral reports by the students based on their progress. A written report is required on completion of the project. **Prerequisite(s):** PHY 490

PHY 492 - Physics Research 3

Course Units: 1

(Fall, Winter, Spring; Staff) The student will normally begin a research project by the fall of the senior year under the supervision of a faculty member; interested students are encouraged to begin research projects earlier in their studies. All students involved in research will meet together once a week with a faculty member who will organize oral reports by the students based on their progress. A written report is required on completion of the project. **CC:** WS (final term)

PHY 493 - Physics 1 Term Research

Course Units: 1

(Fall, Winter, Spring; Staff) The student will normally begin a research project by the fall of the senior year under the supervision of a faculty member; interested students are encouraged to begin research projects earlier in their studies. All students involved in research will meet together once a week with a faculty member who will organize oral reports by the students based on their progress. A written report is required on completion of the project. **Corequisite(s):** Fall term students are expected to attend PHY 490 Lectures. **CC:** WS

PHY 495 - Physics Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Topic to be chosen in consultation with a faculty member and the student's advisor.

PHY 496 - Physics Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Topic to be chosen in consultation with a faculty member and the student's advisor.

PHY 497 - Physics Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Topic to be chosen in consultation with a faculty member and the student's advisor.

PHY 498 - Physics Independent Study 4

Course Units: 1

(Fall, Winter, Spring; Staff) Topic to be chosen in consultation with a faculty member and the student's advisor.

Portuguese

POR 100 - Basic Portuguese 1

Course Units: 1

(Not offered this Academic Year) A foundation course in Portuguese, open only to students who have been accepted for the following fall's term abroad in Brazil. Study of the structure of the language supported by laboratory work, audio-lingual training. **CC:** HUM

POR 104T - Portuguese Language Studied Abroad

Course Units: 1

(Not offered this Academic Year) A continuation of Basic Portuguese I. **Prerequisite(s):** POR 100. See International Programs.

POR 200 - Intermediate Portuguese 1

Course Units: 1

(Not offered this Academic Year) Intermediate Portuguese I is an intensive and accelerated grammar review, and offers vocabulary growth. This course furthers the development of conversation, reading and writing skills based on a variety of cultural text and authentic cultural artifacts. **CC:** LCCP, HUM

POR 490 - Portuguese Independent Study

Course Units: 1

Prerequisite(s): Permission of the instructor.

Political Science

PSC 123 - Topics in Mathematical Political Science

Course Units: 1

(Same as MTH 060) A mathematical treatment (not involving calculus or statistics) of escalation, political power, social choice, and international conflict. No previous study of political science is necessary, but PSC 111 or PSC 112 would be relevant. **CC:** QMR

Political Science - Introductory Courses

PSC 111 - Introduction to US Politics

Course Units: 1

(Fall; Weiner, Winter; Hays, Spring; Weiner) A broad overview of the operation and issues of central concern in the study of U.S. politics. Particular attention is paid to evaluating the U.S. governing system in relation to major theories of political power, such as elitism, pluralism, and populism. In examining these and other broad concepts there is a focus on the foundations, institutions, and linkage mechanisms (political parties, media, etc.) that play a critical role in U.S. politics. Depending on the instructor, topics covered often include: the founding period, U.S. political culture, civil rights and liberties, money and politics, campaigns and elections, the role of mass media, parties and interest groups, politics in the post 9/11 era, and public policies focusing on crime, foreign affairs, the environment, poverty, health care, and war. **CC: SOCS**

PSC 112 - Introduction to Global Politics

Course Units: 1

(Fall; Lobe, Winter; Brown, Spring; Hislope) An overview of 21st century dynamics that shape national politics in different regional settings, the behavior of states in the world arena, and how global actors impact each other. Depending on the instructor, topics to be explored could include war, terrorism, political economy, historical perspectives, cultural tensions, nation-building and development, imperialism, democracy, balance of power, human rights, emerging institutions, and the world's ecology. In all sections, attention will be paid to the development of political arguments, the critical use of concepts and theories, and strategies of making judgments about globalization and about the impact of international affairs on domestic politics and vice-versa. **CC: SOCS**

PSC 113 - Introduction to Political Thought

Course Units: 1

(Fall; Cidam, Winter; Marso, Spring; Seri) This course examines key ideas and concepts, as well as "eternal" questions, in the history of western political thought. We will ask controversial questions such as: What is justice? Can we achieve democracy without eliminating poverty? What are the qualities of a good leader? Should we even have leaders? Can women be philosopher-kings? How does class struggle affect the participation of citizens? What are the qualities of a "good" citizen? These questions have been debated for over 2500 years. The debate continues in this course as we learn what the major thinkers said about these issues. **CC: SOCS**

Political Science - Research Methods

PSC 220 - Social Data Analysis

Course Units: 1

(Same as SOC 201) **(Winter; Oxley)** Introduction to the research process in political science with an emphasis on the analysis of social science data. Focus on the utility of quantitative data and statistical techniques to answer research questions about the political world. **Prerequisite(s):** Any introductory social science course; a background in math is not necessary. **CC: QMR**

PSC 222 - Qualitative Social Research Methods

Course Units: 1

(Same as SOC 302 and ANT 363) **(Not offered this Academic Year)** Introduction to qualitative research methods. The course is equally concerned with research design, techniques for gathering data, ethics in research, and the translation of field data into text.

PSC 223 - Critical Comparisons in Politics

Course Units: 1

(Not offered this Academic Year) What does a convincing explanation in political science look like? This course will focus on how to make good comparative explanations in political science. We will explore how to do this by studying and applying key concepts, such as culture, social movements, elites, institutions, hegemony, and the state. This course will help prepare students for writing the senior thesis.

Political Science - Comparative Politics

Unless otherwise indicated prerequisites for the following courses are **PSC 111** or **PSC 112** or sophomore standing.

200-level courses in comparative politics generally cover political issues that are regionally concentrated (such as Latin America, Europe, China, and the Middle East), or they focus on themes (such as democracy, nationalism, social movements) that are framed at a conceptual level accessible to students from across the college.

300-level courses in comparative politics have a special topics theme (women and politics, the Marxist political tradition, democratization, genocide, and film) and/or a strong methodological component. The course materials are more conceptually and theoretically complex, and involve a more sophisticated set of intellectual problems.

PSC 201T - Cambodia Study Abroad: Crossing Cultures

Course Units: 1

(Spring; Dallas) This class is geared towards deepening students' understanding of Cambodian history, culture and contemporary society. During Winter term (prior to the beginning of class in Spring term), there are two weeks of instruction designed to give students academic background on political and economic development, and a brief primer on 20th century and contemporary Cambodian history, politics, economy, and society. However, the core of the class is the experience in-country during Spring term. This will consist of classroom study, lectures by in-country experts, excursions to learn and interact with the broader society, and will help students to excel in their internships with local NGOs.

PSC 213 - Contemporary China: Politics, Economy and Society

Course Units: 1

(Not offered this Academic Year) A survey course on the politics of the People's Republic of China, with an emphasis on state-society relations. After briefly introducing the Republican and state socialist eras, the heart of the course provides a historical and topical overview of the contemporary political and economic reforms in China. It explores topics in Chinese domestic politics, such as policy-making, center-local relations, inequality, rural transformation, industrialization, village elections, the rule of law and contentious politics, in addition to China's relationship with the outside world, including its integration into the international economy, the environment, energy and foreign policy. **CC: LCC**

PSC 216 - Politics in Africa

Course Units: 1

(Fall; Angrist) This course is designed to introduce students to the essential political history and political dynamics of contemporary Sub-Saharan Africa. By the end of the term, students will have developed an understanding of the process through which the states of contemporary Sub-Saharan Africa emerged; the types of political systems that have evolved in these states; ethnicity and ethnic conflict in Africa; inter and intra-state wars on

the continent and their impact; the challenges of economic development and securing prosperity for Africa; and gender and politics, religion and politics, and the politics of terrorism in Africa.

PSC 240 - Comparative Ethnic and Racial Politics

Course Units: 1

(Not offered this Academic Year) An introduction to the trends and patterns of ethnic conflicts in the contemporary world. Issues pertaining to the rise of nations; theories of ethnic mobilization; the attempt to build general, cross-national explanations; and current efforts to solve ethnic conflict. **CC: LCC**

PSC 243 - Latin American Politics

Course Units: 1

(Not offered this Academic Year) This course offers a working knowledge of Latin America's current politics, trends, and challenges. Years after democratization, regular elections are in place, and support for democracy in the region seems widespread. Still, as local traditions infuse the principles of liberal democracy, politics in Latin America reveal unique traits. Exploring the political as an interpretive endeavor, the course's readings, assignments, and class discussions will help to identify key political institutions, traditions, and cleavages, as well as forms of agency and leadership, both in specific countries and at the regional level. **CC: LCC**

PSC 245 - Populisms in Latin America

Course Units: 1

(Not offered this Academic Year) Many forms of leadership and politics in Latin America are characterized as populist, but there is wide spread disagreement as to what populism is. Claimed by no one, most of the time populism is blamed, disapprovingly, upon leaders and movements connoting demagoguery, manipulative appeals to people's emotions and disregard for formal institutions and rules. This course scrutinizes three different "populist moments," from the first half of the 20th century to the present. Major figures such as Peron or Vargas; neoliberal reformers from the 1990s, from Fujimori to Menem; as well as more recent leaders such as Chavez, Morales, Correa, and Cristina Fernandez de Kirchner will be examined.

PSC 247 - Human (In)Security in a Comparative Perspective

Course Units: 1

(Spring; Seri) With a focus on "the daily lives of ordinary people", the recent tradition of Human Security redefines safety as "freedom from fear and freedom from want." At the interface of security, development, and Human Rights grounding democratization, Human Security adopts the perspective of the common citizen, calling for collaboration between states and international and grassroots organizations to prevent and eliminate obstacles undermining people's autonomy, rights, and development. This course aims, first, to provide students with a solid conceptual and applied knowledge of Human Security. Second, by learning about the deep-seated conditions that hinder people's safety from fear and from want, students will gain a thicker perspective on the structural challenges for peace and democracy around the world through the eyes of the people on the ground. **Prerequisite(s):** PSC 111 or PSC 112, or Sophomore standing

PSC 248 - The Politics of the New Europe

Course Units: 1

(Spring; Hislope) A survey of contemporary European politics including topics such as the emerging European Union, the rise of right-wing movements, growing regional and sectional conflict, patterns of immigration, and debate about the very meaning of "Europe."

PSC 249 - Middle East Politics

Course Units: 1

(Not offered this Academic Year) This course is designed to introduce students to the essential political history and dynamics of the Middle East in the 20th century. Students will study the processes through which the states of the contemporary Middle East emerged; the types of political regimes that have evolved in these states; the origins and evolution of the Arab-Israeli conflict; the relationships between Islam and politics; and debates regarding U.S. foreign policy toward the region.

PSC 340 - Politics and Film

Course Units: 1

(Not offered this Academic Year) This course explores political themes through the rigorous viewing of feature films and documentaries from the United States and abroad. Films present differing perspectives on the subject. Themes include war, revolution, counter-revolution, role of the individual in social conflict, and US intervention in foreign lands. Class requires critical analysis of the films, supplementary readings, and six conceptual-analytical papers.

PSC 341 - Genocide

Course Units: 1

(Fall; Lobe) Genocide is humanity's greatest and most enduring scourge. After the horrific Holocaust, the world's leaders cried out, "Never Again." Sadly, genocide has occurred, again and again, wherein mass murders, ethnic cleansing, mass rape and pillaging, has taken place in countless places and times since World War II. This course examines examples, causes and motives, position of the perpetrators, victims and bystanders. We shall also look at proposals for avoiding or preventing genocide, perhaps through some form of international humanitarian intervention, or "responsibility to protect."

PSC 342 - Challenges to Democratization in Latin America

Course Units: 1

(Winter; Seri) Democracies in Latin America confront a number of challenges, obstacles, and dilemmas that frequently put their continuity at risk. With the format of a research seminar, this course will explore five thematic clusters. Social indicators on rights and inequality, political identities and citizenship, political and legal institutions, life and economic growth after Neoliberalism, and public safety, crime, and state violence. A preoccupation with some of the most urgent challenges faced by democratization in the region will also lead us to assess actual and potential alternatives. CC: LCC

PSC 343 - Women and Politics in the Muslim World

Course Units: 1

(Not offered this Academic Year) In this course we will study how politics and women intersect across the Muslim world, including the Middle East, Sub-Saharan Africa, Central Asia, and South Asia. Empirically, we will investigate the varied paths women's rights have taken in different national settings while examining similarities and differences in the degree to which women wield social, economic, and political power in their respective countries. We will seek theoretical explanation for women's status in the region, which varies significantly from country to country. Sample topics for discussion include the Koran and women, debates about the veil, honor killings, the impacts of oil, war, and foreign intervention on women's status, and Muslim female prime ministers and presidents.

PSC 347 - Comparative Left Politics

Course Units: 1

(Not offered this Academic Year) A critical exploration of Marxian ideas and a comparative examination of how those ideas were, and are, translated into political practice.

PSC 349 - Seminar: Comparative Politics

Course Units: 1

(Spring; Dallas) Selected topics in comparative politics. Content will vary from year to year. Preference to junior and sophomore political science majors. **Prerequisite(s):** PSC 111, PSC 112, or PSC 113 and permission of the instructor. **CC:** LCC

Political Science - International Politics

Unless otherwise indicated prerequisites for the following courses are **PSC 111** or **PSC 112** or **PSC 113** or sophomore standing.

200-level courses in international relations cover foreign policy-oriented courses (China and the USA), regional interstate topics (Asia and the Middle East), and practicum-based courses (Model UN). These courses are framed at a conceptual level accessible to students from across the college.

300-level courses in international relations cover advanced issues in international political economy, institutions of global governance, US security, and transnational actors and trends. The course materials are more conceptually and theoretically complex, and involve a more sophisticated set of intellectual problems.

PSC 251 - American Foreign Policy

Course Units: 1

(Spring; Brown) This course will provide an overview of the history of US Foreign Policy from the Cold War to the post-Cold War era. The course focuses on major policy options, issues in the Middle East, reset to Asia, and the choices between multilateralism and hegemonic dominance. The course emphasizes policy-making, especially the role of the President and Executive, in struggles with Congress, and the role of various NGO's, think tanks, and other lobbyists in the formation of foreign policy outcomes.

PSC 252 - Global Value Chains

Course Units: 1

(Not offered this Academic Year) This course examines the intertwining of power, politics and markets that undergird the production and consumption of everyday consumer goods, from coffee to cars to iPhones. It examines the primary countries where these goods are produced, their differing labor regimes, the international agreements regulating them, the transnational corporations which coordinate the chain of production and consumption, how goods are globally traded and the relative winners and losers these linkages create, usually between developing and developed countries. Each product also corresponds with an underlying theoretical topic, such as natural resources and the global commons or heavy industrialization and industrial policy. The course will introduce some basic conceptual building blocks which will help us organize the extraordinary variety of places, production processes, policies and populations engaged in global value chains. But, we will spend most of the course examining one commodity or product at a time, using what we learn along the way to build an increasingly sophisticated understanding of global production and exchange. Finally, for a final project, students will conduct research on their own product of choice and explore a theoretically important concept associated with it.

PSC 253 - International Relations of East Asia

Course Units: 1

(Spring; Dallas) This course surveys the main currents of international politics in East Asia since World War Two, with an emphasis on events since the end of the cold war. It considers the sequential rise of the economies of Japan, the four East Asian tigers, and finally Southeast Asia and China, and how regional integration across East Asian countries differs from other regions in the world. Furthermore, it examines the foreign policies of the main players in this area, including the important role of the United States, and it explores the evolution of international institutions and norms pertinent to East Asia. **CC: LCC**

PSC 254 - Politics of the Arab-Israeli Conflict

Course Units: 1

(Not offered this Academic Year) In this class students will develop an understanding of the origins, development, and essence of the Arab-Israeli conflict as well as the challenges involved in resolving the conflict. The conflict will be examined in its historical, political, and human dimensions.

PSC 256 - Model United Nations

Course Units: 1

(Winter; Angrist) This course prepares students to participate in the National Model United Nations (NMUN), the largest UN simulation in the world. The NMUN program provides students a better understanding of the inner working of the United Nations. Course goals are to develop research, writing, public speaking, and diplomatic skills amongst students as they confront a myriad of global public policy challenges. At the simulation, students and faculty from five continents work to propose resolutions addressing regional conflicts, peacekeeping, human rights, women and children, economic and social development, and the environment. Students are permitted to take PSC 256 multiple times for credit, but this course can only count once toward a PSC major, ID major or minor. **Note:** PSC 256 cannot be taken pass / fail.

PSC 350 - Theories of International Politics

Course Units: 1

(Not offered this Academic Year) In-depth investigation and evaluation of the major perspectives on world politics. Mainstream theories will be compared and contrasted to critical/alternative paradigms. Special attention is given to modes of theory evaluation.

PSC 351 - Global Organized Crime

Course Units: 1

(Fall; Hislope) This course will focus on the emergence of new transnational criminal networks in the age of globalization, and the sources and patterns of political corruption in a comparative perspective. Specific issues to be explored include: trafficking zones, weak states, economic underdevelopment, the western consumer demand for illegal commodities, international anti-corruption discourse, US drug policy, comparative analysis of mafia organizations, and how private money corrupts democracies.

PSC 352 - International Organizations

Course Units: 1

(Not offered this Academic Year) This course analyzes the development of contemporary international organizations in all forms, examines the activities of various regional organizations and non-governmental organizations (NGO's), as well as multinational organizations. Focusing on major principles, organizational characteristics, functions, and activities of the United Nations and the UN system, the course assesses the rapid changes, problems, and opportunities that have developed since the end of the Cold War.

PSC 353 - Terrorism and Torture

Course Units: 1

(Not offered this Academic Year) This course considers the definition(s) and history of terrorism, as well as its causes and manifestations in the contemporary era. Next, strategies for combating terrorism will be explored - with a major focus on the so-called "war on terror" the U.S. has been engaged in since 2001. A particularly controversial aspect of U.S. actions in the past decade has been the use of torture against detainees at Guantanamo Bay, Abu Ghraib, and other locations. The course will therefore consider a broad-ranging literature on torture - from its history, to the conditions under which it is used in the contemporary era, to questions regarding whether or not torture is effective (and for what purpose).

PSC 354 - Human Rights and Immigration

Course Units: 1

(Fall; Cidam) We are living in an age of human rights. And yet, human rights abuses, in different guises, rage on all over the world, including the developed countries of the West. This is especially true when it comes to migrants who are particularly vulnerable to human rights abuses. The issue becomes even more significant when we take into account the fact that around 200 million people are estimated to be living outside their country of birth. What renders non-citizens so vulnerable to various forms of violence, discrimination, and abuse? To what extent can these problems be addressed and remedied by appeals to human rights? In what ways does the contemporary condition of non-citizens reveal the limits, paradoxes, and promises of human rights? In this upper level political science course, we will address these challenging, intriguing, and the somewhat disconcerting questions through an interdisciplinary inquiry. **Prerequisite(s):** PSC 111 or PSC 112 or PSC 113 and Sophomore Standing **CC:** SOCS

PSC 355 - Defense Policy

Course Units: 1

(Not offered this Academic Year) A deeper understanding of US Defense Policy in relation to current trends in the international threat environment. Examines the historical roots of US defense policy with a focus on the impact of isolationism, exceptionalism, and the Cold War on those policies. The policy-making process itself will be examined highlighting the influence of the realist paradigm, as well as the various organizational inputs, which help to shape the policy outcomes. A look at the post-Cold War period with emphasis on the impact of 9/11 and the proliferation of weapons of mass destruction on changes in US policy.

PSC 358 - Wealth and Power Among Nations

Course Units: 1

(Not offered this Academic Year) An examination of the tensions between developed and developing countries in the global political economy. First, the course traces the genealogy of thinkers on the issues of development, such as Smith, Marx, Keynes, modernization theory and development economics, as a way to understand the enduring debates within the field. Second, it examines historical transformations in the international economy, such as in trade, global finance and economic crises, in order to understand how the structures and opportunities for developing countries have transformed over time. Finally, although there is no focus on any single region of the world, the course touches upon the oil boom in the Middle East in the 1970s, the debt crises in Latin America and Africa in the 1980s, the rise of Japan and the East Asia tigers, the fall of the Soviet Union and Eastern bloc countries in the 1990s, the new giants of China and India, new forms of post-Fordist production, and the relationship between production and identity.

PSC 359 - Seminar: International Politics

Course Units: 1

(Winter; Lobe) Selected topics in international politics. Content will vary from year to year. Preference to sophomore and junior political science majors. **Prerequisite(s):** PSC 111, PSC 112, or PSC 113 and permission of the instructor.

Political Science - Political Theory

200-level courses survey a wide range of texts and themes, and may focus on a specific historical period or a specific theoretical approach. These courses can be taken by students at all levels.

300-level courses are geared towards students who have likely taken PSC 113 or a 200-level course in theory, and have basic familiarity with the history of Western political thought. Some familiarity with close reading and textual interpretation is expected, although these are practices and skills that students will also further develop in 300-level courses.

PSC 230 - (331) Ancient Political Thought

Course Units: 1

(Not offered this Academic Year) Examines the ideas of major political thinkers in ancient philosophy. Potential themes include the tension between philosophy and politics, the nature of democracy, the relationship between war and political life, debates concerning how to live a "good life," the political significance of poetry and art, and the body/mind duality. Thinkers and texts that may be covered include Homer, Thucydides, Plato, Aristotle, the Greek poets, Saint Augustine, Thomas Aquinas, and the Bible.

PSC 231 - Theories of Peace and War

Course Units: 1

(Winter; Seri) Do aggression and violence arise from individuals or groups, from nations, global forces, or from entire civilizations? Is warfare an eliminable pathology or just part of the human condition? Any answer to these questions ultimately involves ontological claims on how things are, key in shaping the ways in which we imagine and inhabit our world. This course revisits arguments on peace, war, and violence central in the tradition of Western political thought. By exploring works of classical, modern, and contemporary political thinkers, contextualized in reference to key cases, we will identify and critically assess contentious explanations and philosophical justifications.

PSC 234 - Women Political Theorists

Course Units: 1

(Not offered this Academic Year) Where are all the women in the history of political thought? Some thinkers we explore throughout history include Mary Astell, Mary Wollstonecraft, Harriet Taylor Mill, and Emma Goldman. Their work will prepare us to discuss the political and social thought of three prominent women thinkers of the 20th century: Simone de Beauvoir, Iris Murdoch, and Hannah Arendt. We investigate questions concerning freedom and contingency, responsibility, the nature of self in relation to others, and the limits and scope of ethical action in the work of these theorists. Women political theorists often write novels, short stories, and autobiography/biography (rather than philosophical texts) to explore political and philosophical themes. Consequently, we will be reading novels and autobiography along with political philosophy to think about the relationship between philosophy, politics, and literature. We will also be interested in considering how living their lives as women might have influenced the way these philosophers viewed major political and intellectual issues of the day.

PSC 235 - African American Political Thought

Course Units: 1

(Not offered this Academic Year) This course will introduce students to the critical and constructive dimensions of African American political thought. We will assess the claims that Black Americans have made on the polity, how they define themselves, and how they have sought to redefine the basic terms of American public life.

PSC 236 - Police, Security and Biopower

Course Units: 1

(Not offered this Academic Year) While the development of a political community presupposes a certain level of security, the second half of the 20th century shows how unfortunately frequent it has become for people to turn into victims of the devices they set to secure themselves. How can the tensions between the political and security be addressed to enhance, not to destroy, the freedom and creativity that characterize a political community? Organized as a seminar, and heavy in contemporary political theory, this course will explore both practical and theoretical relations between political communities and the pre-political preconditions for their preservation. **CC: LCC**

PSC 237 - Music and Politics

Course Units: 1

(Fall; Hislope) This class explores the multiple relationships between music and politics with a specific focus on the following dimensions: (1) the use of music as a lens to perceive the world, to frame injustices, to inform political discourse, to raise consciousness, and to mobilize public opinion; (2) the political context in which critically significant music is produced; (3) biographical details of artists that bring understanding to the art they produce; (4) the impact of class, race, ethnicity, and gender on music; (5) the interpretation of political messages found in music; and (6) the intentional and unintentional political consequences of popular music.

PSC 239 - (332) American Political Thought To World War I

Course Units: 1

(Spring; Brown) Political thought in America from the colonial period until World War I with an emphasis on evolving political, social, cultural, and intellectual perspectives on enlightenment values, nationalism, slavery, the rise of the industrial economy, the political machine, and America's changing role in the world. **Prerequisite(s):** PSC 113 or Sophomore standing

PSC 330 - Enlightenment and Its Discontents

Course Units: 1

(Not offered this Academic Year) Is there a politics to the "age of reason?" This course focuses on enlightenment thought and its critics, in the modern as well as the contemporary era. We will inquire about the role of reason in setting the terms of citizenship, including how the citizen should behave. Is reason a male attribute? Does passion and/or religion play a role in reasonable thinking? The historical span of this course will generally cover the 17th to the 19th centuries and show how we have come to think about politics the way we do today.

PSC 333 - Twentieth Century American Political Thought

Course Units: 1

(Not offered this Academic Year) An exploration of the development of political thinking in the United States in the 20th century of 20th-century. Potential topics include the nature of democracy in the United States, individualism, pluralism, diversity, freedom, social responsibility, protest, social ethics, justice, and how Americans perceive their role in the world.

PSC 334 - Contemporary Continental Theory

Course Units: 1

(Not offered this Academic Year) In the latter half of the twentieth century, theorists working in the continental tradition have developed new approaches to modern political concerns about the power of the state, the possibility of democracy, the importance of language, media and rhetoric, and the connections between knowledge, ethics, religion and politics. Students in this course will grapple with some of the most important figures

and theories at the leading edge of this tradition. While this course presumes no background in continental theory, students must be prepared to wrestle with difficult texts, ideas and thinkers. Authors may include: Agamben, Badiou, Butler, Cavarero, Cavell, Deleuze, Derrida, Fanon, Foucault, Ranciere, Zizek.

PSC 339 - Seminar: Black Radical Politics and Legacies of Malcom X

Course Units: 1

(Spring; Marso) In this seminar, we will explore the legacy of Malcolm X for Black radical politics and the Black Lives Matter movement today. We will dissect and compare Malcolm's vision with other Black radicals that draw on and depart from his. Reading Manning Marable's controversial biography alongside *The Autobiography of Malcolm X* and the website developed by Marable and his students, we will first explore Malcolm's history and legacy to see how class politics, ideological differences, and perspectives on sex and gender within the Black community impact how Malcolm is described, remembered, and lionized. We will also consider Malcolm's legacy through an internationalist lens, one of Manning Marable's contributions. Finally, we will discover how Black nationalists and Muslims the world over have claimed Malcolm as their own, with their own emphases and nuanced narratives.

Underlying questions throughout our discussions will be: What are the politics of memory? What is at stake in how we frame, celebrate, or critique a figure like Malcolm X? When we focus on sexuality and gender, does the vision of what is radical change, and if so, how and why? To explore these questions and others that arise, our seminar will also view Malcolm in comparative perspective vis-à-vis women activists and thinkers such as Ella Baker, and other Black Radical thinkers such as James Baldwin. Prompted by films and contemporary writings, we will also discuss how Malcolm is viewed today. Ultimately, we want to uncover the political stakes in constructing these very different legacies. In the final few weeks of the seminar we will read some contemporary work in the tradition of Black radicalism with Malcolm's legacy in mind. **Prerequisite(s):** PSC 111, PSC 112, or PSC 113 and permission of the instructor.

PSC 434 - Feminist Film

Course Units: 1

(Spring; Marso) Using 10 films as our "texts" we will examine the role of women in society, the diversity of women's lives, the impact of gender roles in various cultural contexts, the possibility of alternative sexualities and ways of living, and whether we can say what constitutes a "feminist film." The course is focused on discussion of, and writing about, the films but includes analysis of feminist political theory and feminist film theory to provide tools for better interpretation.

Political Science - United States Politics

Unless otherwise indicated, prerequisites for the following courses are PSC 111 or PSC 112 or sophomore standing.

200-level courses in United States politics generally focus on institutions of government, political behavior, or public policymaking. These courses are framed at a conceptual level accessible to students from across the college.

300-level United States politics courses focus on a special topic (such as film, political psychology, and constitutional law) and/or contain a strong methodological component. The course materials are more conceptually and theoretically complex, and involve a more sophisticated set of intellectual problems.

PSC 160 - Presidential Elections

Course Units: 1

(Fall; Oxley, Brown) This course will be offered every four years, in the fall term of U.S. presidential election years. The course will consist of an in-depth examination of the presidential election. Candidates, developments, and events of that year will be analyzed, as well as placed within their broader historical and conceptual contexts. **Prerequisite(s):** Students who have taken PSC 159 (Presidential Nominations in Politics) will need special permission from the instructor to enroll. **CC:** SOCS

PSC 260 - Policy Making and American Society

Course Units: 1

(Not offered this Academic Year) The process through which public policies are originated, shaped, adopted, and applied at all levels of government in the U.S. and the impact of public policies on American society. Policies such as crime, immigration, gay rights, abortion, the environment, smoking, and others are used as case studies to examine the policy process.

PSC 261 - Public Opinion

Course Units: 1

(Winter; Oxley) An overview of public opinion in the United States. Topics include the content of citizens' opinions toward a wide range of political topics, the sources of people's opinions, and an evaluation of whether the opinions of the public matter (for policy, for governance, and for democracy). The course material is structured around important normative questions, such as: What is the role of citizens in a democratic society? Are citizens pliable? Do citizens organize their political thinking? Do citizens demonstrate and endorse democratic basics?

PSC 263 - The Politics of Poverty and Welfare

Course Units: 1

(Not offered this Academic Year) This course will look at various theories of poverty and inequality and the ideological and policy implications of these theories. Further, the history and political controversies surrounding the establishment and continuation of welfare programs such as Social Security, TANF, Medicare, Veterans benefits, and disability will be examined. **Prerequisite(s):** Sophomore standing and PSC 111 or SOC 100. **CC:** LCC

PSC 264 - Congressional Politics

Course Units: 1

(Not offered this Academic Year) An examination of the U.S. Congress emphasizing elections, representation, organization, decision-making and the human psychology of being a representative. Course is unique among PS courses in that almost the entire course is conducted as a simulation, with students taking on the roles of legislators, journalists, lobbyists, and members of the executive branch.

PSC 266 - Women and Politics

Course Units: 1

(Not offered this Academic Year) The political, social, and economic circumstances of women in the U.S. Topics include history of women's rights, feminism, women as political actors (voters, candidates, and government officials). Issues including work, reproductive rights, violence against women and poverty are covered. Special attention to the role of minority women. **Prerequisite(s):** Sophomore standing or PSC 111 or SOC 100.

PSC 268 - Electoral Politics

Course Units: 1

(Not offered this Academic Year) Examination of elections in the U.S., including presidential, congressional, and state elections. Specific topics include the democratic theory of elections, candidate strategy, voter decision making, identity politics, campaign finance, and the electoral roles of the media, political parties, and campaign consultants. The course is typically offered every four years, during congressional midterm election years. Examination of elections in the U.S. Course is taught as a simulated presidential election with students taking on the roles of presidential

candidate, campaign staff member, or journalist. Specific topics include the democratic theory of elections, candidate strategy, fundraising, voter decision making, and the electoral roles of the media, political parties, and campaign consultants.

PSC 269 - Media and Politics

Course Units: 1

(Not offered this Academic Year) Major trends in U.S. media, politics, and political communication. The focus is on media treatment of politics, including both the traditional news media, newer media outlets (such as the Internet and talk radio) and popular culture (movies, television shows, and song lyrics, for example). The larger context is the role of media in a democratic society.

PSC 270 - (362) CIA and the Art of Intelligence

Course Units: 1

(Not offered this Academic Year) Provides an historical background to intelligence and espionage, and offers perspectives on present day secret intelligence operations of world powers in support of their national security objectives. Discussions on intelligence analysis, evaluation, human and technical intelligence, cryptography, counter-intelligence, moles, various kinds of overt operations, US foreign policy issues and goals.

PSC 272 - The Environment, Energy, and US Politics

Course Units: 1

(Winter; Schue) Examination of how politics and policymaking affect the air we breathe, the water we drink, and the land we live on. This course will explore key U.S. environmental issues and their scientific underpinnings as well as the connections between these issues and our collective use of natural resources. The course will review major pieces of federal environmental law in the United States and address the policy considerations, justifications, and regulatory frameworks underlying them, as well as the effectiveness of these laws in achieving a healthier environment. The course will also examine the respective roles of Congress, the executive agencies, and the courts in determining environmental policy.

PSC 273 - The Supreme Court and Judicial Politics

Course Units: 1

(Not offered this Academic Year) An investigation of the judicial branch of government in the U.S. that focuses on the role of judges, the functioning of courts, and leading contemporary controversies in the judicial system. Among the primary concerns of this course are: the structure of the American Judiciary, judicial selection processes, how cases originate and move through the judicial system, how judges think about and reach decisions in the cases, and the role law plays in society. In exploring these topics many actual Supreme Court cases are dissected, focusing on such issues as: gay rights, pornography, rights of disabled citizens, the rights of those accused of crimes, and free speech over the Internet, to name only a few areas.

PSC 274 - Political Parties in the US Political System

Course Units: 1

(Not offered this Academic Year) This course will provide an overview of political parties in the United States. Specifically, it will consider the various major party regimes from the founding to the present. Other topics covered will include the role of third parties, polarization among the electorate, and contemporary questions regarding the role of parties in the 21st century.

PSC 277 - Capital Region Political Internships

Course Units: 1

(Fall, Winter, Spring; Brown) This class enables students to become politically active and/or gain political experience by working for elected officials, government agencies, election campaigns, interest groups, non-profit organizations, lobby firms, etc. Students draw on their internship experience and related academic work to reach a better understanding of the complexities and dynamics of politics at the state or local level. Students are permitted to enroll in this course twice, although the course will count toward the Political Science major only once. **Prerequisite(s):** Sophomore standing and permission of the instructor. **Note:** This course does not count towards the PSC portion of an ID major.

PSC 280T - Washington, DC Internship Program

Course Units: 1

(Spring; Lobe) A 10-week spring term in Washington, DC wherein each student is an intern either on the Hill, with a Nongovernmental agency (NGO), or with some other political, social, cultural, or scientific organization in DC. The internship receives one course credit. The second course is a seminar focused on a specific political theme (examples from past years include national security, social security, immigration, environment and foreign policy) introducing students to the policy, partisan and ideological debates within Washington. The third course is Art and Architecture in Washington, focusing on the political dimension of the important buildings, memorials, and museums in DC. **Prerequisite(s):** Sophomore standing and permission of the instructor. These courses may not be taken as pass/fail. **Note:** This course **does not count** towards the PSC portion of an ID major.

PSC 281 - Issues in American Education

Course Units: 1

(Spring; Wiener) The analysis of current conflicts over education policy at all levels of government including the funding of education, increased testing for accountability, the impact of charter schools and choice, bilingual education, religion and prayer, tenure laws and the role of teacher unions. Most of the focus will be on K-12 education but we will also address higher education and the recent concerns about tuition costs, financial aid, and the mission of colleges and universities. **Prerequisite(s):** Sophomore standing and PSC 111 or SOC 100 or ANT 110 or PSY 100.

PSC 282 - Health Politics and Policy

Course Units: 1

(Not offered this Academic Year) This course will examine the subject of health care policy in the American political system. Students will learn about the roles and functions of key actors, institutions, concepts, and principles as part of a broad overview of American health politics. From this foundation, we will develop a theoretical and practical framework to ground our analysis of current health policy issues and debates. Topics will include finance, insurance, Medicare/Medicaid, the Patient Protection and Affordable Care Act (aka "Obamacare"), prescription drug regulation, private markets, the public interest, ethics, and the role of government.

PSC 283 - Social Movements, the Environment and Society

Course Units: 1

(Same as SOC 270) The role of extra-governmental actors in the formation of public policy with a focus on environmental issues. The origins and development of social movements and the differences and similarities among these. Topics include the means by which such groups seek to influence policy and social practice and the outcomes of such attempts.

PSC 284 - Political Sociology

Course Units: 1

(Same as SOC 240) Issues of political power, domination, and legitimacy from a sociological perspective. Topics include the creation and maintenance of political power, the role of legitimacy and the impact of political socialization.

PSC 286 - The Modern Presidency

Course Units: 1

(Not offered this Academic Year) The development of the modern presidency, with a special emphasis on the institution of the presidency. The presidencies of Franklin Roosevelt through Ronald Reagan will be examined.

PSC 287 - (367) The Contemporary Presidency

Course Units: 1

(Not offered this Academic Year) Contemporary developments in the institutional and narrative-based presidency , with a focused examination of the administrations from Ronald Reagan through Barack Obama.

PSC 288 - American Constitutional Theory

Course Units: 1

(Winter; Hays) This course is concerned with the theoretical foundations of American constitutionalism. American constitutional theory is a broad topic, inclusive of the nature of constitutions, interpretive methodologies, institutional design, institutional function, and political development. While this course will touch on each of these, the central animating question is: Who shall interpret the Constitution? Twenty-first century constitutionalism has been marked by interpretive pluralism and the interpretations offered by different departments of government bear their distinct imprimatur. As such, understanding which institution does and ought to interpret the Constitution is among the most important political questions of our time.

PSC 289T - New Hampshire Primary Mini-Term

Course Units: 1

(Not offered this Academic Year) One of the most important events in every presidential election cycle is the New Hampshire primary. In this mini-term, students will analyze the New Hampshire primary through formal coursework (readings, discussions, papers, etc.) They will also experience the primary by spending three weeks in New Hampshire in late November-early December, shortly before balloting occurs early in the following year (a presidential election year). While in New Hampshire, students will volunteer with a candidate campaign organization, media outlet, or other campaign-related group. In addition, students will attend campaign events and guest lectures (by state officials, campaign staff members, journalists, scholars, etc.). This course is offered every four years consistent with the presidential election cycle. **Note:**

PSC 361 - Political Psychology

Course Units: 1

(Spring; Oxley) The application of psychological theories to understanding the political attitudes and behavior of individuals (citizens, political leaders) as well as small groups (juries, presidential advisors). Specific topics include stereotypes, personality, social cognition, attitude formation, altruism, emotion, psychoanalysis, groupthink and elite decision-making. **Prerequisite(s):** PSC 111 or PSC 112 , or PSY 100

PSC 364 - (275) Law and Film

Course Units: 1

(Not offered this Academic Year) This course uses the medium of film as a springboard to introduce and explore concepts in legal theory, American legal culture, and the exercise of public and private power through the legal system. Specific topics of discussion include law as morality, higher versus positive law, law and gender, and the heroic lawyer mythology.

PSC 365 - (285) Law, Society, and the Wire

Course Units: 1

(Spring; Hays) HBO's *The Wire* is often hailed as one of the greatest television series. During its run, critics compared it to a novel or epic poem. Along with its gritty portrayal of inner city decay and the lives lived in this environment, the crime drama convincingly portrays communities and their institutions. *The Wire*'s depiction of law is among its most nuanced and provocative features. The show easily slips among the black letter law, the law on the street, and informal law-like systems that exist among communities that do not fully subscribe to the norms of the state. This course will use the portrayal of law in *The Wire* to address some of the following questions: What is law? Is law only the domain of the state? What is the relationship between law and power? Is violence inherent in law? Is law inherently oppressive? If so, how do we reconcile oppression with democratic practice and human rights?

PSC 369 - Seminar: US Politics

Course Units: 1

(Not offered this Academic Year) Selected topics in U.S. politics. Content will vary from year to year. Preference to sophomore and junior political science majors. **Prerequisite(s):** PSC 111, PSC 112, or PSC 113 and permission of the instructor.

PSC 370 - Constitutional Law

Course Units: 1

(Fall; Hays) An examination of the Constitutional tradition in the United States, focusing upon the structure and powers of the federal government. Topics and themes include the power of the courts to interpret the laws and the Constitution, the power of the federal government and the significance of "states rights," federal government intervention in matters of "commerce" or economics, and the nature and expansion of executive power, especially in the area of national security. The course proceeds mainly through close examination of Supreme Court cases, considered in their political, historical and legal context.

PSC 371 - Civil Rights and Civil Liberties

Course Units: 1

(Not offered this Academic Year) Considers the protections afforded to individual rights and liberties by the U.S. Constitution and the Bill of Rights. Topics include freedom of speech and assembly, the right to privacy, religious freedom, equal protection and discrimination, and the due process rights of those accused of crimes. The course proceeds mainly through close examination of Supreme Court cases, considered in their political, historical and legal context.

Political Science - Independent Research

PSC 295H - Political Science Honors Independent Project 1

Course Units: 0

(Fall, Winter, Spring; Staff) By application to the individual instructor and subject to confirmation by the Department Chair.

PSC 296H - Political Science Honors Independent Project 2

Course Units: 1

(Fall, Winter, Spring; Staff) By application to the individual instructor and subject to confirmation by the Department Chair.

PSC 490 - Political Science Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) By application to the individual instructor and subject to confirmation by the Department Chair.

PSC 498 - Political Science Senior Thesis 1

Course Units: 0

(Fall, Winter, Spring; Staff) Open to seniors in political science. Subject to department approval, this requirement may be fulfilled by the completion of original political science research, political action, political art, or applied public policy research. The senior project is an intensive two-term research project serving as the capstone experience for the major. All senior projects are subject to an oral examination as a requirement for graduation as a major.

PSC 499 - Political Science Senior Thesis 2

Course Units: 2

Psychology

PSY 100 - Introduction to Psychology

Course Units: 1

(Fall, Winter, Spring; DeBono, Morton) The activities and experiences of the human being. Personality and its development, motives, learning and intelligence, and behavior in conflict. CC: SOCS

PSY 200 - Statistical Methods in Psychology

Course Units: 1

(Fall, Winter, Spring; Egan, Hayes, Romero, Stanhope) The descriptive and inferential statistical procedures used by researchers to explain and analyze their results. Mean, variance, correlation, hypothesis testing using t-test, ANOVA, and nonparametric tests.

PSY 210 - Behavioral Neuroscience

Course Units: 1

(Same as BIO 210) **(Fall, Winter, Spring; Hayes, Weisse)** Basic concepts of brain functioning as they relate to psychological phenomena. Including methodology, neuroanatomy, and neurotransmission, important for understanding the mediation of behavior. **Prerequisite(s):** PSY 100 or BIO-110 and BIO-112. **CC:** SET

PSY 212 - Neurobiology

Course Units: 1

(Same as BIO 242) **Prerequisite(s):** BIO 110 and BIO 112

PSY 213 - Clinical Neuropsychology

Course Units: 1

(Not offered this Academic Year) This course will examine the relationship between brain function and behavior, especially the evaluation and treatment of individuals across the lifespan with cognitive deficits and brain compromise (e.g., due to injury, neurodevelopmental or degenerative processes, toxic exposure, etc.). The material is interdisciplinary, integrating across various sub-disciplines of medicine (e.g., neurology, psychiatry, radiology) and subfields of psychology (e.g. neuroscience, abnormal, assessment, cognitive, health). Clinical cases and research reports will be used to illustrate and characterize neuropsychological phenomena, conditions, and diagnoses. The course objectives will be accomplished through lecture, readings, and discussion as well as via experiential and service learning opportunities. **Prerequisite(s):** PSY 100 or PSY 210 (or BIO 210)

PSY 215 - Health Psychology

Course Units: 1

(Fall; Morton) This course will examine psychology's role in the etiology, prevention, progression, and treatment of disease. Topics will include mechanisms by which stress and health-related behaviors such as diet, exercise, smoking and substance abuse contribute to illness, doctor-patient communication, problems of medical compliance, cognitive/behavioral treatment techniques, pain management, and health promotion/ disease prevention strategies. **Prerequisite(s):** PSY 100

PSY 220 - Attention and Memory

Course Units: 1

(Fall, Winter, Spring; Burns, Hayes) This course will focus on how people take in information about the world around them, store that information, and retrieve it to help them solve problems. In doing so, we will discuss the seemingly paradoxical conclusion that we take in and interpret a great deal of our environment but that we also fail to notice much of it. We will also discuss how we are able to work on and manipulate the information we have taken in, and make decisions based on it, emphasizing the impact that this process has on our ability to perform many cognitive tasks. Additionally, those factors that influence how and how well we encode and later retrieve various types of information will be considered. **Prerequisite(s):** PSY 100

PSY 222 - Judgment and Decision Making

Course Units: 1

(Same as ECO 122) **(Not offered this Academic Year)** An introduction to the scientific study of judgment and decision making, featuring

perspectives from cognitive psychology and behavioral economics. Students will learn major theoretical concepts and empirical results from the literature, as well as how they apply to real-world issues. Students should also expect to improve their own ability to evaluate evidence and make rational, well-informed decisions in their own lives. **Prerequisite(s):** PSY 100 (for PSY majors); BIO 210 or PSY 210 (for NS majors); ECO 101 (for ECO Majors).

PSY 225 - The Psychology of Language

Course Units: 1

(Not offered this Academic Year) Psycholinguistics, including speech perception, child's acquisition of language, animal language, linguistic diversity, and recent research. **Prerequisite(s):** PSY 100

PSY 230 - Social Psychology

Course Units: 1

(Same as SOC 203) **(Fall, Winter, Spring; Bizer, Hart, Morton)** This course presents an overview of the field of social psychology: We live in a world in which social factors can dramatically impact us. We will thus explore major theories and classic and contemporary research on why people think, feel, and behave the way they do in both individual and group settings. Topics may also include evolutionary and cultural perspectives, research methods and ethics in the field, and applications of social psychology to areas such as health, law, education, and public policy.

Prerequisite(s): PSY 100 or SOC 100

PSY 235 - Industrial-Organizational Psychology

Course Units: 1

(Not offered this Academic Year) A general overview of the research and theory relating psychology to work behavior and to applications in the industrial setting. Personnel psychology, human factors and engineering psychology, organization theory, organizational development, and organizational behavior will be examined. **Prerequisite(s):** PSY 230 preferred, but not required.

PSY 240 - Developmental Psychology

Course Units: 1

(Fall, Winter, Spring; Stanhope) This course traces the processes that influence human development across the lifespan, from infancy to old age. What are the cognitive, emotional and social behavioral milestones that occur at each significant stage of development? In what ways do human beings change as they get older, and in what ways do they stay the same? What early experiences can influence later developmental outcomes? The major theoretical perspectives that help illuminate the developmental process, as well as the experimental and quasi-experimental methods of study, will be emphasized **Prerequisite(s):** PSY 100

PSY 242 - Death and Dying

Course Units: 1

(Spring; Weisse) This course will examine the social and psychological processes that shape the dying and bereavement process. The historical and cultural factors that influence attitudes toward dying and the ethical issues that impact decisions about how we die will be discussed. In addition, this course will discuss end of life care, including hospice, palliative care and pain management; how our health care system treats the dying; mental health interventions; and suicide. **Prerequisite(s):** PSY 100

PSY 245 - Psychology of Gender Roles

Course Units: 1

(Not offered this Academic Year) The psychological bases and effects of the masculine and feminine role norms in our culture. Topics include biological bases of sex differences, sexuality, romance, work and family roles, origins of sex-typed personality in family and cultural socialization.

Prerequisite(s): PSY 100

PSY 246 - Educational Psychology

Course Units: 1

(Spring; Stanhope) In this course, we will apply the principles of psychology to various aspects of teaching and learning, with an emphasis on the cognitive abilities of students, classroom management procedures, and motivational techniques. **Prerequisite(s):** PSY 100

PSY 250 - Abnormal Psychology

Course Units: 1

(Winter, Spring; Walker) Models and theories of psychology, with description and analyses of forms of abnormality and its modification.

Prerequisite(s): PSY 100

PSY 251 - Personality

Course Units: 1

(Fall, Winter; Morton) Classical and contemporary theories of personality, with an emphasis on current issues and research in the field.

Prerequisite(s): PSY 100

PSY 255 - Psychology of Addiction

Course Units: 1

(Not offered this Academic Year) A socio-psychological approach to understanding a variety of addictive behaviors. Includes coverage of substance abuse, e.g., alcohol, tobacco, illegal drugs and foods, as well as activities such as gambling, sex, work, relationships etc. **Prerequisite(s):** PSY 100

PSY 257 - Evolutionary Psychology

Course Units: 1

(Not offered this Academic Year) This course will provide a solid theoretical foundation for the study of psychology from an evolutionary perspective. We will apply to humans the same lens that evolutionary biology has applied to other species. This perspective cuts across cognition, motivation, attention, social behavior, and many other aspects of psychology. The course will begin with an in-depth introduction to evolutionary theory as it applies to human psychology and behavior followed by a survey of more specific psychological phenomena studied from an evolutionary perspective. **Prerequisite(s):** PSY 100

PSY 291 - Psychology Research Practicum 1

Course Units: 0

(Fall, Winter, Spring; Staff) The Psychology Research Practicum experience allows students to become involved in psychological research early in their careers at Union College. Students work under the supervision of a member of the Psychology Department. Duties will be determined individually with the research supervisor, and may include such things as: surveying the literature in an area, designing or testing research materials, interacting with research participants, collecting data, and analyzing data. Expectations include at least four hours per week devoted to the research, as well as attendance at Psychology Speaker Series seminars. This course requires permission of the individual research supervisor, and is graded on a Pass/Fail basis. In order to receive credit equivalent to one course, the student must earn passing grades in three terms of practicum experience within the psychology department. Research Practicum is normally not open to students who are currently enrolled in independent research experiences in psychology, except by permission of the department chair. The Research Practicum course does not count towards the major requirements in psychology. **Prerequisite(s):** PSY 100 or PSY 100P

PSY 292 - Psychology Research Practicum 2

Course Units: 0

(Fall, Winter, Spring; Staff) The Psychology Research Practicum experience allows students to become involved in psychological research early in their careers at Union College. Students work under the supervision of a member of the Psychology Department. Duties will be determined individually with the research supervisor, and may include such things as: surveying the literature in an area, designing or testing research materials, interacting with research participants, collecting data, and analyzing data. Expectations include at least four hours per week devoted to the research, as well as attendance at Psychology Speaker Series seminars. This course requires permission of the individual research supervisor, and is graded on a Pass/Fail basis. In order to receive credit equivalent to one course, the student must earn passing grades in three terms of practicum experience within the psychology department. Research Practicum is normally not open to students who are currently enrolled in independent research experiences in psychology, except by permission of the department chair. The Research Practicum course does not count towards the major requirements in psychology. **Prerequisite(s):** PSY 291.

PSY 293 - Psychology Research Practicum 3

Course Units: 1

(Fall, Winter, Spring; Staff) The Psychology Research Practicum experience allows students to become involved in psychological research early in their careers at Union College. Students work under the supervision of a member of the Psychology Department. Duties will be determined individually with the research supervisor, and may include such things as: surveying the literature in an area, designing or testing research materials, interacting with research participants, collecting data, and analyzing data. Expectations include at least four hours per week devoted to the research, as well as attendance at Psychology Speaker Series seminars. This course requires permission of the individual research supervisor, and is graded on a Pass/Fail basis. In order to receive credit equivalent to one course, the student must earn passing grades in three terms of practicum experience within the psychology department. Research Practicum is normally not open to students who are currently enrolled in independent research experiences in psychology, except by permission of the department chair. The Research Practicum course does not count towards the major requirements in psychology. **Prerequisite(s):** PSY 292.

PSY 295H - Psychology Honors Independent Project 1

Course Units: 0

Note: Total credit is obtained by the completion of PSY 296H

PSY 296H - Psychology Honors Independent Project 2

Course Units: 1

PSY 300 - Research Methods in Psychology

Course Units: 1

(Fall, Winter, Spring; Bizer, Burns, Egan) Students will learn how to conduct research in psychological science, including hypothesis development, research design, data collection, scientific writing, ethical considerations, and dissemination. Students will also learn how to conduct statistical analyses using the SPSS software package, to include regression as well as analysis of within-participant and factorial designs. In the capstone assignment, students will develop their own hypotheses and design their own psychological experiments with which to test those hypotheses. **Prerequisite(s):** PSY 200 **Corequisite(s):** PSY 300L **Lecture/Lab Hours** Weekly lab

PSY 310 - Cognitive Neuroscience w/Lab

Course Units: 1

(Winter; Romero) This course will present in depth the present understanding of the brain mechanisms that give rise to many mental processes, including attention, memory, language production, and comprehension, numerical processing, reasoning, emotions, and executive functioning. Weekly laboratory sessions will cover major methodologies used in cognitive neuroscience, including brain imaging and neural network simulation **Prerequisite(s):** PSY 200 and PSY 210 (or BIO 210), PSY 220, and PSY 300 **Corequisite(s):** PSY 310L

CC: SCLB **Lecture/Lab Hours** Weekly lab

PSY 311 - Animal Behavior

Course Units: 1

(Same as BIO 325) **Prerequisite(s):** BIO 110 and BIO 112 **Corequisite(s):** PSY 311L **CC:** SET

PSY 312 - Experimental Neurobiology

Course Units: 1

(Same as BIO 362) **Prerequisite(s):** BIO 225 or by permission of the instructor. **Corequisite(s):** PSY 312L **CC:** SCLB

PSY 313 - (211) Sensation and Perception

Course Units: 1

(Fall; Egan) The structural and functional aspects of the sensory system and sensory processes. Also theories and research in the field of perception and perceptual development. **Prerequisite(s):** Students must take PSY 200, PSY 210 (or BIO 210), and PSY 300. **Corequisite(s):** PSY 313L **CC:** SCLB **Lecture/Lab Hours** Weekly lab

PSY 315 - Neural Circuits of Behavior

Course Units: 1

(Same as BIO 365) **Prerequisite(s):** BIO 112 and one of the following: BIO 210, BIO 330, BIO 362, or BIO 363 or permission of instructor. **CC:** SET

PSY 330 - Advanced Personality and Social Psychology

Course Units: 1

(Spring; Hart) Covers contemporary theory and research on (a) attitudes and social cognition (e.g., attitude formation and change; impression formation; persuasion; stereotypes and prejudice; emotion; self-regulation), (b) interpersonal relationships and group processes (e.g., romance;

intergroup relations; aggression; pro- and anti-social behavior), and (c) personality and individual differences (e.g., trait structure, development, assessment, and outcomes). Weekly lab involves learning and applying topically relevant research methods. **Prerequisite(s):** PSY 100, PSY 200, PSY 300 and PSY 230 or PSY 251. **Corequisite(s):** PSY 330L **CC: SCLB Lecture/Lab Hours** Weekly lab

PSY 331 - Psychology of Emotion

Course Units: 1

(Winter; Hart) Examination and evaluation of scientific theories and research about emotions, including the evolution and development of emotions, the physiological and neurological underpinnings of emotions, individual differences and psychopathology, and the role of emotions in close relationships and everyday life. **Prerequisite(s):** Any 200-level PSY course, not including PSY 200.

PSY 334 - Attitudes and Social Behavior

Course Units: 1

(Not offered this Academic Year) Survey of research on attitude-behavior relations and on the psychology of persuasion. Issues of attitude structure, formation and measurement also discussed. Students propose original research ideas. **Prerequisite(s):** PSY 230

PSY 347 - Psychology of Sexuality

Course Units: 1

(Not offered this Academic Year) We will examine the varied forms of human sexuality from a psychological perspective. This analysis will include several theoretical approaches (e.g., comparative, biological, evolutionary, psychoanalytic, queer theory) and a range of topics (e.g., sexual development across the lifespan, choice of gender of partners, the relation of sexuality and gender, power relations in sexuality). **Prerequisite(s):** PSY 100

PSY 350 - Psychotherapy

Course Units: 1

(Fall; Walker) Survey of the major contemporary systems of psychotherapy. Includes analytic, family systems, cognitive and behavioral approaches. Students will learn theories, techniques, and processes involved in the practice of psychotherapy. **Prerequisite(s):** PSY 250

PSY 351 - Human Relations 1: Communications

Course Units: 1

(Winter; Andersen-Hanley) Explores interpersonal communication as it shapes and is shaped by human relationships. Psychological theories of interpersonal communication are presented with a view to explicating the processes by which people come to describe, explain, or otherwise account for experiences with others. Categories of "abnormal" behavior and approaches to psychotherapy are revisited from the perspective of communications theory. Similarly, communications theory will be examined for its role in everyday relationships including familial, romantic, and work communications, with special attention to the role of the helping professional (e.g., psychologist, medical/health professional, etc.). The lab portion of the course will include opportunities for experiential learning, including: practice with clinical research methods for coding and analyzing factors salient in dyad and group interpersonal communication (e.g., non-verbal, verbal, and other aspects of communication). **Prerequisite(s):** PSY 200 and PSY 300. **CC: SCLB Note:** This course is designed to be taken in sequence with PSY 451, but enrollment in PSY 451 is optional and may be taken in a subsequent year, space permitting. *Please also note that the previous name of this course was "Seminar in Human Relations 1".*

PSY 352 - Psychological Assessment and Testing

Course Units: 1

(Not offered this Academic Year) Learn about one of psychology's most important and unique practical contributions. Examine assessment tools that are key to the practice of clinical and counseling psychology (e.g., diagnostic and personality tests). Review issues related to test construction (e.g., reliability and validity). Practice construction and validation of a new test. **Prerequisite(s):** PSY 100 (PSY 200 is preferred, but not required)

PSY 402 - Honors Colloquium 1

Course Units: 0

(Fall; Hart) A one-credit course running the full academic year, open to junior and senior qualified students. Limited enrollments; students will be recommended for the course by faculty. Each year's topic will be chosen by the supervising faculty member. Normally, students will meet to discuss readings pertaining to the topic and upcoming speakers. About seven to nine speakers with expertise in the chosen area will be invited to discuss their positions with students. Relevant field trips may also be arranged. **Note:** This course does not fulfill the psychology major requirement of a seminar.

PSY 403 - Honors Colloquium 2

Course Units: 0

(Winter; Hart) A one-credit course running the full academic year, open to junior and senior qualified students. Limited enrollments; students will be recommended for the course by faculty. Each year's topic will be chosen by the supervising faculty member. Normally, students will meet to discuss readings pertaining to the topic and upcoming speakers. About seven to nine speakers with expertise in the chosen area will be invited to discuss their positions with students. Relevant field trips may also be arranged. **Note:** This course does not fulfill the psychology major requirement of a seminar.

PSY 404 - Honors Colloquium 3

Course Units: 1

(Spring; Hart) A one-credit course running the full academic year, open to junior and senior qualified students. Limited enrollments; students will be recommended for the course by faculty. Each year's topic will be chosen by the supervising faculty member. Normally, students will meet to discuss readings pertaining to the topic and upcoming speakers. About seven to nine speakers with expertise in the chosen area will be invited to discuss their positions with students. Relevant field trips may also be arranged. **Note:** This course does not fulfill the psychology major requirement of a seminar.

PSY 410 - Seminar in Brain and Behavior

Course Units: 1

(Same as BIO 211) **(Winter; Weisse)** This seminar will provide students with an opportunity to examine how brain processes impact behavior and psychological functioning. Students will gain experience giving oral presentations and critically evaluating empirical studies pertaining to both normal and abnormal behavior.. **Prerequisite(s):** PSY 210 (or BIO 210) and PSY 300 **CC:** SET

PSY 411 - Seminar in Clinical Neuropsychology

Course Units: 1

(Not offered this Academic Year) Through this course you should gain a close-up view into the field of Clinical Neuropsychology, which aims to explore the relationship between brain function and behavior, especially the evaluation and treatment of brain damaged individuals. This will be

accomplished through lecture, readings, discussions, field-work/ service-learning, and other hands-on practice experiences. **Prerequisite(s):** PSY 250 and one of the following: PSY 210 or PSY 220; or permission of the instructor.

PSY 420 - Seminar in Cognitive Psychology

Course Units: 1

(Winter; Hayes) A selected topic in learning or cognitive psychology, such as language, reading, attention, memory, conditioning, and applications.

Prerequisite(s): PSY 210 or PSY 220 or permission of instructor.

PSY 422 - Communicating Psychological Science

Course Units: 1

(Not offered this Academic Year) A seminar on how research in psychological science relates to the real world, focusing on how to effectively communicate to non-specialist audiences. We will cover these topics: (1) how to write effective and efficient essays and documents that apply psychology to everyday events and convey research ideas to general audiences; (2) how to organize and present data to maximize audience understanding; (3) how to deliver effective short talks; (4) how theoretical ideas and empirical studies from cognitive science can guide us in becoming better communicators. Students will write essays, create information graphics, and deliver talks on research topics that apply to real-world events. **Prerequisite(s):** Students considering should take PSY 200 and (a) any three other 200-level PSY courses, or (b) take PSY 300.

PSY 430 - Seminar in Social Psychology

Course Units: 1

(Spring; Bizer) A selected area of social psychology. Specific topic will be announced in advance by the instructor. **Prerequisite(s):** PSY 230 and PSY 300 or permission of instructor.

PSY 431 - Seminar in Psychology of Religion

Course Units: 1

(Spring; DeBono) The psychological origins of religious beliefs and the apparent behavioral consequences of holding such beliefs. Specific topics will include: religiosity as an evolutionary, psychological, and social phenomenon; the role of religious beliefs in mental health, physical health, interpersonal relationships, and prejudice. **Prerequisite(s):** PSY 210, PSY 220, PSY 230, PSY 240 or PSY 251 or permission of the instructor.

PSY 432 - Love and Death

Course Units: 1

(Fall; Hart) This course examines two lines of inquiry, principally initiated in the 1950's and 60's by John Bowlby and Ernest Becker, respectively, which have subsequently developed into two influential contemporary theories in experimental social and personality psychology: attachment theory and terror management theory (TMT). These theories and the intellectual traditions that spawned them address two elements of life - love and death - that have far-reaching psychological consequences and philosophical implications. The course will start with discussion of Bowlby's and Becker's classic books, and as class progresses, class members will assume increased responsibility for leading discussions and examining contemporary research. Ultimately, each class member will develop his or her own questions, and tentative answers, relating to the course material, which will culminate in a significant paper. **Prerequisite(s):** PSY 300 or permission of instructor.

PSY 440 - Seminar in Human Development

Course Units: 1

(Winter; Stanhope) A selected area of developmental psychology. Topic will be announced in advance by the instructor. **Prerequisite(s):** PSY 240

PSY 441 - Seminar in Adolescence

Course Units: 1

(Fall; Benack) Development during adolescence and early adulthood, including changing relations to parents, love and sexuality, moral and cognitive growth, and the establishing of identity. The seminar will use the case study method, i.e., we will analyze a series of individual people's accounts of their adolescent experience. **Prerequisite(s):** PSY 240 or PSY 251

PSY 450 - Seminar in Clinical Psychology

Course Units: 1

(Fall; Walker) A selected area of clinical psychology. Topic will be announced in advance by the instructor. **Prerequisite(s):** PSY 250

PSY 451 - Human Relations 2: Internship

Course Units: 1

(Spring; Anderson-Hanley) Intensive practicum course designed to provide direct exposure to clinical populations, along with structured individual and group clinical supervision. Activities include placement at a psychologically-oriented internship site, along with seminar discussion of clinical cases and systems issues. Emphasis on the theoretical understanding of clinical assessment and intervention from a psychological perspective, integrating both nomothetic and ideographic approaches. **Prerequisite(s):** Permission of the instructor.

PSY 487 - Psychology 3 Term Thesis 1

Course Units: 0

PSY 488 - Psychology 3 Term Thesis 2

Course Units: 0

PSY 489 - Psychology 3 Term Thesis 3

Course Units: 3

PSY 490 - Psychology Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff)

PSY 491 - Psychology Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff)

PSY 492 - Psychology Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff)

PSY 493 - Psychology 2 Term Independent Study 1

Course Units: 0

(Fall, Winter, Spring; Staff) First term grade is normally pass or fail. A comprehensive grade for both terms is assigned at the end of second term.

PSY 494 - Psychology 2 Term Independent Study 2

Course Units: 2

PSY 495 - Psychology 1 Term Senior Project

Course Units: 1

(Fall, Winter, Spring; Staff) CC: WS

PSY 496 - Psychology 2 Term Senior Project 1

Course Units: 0

(Fall, Winter, Spring; Staff)

PSY 497 - Psychology 2 Term Senior Project 2

Course Units: 2

CC: WS

PSY 498 - Psychology Senior Thesis 1

Course Units: 0

(Fall, Winter, Spring; Staff) Please read details for psychology honors in department's introductory statement. First term grade is pass or fail; a comprehensive grade for both terms is assigned at the end of the second term. **Prerequisite(s):** PSY 200 and PSY 300

PSY 499 - Psychology Senior Thesis 2

Course Units: 2

Religious Studies

REL 103 - Introduction to Religious Studies

Course Units: 1

(Fall, Spring; Wegter-McNelly) This course introduces students to the academic study of religion through an investigation of central topics such as sacred space, sacred text, myth, ritual, ethics, religion and society, concepts of the divine and ultimate reality, anthropology, and others. Examples for discussion are drawn from a variety of religious traditions including Judaism, Christianity, Islam, Hinduism, and Buddhism, as well as other religious traditions, ancient and modern. Attention is also given to aspects of religion in contemporary settings. **CC:** HUL, LCC

REL 170 - Myth, Ritual and Magic

Course Units: 1

(Same as ANT 170) **(Not offered this Academic Year)** This course examines some of the theoretical issues surrounding myth, ritual and magic as well as specific examples of their cultural expression. How do people make sense of themselves, their society and the world through myth and ritual? How do cosmology and belief systems help them gain and organize knowledge about the world and themselves? The course will be examining a number of "occult" and "esoteric" practices, that is, practices that were not commonly known to all members of society, including sufism, kabbalah, alchemy, and shamanism. **CC:** HUM, LCC **Note:** Electives (only one cross-listed course can count for the major or minor)

REL 203 - Judaism/Christianity/Islam: Comparative Perspectives

Course Units: 1

(Also HST 203) **(Not offered this Academic Year)** This course offers a comparative approach to Judaism, Christianity and Islam, three closely related religious traditions. It attempts to draw out commonalities among and differences between these traditions by focusing on their histories, their understandings of God, revelation and tradition, religion and society, and responses to social and political change. **CC:** HUM

REL 230 - Judaism and Christian Origins

Course Units: 1

(same as CLS 230) **CC:** HUM, LCC

REL 271 - Religion and Food

Course Units: 1

Why do we eat the things we eat in the way we eat them? Used in religious rituals, food can become a potent symbolic expression of people's relationships to one another, to the world, and to the Ultimate. Historically, food has been an integral part of religious activity through practices such as preparation, consumption, and fasting. In order to understand these practices better, the course begins with a brief exploration of how food functions in culture generally to create and sustain meaning. The bulk of the course investigates the place of food in the rituals and beliefs of three of

the world's great religious traditions: Hinduism, Judaism, and Christianity. The course also examines the phenomena of over- and under-eating in light of the importance given to feasting and fasting in these religious traditions, as well as the issue of food production and consumption from the perspective of social justice.

REL 280 - Religion and Science

Course Units: 1

This course explores the historical and contemporary relations between several of the world's major religions and the natural sciences. The presently pervasive "conflict" view is examined, along with alternative views. The course assumes no background in science beyond high school, nor adherence to any particular religious tradition. **CC: HUM**

REL 295H - Religious Studies Honors Independent Study 1

Course Units: 1

REL 296H - Religious Studies Honors Independent Study 2

Course Units: 1

REL 300 - Seminar: Theory and Method in the Study of Religion

Course Units: 1

(Not offered this Academic Year) This course offers an introduction to the theory and methodology of the academic study of religion. It explores several of the most influential efforts to develop theories of religion and methods for its study, including approaches found in disciplines such as anthropology, sociology, psychology and phenomenology. The course adopts an historical perspective, outlining issues and developments in the field from the Enlightenment through to today. **CC: HUM**

REL 490 - Religious Studies Independent Study 1

Course Units: 1

REL 491 - Religious Studies Independent Study 2

Course Units: 1

REL 498 - Religious Studies Senior Thesis 1

Course Units: 0

REL 499 - Religious Studies Senior Thesis 2

Course Units: 2

Russian

MLT 230 - Madness & The Mad in Russian Culture

Course Units: 1

(Same as RUS 330) **(Spring; Staff)** In this course we will investigate illness and its various representations in 19th and 20th century Russian culture. Specific emphasis will be placed on madness, disease and death in our discussion of various literary and historical madmen. The course will be conducted as a combination of lectures and class discussion. An occasional film will be shown. **CC: HUL, LCC**

MLT 260 - The Vampire as Other in East European and American Culture

Course Units: 1

(Not offered this Academic Year) We will discuss the present distribution of the East European peoples, their prehistory, and their relation to other peoples of Europe and Asia. We will also survey their early culture, including pagan, animistic, and dualistic religious beliefs, and Christianization. Our focus will be the myth of the vampire, which has had enduring power not only in Eastern European folk belief but also in American popular culture right up to the present day. **CC: HUL, LCC**

MLT 262 - Russia: Magnificence, Mayhem, and Mafia

Course Units: 1

(Not offered this Academic Year) Through analysis of literature, film, and visual arts we will discuss the Russian impact on the world with all its manifestations, constructive and destructive, and we will also attempt to "imagine" Russia in the future. Do you want to know more about Dostoevsky, communist and post-communist Russia, and, most importantly, the Russian Mafia? **CC: HUL, LCC**

MLT 265 - Soviet and Russian Film Revolutions: Political, Social, Cultural

Course Units: 1

(Not offered this Academic Year) At its inception, Soviet film was intertwined with political revolution. In masterpieces such as Eisenstein's *The Battleship Potemkin* and Pudovkin's *Mother*, film directors sought to portray the Bolshevik take-over as a legitimate and inevitable response to oppression. Who could imagine that the same country would produce *Little Vera*, a film about the sexual revolution of the 1980's or *Brother*, a hero-story about assassins? This course will follow the trajectory of Soviet and Russian cinema from the 1917 Revolution to the present day, as it was used to chronicle social and cultural upheavals. **CC: HUM, LCC**

MLT 300T - Irkutsk, Russia Internship

Course Units: 1

(Not offered this Academic Year) This course is designed to help students connect their academic studies to practical application by offering academic credit for environmentally-focused work experience. Students will work 10-12 hours at an internship and will also attend class once a

week. Articles on geography, climatology, resource allocation, remote sensing, and conservation biology will expose students to a wide range of practical and theoretical issues connected to the environment; specific focus will be on the Lake Baikal region of Siberia. The internships (at Great Lake Baikal Trail, museums or schools) will provide students with hands-on experience with environmental conservation and expose them to the day to day issues that Russian NGOs, schools and museums confront. **CC:** LCCR

RUS 100 - Basic Russian 1

Course Units: 1

(Fall; Staff) For students with no knowledge of Russian. An introduction to the language, with emphasis on oral skills and communicative proficiency. **CC:** HUM

RUS 101 - Basic Russian 2

Course Units: 1

(Winter; Staff) Continuation of RUS 100 . **Prerequisite(s):** RUS 100 or two years of high school Russian. **CC:** LCCR, HUM

RUS 102 - Basic Russian 3

Course Units: 1

(Spring; Staff) A continuation of RUS 101 , with increasing attention paid to reading simple, every day texts. **Prerequisite(s):** RUS 101 or equivalent. **CC:** LCCR, HUM

RUS 200 - Intermediate Russian 1

Course Units: 1

(Fall; Staff) Intensive development of the four proficiency skills (speaking, listening, reading, writing) with continued emphasis on strategies of basic conversation. **Prerequisite(s):** RUS 102 or equivalent. **CC:** LCCR, HUM

RUS 201 - Intermediate Russian 2

Course Units: 1

(Winter; Staff) Continuation of RUS 200 . **Prerequisite(s):** RUS 200 or equivalent. **CC:** LCCR, HUM

RUS 202 - Advanced Russian

Course Units: 1

(Spring; Staff) Development of skills and vocabulary necessary to deal with conversation about and texts on Russian cultural life. Basic grammar review. **Prerequisite(s):** RUS 201 or equivalent. **CC:** HUM, LCCR

RUS 224T - The Russian Language Studied Abroad 1

Course Units: 1

RUS 225T - The Russian Language Studied Abroad 2

Course Units: 1

RUS 226T - The Russian Language Studied Abroad 3

Course Units: 1

RUS 227T - The Russian Language Studied Abroad 4

Course Units: 1

RUS 230 - Contemporary Russian Culture

Course Units: 1

(Not offered this Academic Year) A course that combines expanding oral, aural, and written skills with an introduction to contemporary issues in Russian culture and political life. **Prerequisite(s):** RUS 202 or instructor's permission. **CC:** LCCR, HUM

RUS 250T - The Russian Language Studied Independently Abroad 1

Course Units: 1

RUS 251T - The Russian Language Studied Independently Abroad 2

Course Units: 1

RUS 295H - Russian Honors Independent Study 1

Course Units: 0

RUS 296H - Russian Honors Independent Study 2

Course Units: 1

RUS 300 - Survey of Russian Literature 1: From Pushkin to Revolution

Course Units: 1

(Not offered this Academic Year) Readings that begin with the godfather of Russian literary life, Aleksander Pushkin, and that ends on the eve of the October revolution. Continued attention to development of vocabulary and oral presentation. **Prerequisite(s):** RUS 202 or instructor's permission. **CC:** HUL, LCCR

RUS 301 - Survey of Russian Literature 2: From Revolution to Present

Course Units: 1

(Not offered this Academic Year) Readings ranging from the great revolutionary writers (Mayokovsky, Babel, Platonov, etc.) to contemporary writers of interest. **Prerequisite(s):** RUS 300. **CC:** HUL, LCCR

RUS 302 - The Russian Short Story: Pathologies of the Everyday

Course Units: 1

(Not offered this Academic Year) A survey of Russian short prose, with emphasis on its reflected/distorted images of Russian everyday life. Includes Gogol, Tolstoy, Gorky, Kharmis, Petrushevskaya, and others. **CC:** HUL, LCCR

RUS 330 - Madness & The Mad in Russian Culture

Course Units: 1

(Same as MLT 230) **(Spring; Staff)** In this course we will investigate illness and its various representations in 19th and 20th century Russian culture. Specific emphasis will be placed on madness, disease and death in our discussion of various literary and historical madmen. The course will be conducted as a combination of lectures and class discussion. An occasional film will be shown. **CC:** HUL, LCCR

RUS 490 - Russian Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) **Prerequisite(s):** One 300-level course and permission of the instructor.

RUS 491 - Russian Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) **Prerequisite(s):** One 300-level course and permission of the instructor.

RUS 492 - Russian Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) **Prerequisite(s):** One 300-level course and permission of the instructor.

Science, Medicine, and Technology in Culture

SMT 123 - Ethics, Technology & Society

Course Units: 1

(Same as ISC 123) **(Not offered this Academic Year)** In today's technologically advanced society, professionals are faced with situations that require more than technical knowledge, common sense, and good judgment. Many of the issues borne by the complexity of modern day life are not only interwoven but are multidimensional. One of these dimensions is ethics. To illustrate how ethics, technology, and society intersect, this course offers case-based situations where students will learn from well-documented cases how to engage ethics principles in the decision making process, and how to put into practice the experience gained in the classroom from discussing various scenarios and from making one's own arguments. **CC:** SET

Sociology

SOC 100 - Introduction to Sociology

Course Units: 1

(Fall, Winter, Spring; Staff) The basic concepts and perspectives of sociology, including a survey of the major social institutions, social aspects of personality, and the processes of social interaction. **CC:** SOCS

SOC 201 - Social Data Analysis

Course Units: 1

(Same as PSC 220) The analysis of social science data. Emphasis on testing substantive hypotheses by means of computer data processing and statistical techniques. **Prerequisite(s):** SOC 100 **CC:** QMR

SOC 202 - Social Problems, Policy and Pop Culture

Course Units: 1

(Spring; Kaplan) Identification of social forces and cultural images of major social problems (i.e. substance abuse, violence, crime, pollution) and relevant social policies. **Prerequisite(s):** SOC 100

SOC 203 - Social Psychology

Course Units: 1

(Same as PSY 230) **(Fall, Winter, Spring; Staff)** **Prerequisite(s):** SOC 100

SOC 204 - Social Construction of Deviance

Course Units: 1

(Not offered this Academic Year) An examination of "deviance" as a sociological phenomenon, including how the deviant label develops and how those so labeled are treated and controlled. Crime, prostitution, witch persecutions, mental illness, and the shaping of sexual identities and preferences are investigated. **Prerequisite(s):** SOC 100

SOC 205 - Social Work and Human Services

Course Units: 1

(Not offered this Academic Year) The history of social services and the development of the profession of social work. Social problems and society's response to these problems will be investigated. **Prerequisite(s):** SOC 100

SOC 206 - Aging and Society

Course Units: 1

(Winter; Staff) The social, psychological, and economic consequences of aging, with an emphasis on successful aging. Social programs and policies for the aged are evaluated. **Prerequisite(s):** SOC 100

SOC 212 - The American Family and Cross-Cultural Perspectives

Course Units: 1

(Fall; Butler) This course examines historical and contemporary patterns of American family from cross-cultural perspectives. We explore the ways in which race/ethnicity, social class, gender roles, conflict and crisis, and the media influence family life. **Prerequisite(s):** SOC 100 **CC:** LCC

SOC 222 - Schools and Societies

Course Units: 1

(Not offered this Academic Year) Sociological analysis of education as an institution over time and across societies. **Prerequisite(s):** SOC 100

SOC 223 - Sociology of Religion

Course Units: 1

(Not offered this Academic Year) The role of religion and religious phenomena from an institutional, organizational, and individual perspective in contemporary and historical context, exploring the interplay between the public and private spheres. **Prerequisite(s):** SOC 100

SOC 224 - Sociology of Community

Course Units: 1

(Spring; Cotter) How communities and their residents respond to external environments and internal organization. A series of case studies of urban, rural, and suburban communities and their effect on social behavior is a focus. **Prerequisite(s):** SOC 100

SOC 228 - Sociology of Medicine

Course Units: 1

(Not offered this Academic Year) Sociological perspectives on health, illness, the health professions and institutions, including studies of the social components of disease and its distribution, doctor-patient relations, and alternative health-care systems. **Prerequisite(s):** SOC 100

SOC 230 - Sociology of the Black Community

Course Units: 1

(Not offered this Academic Year) This course is an introduction to African American society as revealed in the empirical literature of social sciences. Teaching and Learning in the context of this class will be multidimensional. You will learn about social structure and inequalities through readings, lectures, discussions, popular media examples, and field trips. Using these pedagogical strategies, our class will work as a learning community to explore contemporary issues relating to African American experiences. **Prerequisite(s):** SOC 100 **CC:** LCC

SOC 231 - Sex and Gender in American Society

Course Units: 1

(Not offered this Academic Year) An examination of gender and the social context of the behavior of men and women in contemporary American Society. **Prerequisite(s):** SOC 100

SOC 233 - Race, Class, and Gender in American Society

Course Units: 1

(Not offered this Academic Year) The issues of gender, race, and class as organizing principles within sociology. The course draws broadly from the critical tradition, which focuses on issues of power, control, opportunity, gender, and economic relations. **Prerequisite(s):** SOC 100 **CC:** LCC

SOC 240 - Political Sociology

Course Units: 1

(Same as PSC 284) **(Fall; Butler)** Explores issues of political power, domination, and legitimacy from a sociological perspective. Topics include the creation and maintenance of political power and the impact of political socialization. **Prerequisite(s):** SOC 100

SOC 260 - Demography: Population and Society

Course Units: 1

(Fall; Grigsby) An introduction to the study of human populations and the dynamics of birth, death and migration. Focus on how populations grow and decline and the implications for social policy in areas such as health, aging, social inequality, the environment, immigration and urban life. **Prerequisite(s):** SOC 100

SOC 261 - Crime and Justice in Society

Course Units: 1

(Not offered this Academic Year) The social construction of crime and delinquency as social and legal categories; perspectives on causation and consequences of the societal reaction to crime. **Prerequisite(s):** SOC 100

SOC 262 - Juvenile Delinquency

Course Units: 1

(Fall; Stablein) An overview of sociological theory and research concerning juvenile delinquency and youth culture. Analyzes causes of juvenile delinquency, current strategies to control delinquency, perceptions of youth crime and contemporary youth problems. In addition, the course considers the strategies young people historically employ to counter situations of deprivation, alienation, and isolation **Prerequisite(s):** SOC 100

SOC 270 - Social Movements, the Environment, and Society

Course Units: 1

(Same as PSC 283) **(Not offered this Academic Year)** The role of extra-governmental actors in the formation of public policy with a focus on environmental issues. The origins and development of social movements and the differences and similarities among these. Topics include the means by which such groups seek to influence policy and social practice and the outcomes of such attempts. **Prerequisite(s):** SOC 100

SOC 271 - Sociology of Disaster

Course Units: 1

(Spring; Grigsby) This course is an introduction to the sociological analysis of disasters. We will consider how sociologists conceptualize and theorize about disasters and the social and physical damage, death and injury, and economic loss they involve. Variations in the vulnerability of communities and particular social groups to such events will also be examined. **Prerequisite(s):** SOC 100

SOC 284 - Sociology of Women & Health

Course Units: 1

(Not offered this Academic Year) A critical introduction to the sociological analysis of issues in women's health in the contemporary United States, emphasizing how the key variables of gender, race & class structure access to health & well-being for women in our society. **Prerequisite(s):** SOC 100

SOC 285 - Food, Nutrition and Society

Course Units: 1

(Not offered this Academic Year) In this course we will explore the social construction of food and its emotional and cultural meaning. How do social structures, such as education, affect how we eat? Included in the topics addressed in this course are how gender, culture, socio-economic status, ethnicity, and media affect our food choices, nutrition, health and health care system. **Prerequisite(s):** SOC 100

SOC 290 - Personality, Media, and Society

Course Units: 1

(Fall; Kaplan) How social roles and group dynamics impact personality and group behavior. Agents of socialization, with particular emphasis on the media and their impact on individual and societal expectations and values, will also be examined. **Prerequisite(s):** SOC 100

SOC 295H - Sociology Honors Independent Project 1

Course Units: 0

SOC 296H - Sociology Honors Independent Project 2

Course Units: 1

SOC 300 - Quantitative Methods of Social Research

Course Units: 1

(Fall; Cotter) Identifying sociopolitical questions and developing hypotheses; designing research instruments (questionnaires); basic statistics and introduction to social science computer analysis.

SOC 302 - Qualitative Social Research Methods

Course Units: 1

(Same as PSC 222) **(Not offered this Academic Year)** Introduction to qualitative research methods. The course is equally concerned with research design, techniques for gathering data, ethics in research, and the translation of field data into text.

SOC 305 - History of Sociological Thought

Course Units: 1

(Winter; Goldner) The development of sociological theory, with particular emphasis on the works of Marx, Weber, Durkheim, Mead, Foucault, and Bourdieu, with a feminist critical analysis of each.

SOC 314 - America's War on Drugs: Culture, Conflict, & Social Policy

Course Units: 1

(Not offered this Academic Year) A critical evaluation of United States domestic and international drug policy. In this course, students will gain an understanding of domestic and international drug policy, and will apply a sociological perspective to understand the historic and current situational forces which shape America's War on Drugs. We will evaluate current drug control strategies and the inequalities that have emerged as a result. This course also offers an overview of America's international war on drugs and the role it plays in other parts of the world. **Prerequisite(s):** SOC 100

SOC 340 - Inequality and Mobility: From Penthouse to Poorhouse

Course Units: 1

(Not offered this Academic Year) The forms, causes, and consequences of social inequality. Topics include objective and ideological manifestations of trends and patterns in wealth, poverty, mobility, and welfare policy.

SOC 346 - Sociology of Black Women's Culture

Course Units: 1

(Spring; Butler) This course examines the socialization of black womanhood. We will explore how certain socio-historical norms shape black women's ideas about race, gender, class, sexuality, constructions of femininity, and public and private activism. Understanding the complexities of strategies of resistance to multiple and intersecting oppressions (race, class, gender, sexuality, etc.) forms the focus of the course. **Prerequisite(s):** Suggested: SOC 230, SOC 233, GSW 100 **CC: LCC**

SOC 359 - Environmental Policy and Resource Management

Course Units: 1

(Fall; Kaplan) An examination of environmental issues and problems such as acid rain, ocean dumping, and nuclear wastes, and the social forces that shape environmental policies.

SOC 360 - Domestic Violence

Course Units: 1

(Spring; Staff) A sociological examination of issues and questions raised by violence within American families. The public definition of family violence, subjective experiences of abusers and victims, social and individual causes and consequences of abuse, complexities and problems of social interventions.

SOC 362 - Family and Community Services

Course Units: 1

(Winter; Kaplan) An examination of the response of community organizations and services to family life. Particular issues will include spouse and child abuse, juvenile delinquency, teenage pregnancy, daycare, and family instability and mental health. Visits to community and human service organizations will also be arranged.

SOC 364 - Sex and Motherhood

Course Units: 1

(Spring; Grigsby) An analysis of selected issues in the regulation of human reproduction & family building, primarily from sociological and feminist perspectives. Topics such as birth control, abortion, adolescent pregnancy, infertility & pregnancy are examined in historical and cross-cultural contexts with particular focus on the variables of gender, class and race.

SOC 370 - Public Health Care Policy and Society

Course Units: 1

(Fall; Goldner) An overview of public health with emphasis on the impact of large-scale social and cultural forces on the health of the public. The epidemiology of selected diseases, injuries, and the addictive disorders; the health effects of exposure to environmental and work place toxins; the role of nutrition in health.

SOC 372 - Global Health

Course Units: 1

(Not offered this Academic Year) An in-depth survey of health care systems from a cross-cultural perspective, of particular interest to health care providers and practitioners and to students interested in comparative health care systems, particularly those planning to go on the Health Systems Term Abroad.

SOC 374 - Mental Health and Society

Course Units: 1

(Not offered this Academic Year) A general introduction to the social scientific study of mental health. Topics include theories of mental illness, epidemiology of mental illness, the social experience of being a mental patient, and contemporary issues in mental health.

SOC 385 - Internship in the Delivery of Human Services

Course Units: 1

(Spring; Kaplan) Designed to provide the student with work and research experience within a human service organization. Registration by application filed during fall term and by permission of instructor.

SOC 387T - Community Service Miniterm

Course Units: 1

An integrative learning experience that combines an intensive off-campus December service experience with academic inquiry and critical reflection about the social, political, cultural and economic issues in which such service is embedded. Current focus is hurricane recovery in Louisiana Gulf coast. Registration by application filed in spring term and permission of instructor. **CC: LCC**

SOC 450 - Environmental Services and Policy

Course Units: 1

(Winter; Kaplan) The focus of this seminar is on the implementation of different environmental policies. Internships or case studies of environmental organizations, including NYS Department of Environmental Conservation, are part of the course.

SOC 490 - Sociology Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Prerequisite(s): Permission of the department chair.

SOC 491 - Sociology Independent Study 2

Course Units: 1

SOC 492 - Sociology Independent Study 3

Course Units: 1

SOC 493 - Sociology Independent Study 4

Course Units: 1

SOC 494 - Sociology Independent Study 5

Course Units: 1

SOC 495 - Sociology Independent Study 6

Course Units: 1

SOC 496 - Sociology Independent Study 7

Course Units: 1

SOC 497 - Sociology Independent Study 8

Course Units: 1

SOC 498 - Sociology Senior Thesis 1

Course Units: 0

(Fall, Winter, Spring; Staff) Special project for senior majors. **Prerequisite(s):** Permission of the department chair.

SOC 499 - Sociology Senior Thesis 2

Course Units: 2

(Fall, Winter, Spring; Staff) Special project for senior majors. **Prerequisite(s):** Permission of the department chair.

Sophomore Research Seminar

SRS 200 - Sophomore Research Seminar

Course Units: 1

Ensures that students have an early hands-on experience thinking and working as an academic researcher. Note that students in the Scholars Program take the Scholars Research Seminar (SCH-150) after the Scholars Preceptorial.

Spanish

MLT 272 - Art and Politics in Spain: From the Civil War to Postfrancoism and Postmodernity

Course Units: 1

(Not offered this Academic Year) The impact that political events of this century in Spain have had on Spanish society and culture, as manifested in the arts in general and in literature in particular. **CC:** HUL

MLT 273 - Re-Viewing Spanish Cinema: From Dictators, Bullfighters and Flamenco to Nationalisms and Globalization

Course Units: 1

(Not offered this Academic Year) This course examines the works of such well-known artists/filmmakers as Medem, Almodovar, Bigas Luna, de la Iglesia, Amenabar, among others, who often directly engage with questions of "Spanishness," of the nature of regional and ethnic diversity and identities within Spain, and the place of these identities in the wider framework of filmmaking in Europe. Furthermore, it will also study popular cinema which has been successful in a national context under the Franco regime and since the coming of democracy in the 1970s. **CC:** HUM

MLT 281 - Screening Identities in Latin American Cinema

Course Units: 1

(Not offered this Academic Year) A survey of the main trends in film production in Latin America since the 1950s (Mexican Golden Age Cinema, Brazilian Cinema Novo, Cuban Imperfect Cinema, Mexican New Wave, the 1990's and beyond). Readings and discussions on issues of film history, aesthetics, representation and reception will frame our critical reflection on the construction of identities (inner-city youth, gender roles, masculinities, race and ethnicity, and US Latinos). **CC:** HUM, LCC

MLT 282 - North/South Relations and Diasporic Politics

Course Units: 1

(Not offered this Academic Year) This course explores the cultural and political interaction between North and South that historically has helped to define the geography of the Americas. As an interdisciplinary course, North/South will draw students into ongoing debates about linguistic and intercultural exchange and conflict within hemispheric politics. **CC:** HUM, LCC

MLT 283 - Beyond the Sunny Paradise: Literature and Politics in the Caribbean

Course Units: 1

(Not offered this Academic Year) An interdisciplinary study of Caribbean literature focusing on the political history of the region from 1898 to the present. Pan-Caribbean literary survey (Alvarez, Arenas, Bosch, Cartagena- Portalatin, Zobel, Danticat, Ferre, Kincaid, Naipaul, Santos-Febres, Ana Lydia Vega, among others). Besides the literary texts, films and substantive readings will contribute to an examination of five main topics: Legacies of Colonialism; Race and Ethnicity; Constructed Identities; U.S. Dominance and Interventionism; and Caribbean Diaspora. **CC:** HUL, LCC

MLT 284 - Popular Religion and Politics in Latin America

Course Units: 1

(Not offered this Academic Year) In this course we will examine the connection between politics and popular religions in Latin America, taking a critical view of several of their manifestations without losing track of the language and "sciences" historically used to describe them. We will engage biblical, anthropological, videographic, ethnohistorical and cultural theory texts as well as oral histories and collective memories. The final goal is to tease out those ideas that have traditionally defined the terms in which we understand and explain the "popular" in religious behavior; to understand

better the conflicted relationship between "popular" cultural and institutional spaces; and finally to understand why the evolution of popular religions in Latin America cannot be examined without also taking into account their political economy. **CC:** HUL, LCC

MLT 286T - Gender and Identity in Contemporary Brazilian Cinema

Course Units: 1

(Not offered this Academic Year) The course is a survey of contemporary Brazilian cinema focusing on issues of representation, reception and spectatorship, and construction of (national, cultural, gender, and racial) identity. Besides the films, reviews and substantive readings will contribute to an examination of five main topics: 1) Constructions of Gender; 2) Representations of National Identity; 3) Race and Class; 4) Queer Images; and, 5) Imagining Marginality. All films studied in class will link two or more of these topics. **CC:** HUM, LCC

MLT 287 - Filming Margins: Cinema Verité and Social Realism in Latin America

Course Units: 1

(Not offered this Academic Year) This course studies different styles of documentary and realist film making from Latin America. It looks critically and with a "film-eye" at the aesthetics and socio-political meanings of conventional and experimental documentary films dealing with marginalized peoples and their representation, such as Bunuel's *Los Olvidados* (1950), Hector Babenco's *Pixote* (1981) and Fernando Meirelles' *City of God* (2002), and others. **CC:** HUM, LCC

MLT 288 - Torture and Dictatorship in Latin American Literature

Course Units: 1

(Not offered this Academic Year) This course is an exploration of Latin-American literature in the twentieth century with a particular focus on the Dirty War in Argentina (1976-1983) and the early years after the military coups in Uruguay and Chile during the same time period. Readings include texts by writers who stayed in Argentina and Chile and who wrote under the confines of censorship, texts by exiled writers and essays theories of violence, torture and censorship. The class will also include viewings and analysis of films related to the events in those countries. We will also discuss the gendering of nation, the government and the victims-and will study the phenomenon of nation and people as the feminine "body" on which the male government exacts its control and punishment. We will also analyze the contrasts between literature written under the constraints of censorship, and that of exile. **CC:** HUL, LCC

MLT 289 - Literature of the Mexican-American Border

Course Units: 1

(Not offered this Academic Year) This is a class in literature, film and essays from both sides of the Mexican-American border. This course is designed to give students an under-standing of the complexities of the history, culture and sense of identity of residents from both sides. The class will be discussion based and will focus on the close readings of novels, poems, short stories and plays. **CC:** HUL, LCC

MLT 293 - Made in New York: Puerto Rican and Dominican Transnational Identities in American Literature & Cinema

Course Units: 1

(Winter; Staff) The course is a survey of the cultural production and representation of the Dominican and Puerto Rican communities in New York City from the late 1950's to the present. Through the analysis of literary texts (narrative, poetry, theater) and films, students are encouraged to reflect on the forging of transnational identities and other issues (race, cultural identity, gender and masculinities) related to these two Caribbean diasporic communities in the U.S., and on the politics of their representation within the American cultural economy. **CC:** HUL, LCC

MLT 294 - Generation X: Global Youth Culture in Fiction and Film

Course Units: 1

(Not offered this Academic Year) In this course we will examine the production of Generation X literature and culture worldwide. We will begin the course by gaining an understanding of the roots and meaning of "Generation X" since the US post-war period, to its various outgrowths around the world. We will examine how the axis of a "GenX" consciousness plays itself out in countries around the world in narrative, film, art, and music. Possible authors, artists and directors include Canadian Douglas Coupland, American Richard Linklater, Spaniard Ray Loriga, Chilean Alberto Fuguet, Bolivian Edmundo Paz-Soldan, Australians Andrew McGahan and Justine Ettler, Icelandic author Hallgrímur Helgason, British artist Sarah Lucas, Chinese writers Mian Mian and Wei Hui, Russian Viktor Pelevin, Czech writer Jáchym Topol, and others. In this course, students will create their own short films through a careful, task-by-task research and creative idea generation process, they will receive training using iMovie, and they will learn about the ethical and lawful use of digital media material. For MLT Spanish credit, students must engage in a research / film project related to the Hispanic world. **CC:** HUM, LCC

SPN 100 - Basic Spanish 1

Course Units: 1

(Fall; Staff) An introduction to the study of the Spanish language and culture through listening, speaking, reading, and writing. No prior knowledge of Spanish is required. Attendance of weekly sessions with the language assistant is required. **CC:** HUM

SPN 101 - Basic Spanish 2

Course Units: 1

(Winter; Staff) A continuation of Spanish 1. This course further develops all language skills. **Prerequisite(s):** SPN 100 or two years of Spanish at high school level. Attendance of weekly sessions with the language assistant is required. **CC:** LCCS, HUM

SPN 102 - Basic Spanish 3

Course Units: 1

(Spring; Staff) A continuation of Spanish 2. This course further develops all language skills. **Prerequisite(s):** SPN 101 or three years of Spanish at high school level. Attendance of weekly sessions with the language assistant is required. **CC:** LCCS, HUM

SPN 200 - Intermediate Spanish 1

Course Units: 1

(Fall, Winter, Spring; Staff) Intensive and accelerated grammar review, and vocabulary growth. Further development of conversation and writing skills based on cultural texts. **Prerequisite(s):** SPN 102 or equivalent or four years of secondary school Spanish. **CC:** LCCS, HUM

SPN 201 - Intermediate Spanish 2

Course Units: 1

(Fall, Winter, Spring; Staff) Continuation of the intensive and accelerated grammar review and vocabulary growth initiated in the previous course. Further development of conversation and writing skills based on cultural and literary texts. **Prerequisite(s):** SPN 200 or AP Spanish credit in high school **CC:** LCCS, HUM

SPN 202 - Intermediate Spanish 3

Course Units: 1

(Fall, Winter, Spring; Staff) Continuation of the intensive and accelerated grammar review and vocabulary growth initiated in the previous course. Further development of conversation and writing skills based on literary texts. **Prerequisite(s):** SPN 201 or a score of 3+ on AP Spanish exam. **CC:** LCCS, HUM

SPN 203 - Advanced Spanish

Course Units: 1

(Fall, Winter, Spring; Staff) The course emphasizes the further development of composition and writing skills using the process-writing approach. Writing production will consist of expository and creative pieces based on cultural and literary readings. **Prerequisite(s):** SPN 202 or permission of the instructor. **CC:** LCCS, HUM

SPN 204T - The Spanish Language Studied Abroad 1

Course Units: 1

(Fall; Staff) See International Programs.

SPN 205T - The Spanish Language Studied Abroad 2

Course Units: 1

(Not offered this Academic Year) See International Programs.

SPN 206T - The Spanish Language Studied Abroad 3

Course Units: 1

(Not offered this Academic Year) See International Programs.

SPN 207T - The Spanish Language Studied Abroad 4

Course Units: 1

(Not offered this Academic Year) See International Programs.

SPN 208T - Spanish Civilization

Course Units: 1

(Not offered this Academic Year) See International Programs.

SPN 209T - Mexican Civilization

Course Units: 1

(Not offered this Academic Year)

SPN 250T - The Spanish Language Studied Independently Abroad 1

Course Units: 1

SPN 251T - The Spanish Language Studied Independently Abroad 2

Course Units: 1

SPN 295H - Spanish Honors Independent Study 1

Course Units: 0

SPN 296H - Spanish Honors Independent Study 2

Course Units: 1

SPN 301 - Pop, Punk, and Rock & Roll: Spanish Generation X Writers of the 1990s and the Mass Media

Course Units: 1

(Not offered this Academic Year) In this course we will study the narrative of the youngest generation of writers in Spain, those born after 1960 and publishing in the 1990s. We will examine their works in relation to the influence of the mass media on the construction of subject identities. How does the mass media and popular culture contribute to the self-definition of contemporary bodies? How does it infuse Generation X's writing on a thematic and a technical level? We will answer these questions through repeated literary analysis of short stories by authors like Josan Hatero, Juan Bonilla, Marta Sanz, and Nuria Barrio and of novels like Amor, curiosidad, prozac y dudas by Lucia Etxebarria, and La pistola de mi hermano by Ray Loriga. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 304 - Performing Identities in Contemporary Spanish Theater

Course Units: 1

(Not offered this Academic Year) Representative works by Spain's leading playwrights from the 1930's to the present (Garcia Lorca, Sastre, Buero Vallejo, Muniz, Arrabal, Lopez Rubio, Cabal, Pedrero, Diosdado, Onetti) are studied from diverse theoretical approaches to reflect on the performative nature of identities. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 306 - Spanish Mutant Fictioneers: Mutant Fiction & Media Mutations in Twenty- First Century Spanish Literature

Course Units: 1

(Not offered this Academic Year) The contemporary authors known as the Mutantes are well-connected and savvy users of new media and social networking sites. They maintain their own web pages, they write blogs, they produce videos, book trailers, electronic hypertexts, and post photographs on Flickr. They directly address and dialogue with their fans and foes alike. This course examines how authors such as Agustin Fernandez Mallo, Jorge Carrion, Alberto Olmos, Juan Francisco Ferre, Javier Fernandez, among others use new media technologies to mutate words in print and print across media platforms. To understand the role of media in print, this course includes a series of hands-on workshops and a series of digital assignments. Students will read, watch, and analyze the work of these authors by engaging in research projects, reading short stories, book chapters, newspaper articles, blogs, and watching trailers, presentations, even spoken word DJ performances. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUM

SPN 311 - Otherness and Citizenship in Contemporary Spanish Theater and Cinema

Course Units: 1

(Not offered this Academic Year) An introduction to the study of the dramatic and film genres through the analysis and discussion of contemporary works by Spanish playwrights (Alonso deSantos, Moral, Onetti, Pedrero) and filmmakers (Almodovar, Bollain, De la Iglesia, Leon de Aranoa, Pons, Uribe). Theoretical readings and diverse critical approaches to theater and cinema frame the course around the portrayal of the Other (women, North African and Latin American immigrants, LGBT communities, Roma people, and the poor). The analysis of primary texts will center on how the authors/directors weave representations of difference into narratives of nationhood, engaging in cultural and political debates about citizenship. The course also aims to familiarize students with Spanish visual culture and performance from "la Movida" (immediate post-Franco period) to the new millennium. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUM

SPN 312T - Immigration in Spanish Cinema

Course Units: 1

This course will examine the filmic representation of migration in Spain in the context of contemporary European debates related to cultural, economic, and political change. The course seeks as well to grasp more clearly immigration's racial, gender, sexual, religious, and other identity locations, as the Spanish nation and the people that inhabit its borders negotiate-often in paradoxical ways-national and social proximity with demographic realities. The course will analyze miscellaneous printed (newspapers, magazines, literary and economic-political texts) and visual media (virtual and not) dealing with the topic of migration in the context of re-settlement and human rights and institutional, cultural, and national beliefs. **CC:** LCCS

SPN 325 - Staging Conflict: Studies in One-Act Mexican Theater

Course Units: 1

(Not offered this Academic Year) This course surveys contemporary one-act Mexican theater focusing on the theatrical devices, trends, and discourses adopted by playwrights to explore conflictive issues in Mexican society and culture: urban violence, generational clashes within the family, sexual diversity, gender roles, consumerism, among others. The course offers an introduction to the study of drama and the analysis of theatrical signs, and it attempts to complement the students' term abroad experience in Mexico by focusing on and contextualizing linguistic and cultural aspects in the texts. Students read texts by Emilio Carballido, Victor Hugo Rascon Banda, Sabina Berman, Hugo Salcedo, among others. **SPN 203** or permission of the instructor. **CC:** LCCS, HUL

SPN 326 - Women Weaving Histories: Short Narratives by Latin American Female Writers

Course Units: 1

(Not offered this Academic Year) We will focus on short stories written in the 20th century by women throughout the Latin American region, including Isabel Allende (Chile), Elena Poniatowska (Mexico), Luisa Velenzuela (Argentina), Rosario Ferre (Puerto Rico), Laura Antillano (Venezuela), Maria Teresa Solaris (Peru), Helena Araujo (Colombia), Clarice Lispector (Brasil), Claribel Alegria (El Salvador/Nicaragua), among others. We will examine how these women have fictionalized their political and social realities and called into question the myths surrounding their

existence; how their narratives subvert notions of national history, and of female identity and sexuality in relation to private and public spaces. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 327 - The Nation at Home: Family and Nationhood in Spanish American Theater

Course Units: 1

(Not offered this Academic Year) An introduction to the study of the dramatic genre through the analysis and discussion of representative works by Spanish American playwrights (Triana, Wolff, Diaz, Gambaro, Arguelles, Berman, Canales, among others). Theoretical readings and diverse critical approaches to theater frame the course around the representation of family as a microcosm in which narratives of nationhood are contested, revised, and imagined. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 328 - Inquiring Latin American Identities: Reading Context, Space & Cultural Artifacts

Course Units: 1

(Not offered this Academic Year) This course reflects on how Latin American identities are constructed through the lenses of written, visual, and oral texts. Latin-American cultural identities are conceived as processes initiated and sustained by the merging of radically different cultures that framed and continue to shape people's lives.. Particularly, the course explores the impact of gender relations, ethnicity, urban spaces, cultural practices and beliefs on identity. Substantive theoretical readings will complement the assignments. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUM

SPN 329 - Interruptions: The Paradox of Tradition in Spanish American Poetry

Course Units: 1

(Not offered this Academic Year) Octavio Paz describes modern literature as a "tradition of discontinuity," one that constantly rebels against itself in search of innovation. This course examines Paz's assertion through the study of foundational Spanish American poets. As we read and discuss each poet's contribution to modern literature we will also study the characteristics that manifest a Spanish American poetic tradition. The course's objectives are centered on strengthening student's process of language acquisition, developing analytical skills, and reinforcing writing proficiency through reading poetry. Students will also have the opportunity to share their knowledge and collaborate in a learning community through in-class discussion and oral presentations. SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 330 - Mexican Women's Contemporary Short Fiction

Course Units: 1

(Not offered this Academic Year) This course focuses on Mexican women's contemporary short fiction. Its analytical structure centers on reading stories from three anthologies that deal with three of the most significant formative female experiences in contemporary Latin-American societies: the mother, the family, and schools. The axis of conversation and analysis follows a feminist theoretical path while keeping in mind also local cultural, social and economic realities, racial and ethnic identities, and temporal specificities. SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 332 - An Introduction to Afro-Hispanic Literatures and Cultures

Course Units: 1

(Spring; Staff) This course exposes students, through selected readings dealing with the black experience in Latin America, to African diaspora literature particular to Spanish-speaking regions. It bridges various genres and artistic media (narrative, poetry, drama, film, music) in order to provide a general sense - aesthetic, material and cultural, theoretical and cross-temporal - of different manners in which black diasporic expressions have intervened in the re-creation, transformation, and interrogation of African-derived identities in Latin America. As such, this course examines

these expressions as locutions that problematize and enrich our perceptions of social, cultural, economic, religious, gender, and sexual social orders and identities related to the black experience. SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 350 - Visions and Voices: Chicana Icons from Myth to Matter

Course Units: 1

(Not offered this Academic Year) La Virgen de Guadalupe, La Malinche, and Frida Kahlo surround us on a daily basis. We see them in our dreams and in ourselves; they are repeatedly embodied in contemporary life and art. In this course we will discuss the historical significance of these three figures in dialogue with feminist reappropriations of their iconic value in contemporary literature, art, and culture. We will examine how musicians, visual artists, poets, narrators, and playwrights reclaim the iconic significance of these women and give them new voice and body in order to reposition and redefine the sexual and social identities of contemporary women. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 351 - Border Identities

Course Units: 1

(Not offered this Academic Year) This course explores Chicano culture through essays, literature, and films that represent current and historical issues of the Mexican-American border. Readings will provide research and data, while literary texts and films will offer varying interpretations and representation of the border culture that will allow you to consider critically the complexities of 20th and 21st century issues that include immigration, working conditions, socio-economic status, the role of women, and identity. The course should also help you improve your proficiency in Spanish at all levels: building vocabulary, speaking, listening, reading, and writing. **Prerequisite(s):** Take SPN 203 or any other 300-level Spanish course. **CC:** LCCS, HUL

SPN 352 - Imagining Latino & Latina Identities

Course Units: 1

(Winter; Staff) This course is an introduction to contemporary US Latino/a literature with a focus on Cuban-Americans, Dominican-Americans, Mexican-Americans/Chicanos, and Puerto Ricans. We will study representative works of various genres (narrative, drama, poetry, and film) within their cultural context. Our exploration of US Latino/a production seeks to reflect on the plurality and diversity of (self-) representation and the various ways in which Latin@ authors and artists imagine and construct their identities and communities in the United States. In addition to acquainting students with significant works of US Latino/a literature, the course seeks to strengthen reading ability and sharpening writing and critical skills. Class discussions and writing assignments are in Spanish. **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 360 - Spanish Communication: Speaking and Writing in Contemporary Settings

Course Units: 1

(Fall; Staff) The goal of this course is to build oral proficiency in Spanish at advanced levels. Oral communication will be supported by readings and intensive writing in the target language. Acquisition of linguistically and culturally appropriate oral skills will allow students to communicate successfully in academic and professional settings as well as daily life. **CC:** LCCS, HUM

SPN 375 - Dreams, Mirages and Delusions in Peninsular and Latin American Fiction

Course Units: 1

(Spring; Staff) This course examines the complex relationships between author, character, and audience and explores representations of reality through the subconscious, the magical real and the unreal. Readings include texts by Cervantes, Borges, García Lorca, García Márquez, Cortázar, and Ana Lydia Vega **Prerequisite(s):** SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 376 - Down to Earth: Cross-Cultural Explorations of the Hispanic World

Course Units: 1

(Not offered this Academic Year) This course furthers the development of cultural competency while maximizing language skills and providing the foundation for further studies in language, literature, and culture. "Down to Earth" broadens students' knowledge of the Spanish-speaking world by focusing on shared past and present issues affecting people living in similar geographic regions. **CC:** LCCS, HUM

SPN 380 - What's Love Got to Do with It: Gender and Nation in Hispanic and US Latino Literatures

Course Units: 1

(Not offered this Academic Year) An introduction to the study of literary genres thematically anchored in the intersection of gender dynamics, national politics, and the construction of identity (sexual, cultural, national). Students will read narrative, poetry, and drama from Spain, Spanish-America, and U.S. Latino communities. Theoretical readings and diverse critical approaches to literature frame the course around the portrayal of romantic/sexual relationships that acquire broader dimensions when scrutinized from the perspective of gender and national politics. How are gender and sexual identities inscribed in national identity? How cultural artifacts project and reflect the gendered body of the nation? SPN 203 or permission of the instructor. **CC:** LCCS, HUL

SPN 381 - Hauntings in Hispanic Fiction

Course Units: 1

(Not offered this Academic Year) Ghost stories evoke both fear and delight in readers, listeners, or viewers. But beyond entertaining us, tales of haunting can reveal memories, traumas, and social figures that an individual or society has repressed or maybe just never noticed before. For example, a ghostly apparition may serve to remind a nation of historical violence that it has sought to forget. Or it may represent the return of a marginalized social figure silenced in the past and clamoring to be heard in the present. In this course we will explore haunting as a theoretical concept and storytelling device. To do so we will analyze a variety of ghostly narratives - both literary and cinematic - from the Hispanic world. As we summon these fictional phantoms and work to interpret their messages, we will situate each text within its particular cultural, sociopolitical, and intellectual contexts. **Prerequisite(s):** SPN 203 **CC:** HUM, HUL, LCCS

SPN 400 - Don Quixote

Course Units: 1

(Not offered this Academic Year) This course explores what is considered the first modern novel: its place within the historical and literary context of the time it was written, the complexities of the narrative, and its continued popularity 400 years after its initial publication. Related articles will provide background information and points of departure for discussion. By the end of the course students will have better knowledge of the period known as the Golden Age of Spanish literature, the Renaissance in Spain, and the famous text itself; and they will recognize the international influence the book has had on the arts around the world. **Prerequisite(s):** Any two 300-level Spanish courses, or any 400-level Spanish courses. **CC:** LCCS, HUL

SPN 401 - Bodies and Power in Latin American Narrative

Course Units: 1

(Not offered this Academic Year) We will examine through narrative and film the metaphoric use of the body in literature and how it represents the effects of political and socio-economic power. We will read texts by Manuel Puig, Gabriel Garcia Marquez, Laura Esquivel, among others. **Prerequisite(s):** Two 300-level courses. **CC:** LCCS, HUL

SPN 402 - Dressing Up the Canon: Cross-Dressing in Hispanic Literature and Film

Course Units: 1

(Not offered this Academic Year) The course is a survey of literary and cinematic texts in the Hispanic world that adopt cross-dressing as a subversive device to reflect on and deal with the questioning of authority at various arenas (gender roles, sexual and national identities, politics, and cultural hegemony). Authors and directors such as Juana Inés de la Cruz, García Lorca, Luis Riaza, Paloma Pedrero, Isaac Chocrón, Diana Raznovich, Arturo Ripstein, and Pedro Almodóvar will be studied, as well as critical theory readings that will frame the class discussions.

Prerequisite(s): Two 300-level courses. **CC:** LCCS, HUL

SPN 406 - Film of the Mexican American Border

Course Units: 1

(Winter; Staff) Through the study of 9 films, students will gain an understanding of cinematic techniques and the ways in which the directors of these films use them to convey differing perspectives of the Mexican-American border, with emphasis on the Mexican side. The films will be presented thematically in reference to the border as the perceived locus of perversion and violence, emigration/immigration, and identity. Readings for the course will come from texts on film, and from book chapters and articles. By the end of the term students will have a better understanding of the history and social dynamics of the Mexican- American border. They will also better understand how to "read" film through different theoretical approaches. They will also be able to discuss and write analytically about what a director does and why. **CC:** LCCS, HUM

SPN 407 - Cultures in Contact (and Conflict) in Contemporary Spain

Course Units: 1

(Not offered this Academic Year) What does it mean to be a national of a country? And who is included in that definition? By analyzing the specific case of Spain, in this course we will discover that the answers to these questions are complex and multiple. We will study literature, film, music, and television shows from three culturally and linguistically distinct regions of Spain: Galicia, Catalonia, and the Basque Country. In our analyses of these works we will discuss the key components of national identity, including language, traditions, geography, historical memory, political repression and violence, and gender. In the final unit we will explore how immigration and Spain's relationship to the European Union are challenging traditional definitions of the nation. **Prerequisite(s):** Take any two 300-level Spanish courses.

CC: LCCS, HUL

SPN 409 - Rebels with a Cause: Contemporary Spanish Youth Culture 1975-2010

Course Units: 1

(Not offered this Academic Year) This course examines fiction and film of Spanish writers and directors from 1975 to 2010. Students consider critical perspectives on the development and expression of youth from the Spanish Movida (1975-85), Generation X (1990-2000), and the Mutantes (2000-2010). What are the socio-historical and cultural developments that have influenced these groups of writers? How have they reacted and represented their social realities? How did they define their identities, question and rebel against society? To what degree did North American popular and commercial culture and developments in media technologies infuse their storytelling practices on thematic and technical levels? Students in this course will read short stories and extracts from novels, magazines and newspaper articles, they will watch films and YouTube clips, write blogs and papers. **Prerequisite(s):** Two 300-level courses. **CC:** LCCS, HUL

SPN 415 - What Remains: Waste in Latin American Cinema, Literature, Media, and Art

Course Units: 1

(Not offered this Academic Year) This course examines the presence and impact of trash, disposed objects and life, and landfills/wastelands in the context of expiry, renewal, and globalization in Latin America. Borrowing from philosophy and urban sociology and anthropology, Latin American, cultural, media and cinema, and environmental studies, the course teases out the aesthetic, political, and economic aspects of "trash" as an intricate stockpile of modern, industrial, digital, and postindustrial traces of discarded and remnant history as well as a multifaceted symbolic index with

particular trajectories and manifestations in Latin America contexts. The course will revisit cultish films like *Amores Perros* (González Iñárritu, 2000) and lesser known films like *La sociedad del semáforo* (Mendoza, 2010) and *Buscando a Miguel* (Fisher, 2006); examine Photography work by Manuel Álvarez Bravo, Miguel Río Branco, and Enrique Meinitides and conceptual art by Teresa Margolles and Doris Salcedo, among others; explore documentary and environmental work looking at waste, neoliberalism, and recovered and precarious life such as *Sequía* (Sánchez Macías, 2009), *Cartoneros* (Livón-Grosman, 2006), *Lixo extraordinario* (Walker, Jardim, Harly 2010), *El tren blanco* (García, Pérez Giménez y García, 2003), and *Yasuní: dos segundos de vida* (Leonardo Wild, 2010); and finally, analyze select literary and alternative initiatives related to "basura" (Ibargoyen, Bolaños, Restrepo, editorial Eloisa Cartonera, Spregelburd, among others). **Prerequisite(s):** Take two SPN-300 level courses. **CC:** LCCS, HUM

SPN 417 - Death and Revenge in the Southern Cone

Course Units: 1

(Not offered this Academic Year) This course explores the literature of the Dirty War in Argentina, Uruguay, and of the early years of the Pinochet regime in Chile. Through analysis of narrative, theater and film we will touch upon the effects of torture and terrorism on society in those countries during the early 1970's through the mid 1980's. The class will read texts and view films written and produced under heavy censorship, and those written and produced in exile. We will also examine themes of revenge either by exiled writers or by those who can write more freely after a change in government. We will read texts by Marta Traba, Luisa Valenzuela, Diana Raznovich, Eduardo Pavlovsky, Ariel Dorfman, and others. Films will include *Camila* and *Death and the Maiden*. **Prerequisite(s):** Two 300-level courses. **CC:** LCCS, HUL

SPN 418 - Of Cock Fights and Crowded Elevators: Readings in Contemporary Mexican Theater

Course Units: 1

(Not offered this Academic Year) Readings in contemporary Mexican theater that seek to explore how Mexican playwrights stage, perform, and imagine the nation and their communities either contesting or legitimizing hegemonic narratives of cultural uniformity, normative gender and sexual roles, and a cohesive political state. We will analyze dramatic texts by Luisa Josefina Hernández, Hugo Argüelles, Leonor Azcárate, Tomás Urtusástegui, Dante del Castillo, Jesús González Dávila, Sabina Berman, Hugo Salcedo, among others. **Prerequisite(s):** Two 300-level courses. **CC:** LCCS, HUL

SPN 431 - Colonial Latin America 1492-1800

Course Units: 1

(Not offered this Academic Year) This course examines the complex array of European, indigenous, mestizo and African recordings of the encounter between Europeans, slaves and native Americans that started in the fifteenth century; and at the colonization and subsequent reconfiguration and displacement of individuals, communities, and their cultures. The course analyzes in some detail the historical and theoretical issues arising from this trans- Atlantic collision and exchange, a diverse historiographic and literary production that heralded and bore witness to the many ways in which the various peoples of, and involved in, the creation of the Americas documented, perceived, and imagined the old and the new, themselves and others. We will read travel journals, poetry, drama, histories, ethnographies, and other types of textual/visual production such as films and codices. **Prerequisite(s):** Two 300-level courses. **CC:** LCCS, HUL

SPN 432 - Islands Adrift: Race, Politics, and Diasporas in the Hispanic Caribbean

Course Units: 1

(Spring; Staff) Introduction to the literatures and cultures of Cuba, Dominican Republic, and Puerto Rico centering on how the region continues to approach its development tempered by an array of colonial legacies—from the slave plantation system to globalization—that impact on social, political, economic, and cultural dynamics. Diverse critical approaches will frame the analysis of literary, visual, and musical texts by Luis Pales Matos, Nicolas Guillen, Pedro Mir, Heberto Padilla, Tomas Gutierrez Alea, Aida Cartagena Portalatin, Celia Cruz, Ana Lydia Vega, Juan Luis Guerra, Reinaldo Arenas, Mayra Montero, among others. **Prerequisite(s):** Two 300-level courses. **CC:** LCCS, HUL

SPN 433 - Latin American Colonial Crossroads at the Movies

Course Units: 1

(Not offered this Academic Year) This course explores critically filmic approaches to colonial Latin American literature and history. Its main objectives are to analyze films preoccupied with historical events and life in colonial times, to engage the filmic representation of the cultural, political, and religious encounters and tensions informing our desire to revisit contact among Amerindians, African slaves and Europeans, and to familiarize students with debates pertaining to reconstructing the colonial past for contemporary consumption. **Prerequisite(s):** Two 300-level courses. **CC:** LCCS, HUM

SPN 473 - Re-Viewing Spanish Cinema

Course Units: 1

(Spring; Staff) This course examines the works of such well known artists/filmmakers as Medem, Almodóvar, Bigas Luna, de la Iglesia, and Aménabar, among others, who often directly engage with questions of "Spanishness," of the nature of regional and ethnic diversity and identities within Spain, and the place of these identities in the wider framework of filmmaking in Europe. Furthermore, it will also study popular cinema which has been successful in a national context under the Franco regime and since the coming of democracy in the 1970s. **Prerequisite(s):** Two 300-level courses **CC:** LCCS, HUM

SPN 489 - Honors Senior Seminar

Course Units: 1

(Spring; Staff) For seniors who qualify for departmental honors; please contact the department during the Winter term. **CC:** LCCS

SPN 490 - Spanish Independent Study 1

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in the field of Spanish or Spanish-American literature. **Prerequisite(s):** At least one course in Spanish at the 400-level and permission of the instructor.

SPN 491 - Spanish Independent Study 2

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in the field of Spanish or Spanish-American literature. **Prerequisite(s):** At least one course in Spanish at the 400-level and permission of the instructor.

SPN 492 - Spanish Independent Study 3

Course Units: 1

(Fall, Winter, Spring; Staff) Individual directed readings in the field of Spanish or Spanish-American literature. **Prerequisite(s):** At least one course in Spanish at the 400-level and permission of the instructor.

Statistics

STA 064 - (MTH-064) Statistical Thinking

Course Units: 1

(Not offered this Academic Year) Seeks to provide the conceptual foundation and analytical skills required to understand a complex, data-rich and uncertain world, and to navigate through the daily bombardment of data from all sides. Significant emphasis is given to understanding the difficulties in acquiring high-quality data, before moving on to graphical and statistical analysis of data, in order to draw actionable conclusions. **CC:** QMR
Note: Not open to students who have passed STA 104, ECO 243, MER 301, or PSY 200

STA 104 - (MTH-104) Introduction to Statistics

Course Units: 1

(Winter; Staff) This course is intended to provide the conceptual foundations, and also analytical skills, for students to be able to quantify uncertainty, and further, to make rational decisions in the face of uncertainty. It addresses collection of high-quality data, basic statistical analysis of such data, including use of computer software, and drawing actionable conclusions from analyses. These conclusions include understanding the limitations of statistical analyses. The integration of subject matter knowledge with data analysis within the sequential cycle of scientific inquiry will be emphasized. This course is also intended to prepare students for more advanced statistics courses, such as those in experimental design or regression analysis. **CC:** QMR **Note:** Not open to students who have passed STA 064, STA 164, STA 264, MER 301, ECO 243, or PSY 200

STA 128 - Probability

Course Units: 1

(Winter; Staff) (Same as MTH 128) Probability theory and applications. **Prerequisite(s):** MTH 102, MTH 112, or MTH 113

STA 164 - (MTH 164) Strategies of Experimentation: Statistical Design and Analysis of Experiments

Course Units: 1

(Spring; Staff) Experimentation is at the heart of the scientific method, both in the physical and social sciences. Not only do experiments validate or disprove existing hypotheses, but often unexpected results lead to the development of new hypotheses and new theoretical understanding. This course will focus on strategies to accelerate the scientific method when experimenting with multiple variables. Specific topics include design options, such as simple comparative experiments, factorials and fractional factorials, and response surface designs, as well as analysis methods such as graphical methods, analysis of variance, and regression models. **Prerequisite(s):** STA 104 (MTH 104), MER 301, ECO 243, PSY 200 or STA 128 (MTH 128) or permission from the Chair.

STA 264 - (MTH 264) Regression Analysis

Course Units: 1

(Winter; Staff) Regression analysis is one of the most important and influential methods in statistics, finding application in virtually all disciplines, from business to healthcare to sociology to the hard sciences. This course will cover both the science of regression analysis - its underlying mathematical theory, as well as the art of its practical application. The course project will involve development of a regression model to fit a real data set. Lectures will be given primarily in matrix notation, i.e., using linear algebra. While the course will not be all-encompassing in itself due to time constraints, it would be good preparation for more advanced modeling courses involving data mining, machine learning, "Big Data", and so on. Prior understanding of statistical concepts is assumed **Prerequisite(s):** MTH 115 and STA 104, ECO 243, STA 164 (MTH 164), or PSY 200, or permission from Chair.

STA 295H - Statistics Honors Independent Project 1

Course Units: 0

STA 296H - Statistics Honors Independent Project 2

Course Units: 1

STA 364 - Big Data Analytics

Course Units: 1

(Spring; Staff) This course focuses on the analysis of large data sets in diverse application areas using statistical programming languages. Students will develop an understanding of the role of machine learning methods within the context of the scientific method. They will analyze real data sets using downloadable statistical programming packages, including on a course project of their own choosing. This analysis will include exploratory data analysis, visualization, and use of more sophisticated classification and predictive algorithms including nearest neighbor, naïve Bayes, classification and regression trees (CART), neural networks, and others. During the course we will pay special attention to validating models using the "train and test" regimen, as well as through cross validation and bootstrapping. In the process of studying the machine learning methods themselves, students will develop an ability to manipulate big data to accomplish the previous objectives. This includes downloading, merging, appending and reshaping data, and creating new variables. Successful completion of this course would be advantageous for those considering graduate study or employment in the areas of statistics, data science, machine learning, computer science, econometrics, or related disciplines.

Prerequisite(s): STA 264 or ECO 243 or permission from Chair.

STA 490 - Statistics Independent Study

Course Units: 1

(Fall, Winter, Spring; Staff) Independent study in a particular area of statistics under the supervision of a faculty member. **Note:** Subject to faculty availability and Chair approval.

Prizes, Honors, and Scholarships

Endowed and Annual Prizes

William F. Allen (1895) Essay Prize. To a senior in any department for the best essay.

Ronald K. Amiraian (1980) Memorial Prize. To a student of modern languages who has performed with distinction on a Union Term Abroad.

Andrew W. Archibald (1872) Prize. To the senior earning a Bachelor of Arts degree with the highest scholastic standing.

Frank Bailey (1885) Prize. To the senior who has rendered the greatest service to the College in any field.

Arnold I. Bittleman Memorial Prize. To a student who has studied drawing in the Visual Arts department and whose work, in the judgment of the Visual Arts faculty in collaboration with an outside juror, is outstanding.

Fletcher (1947) and Grace Blanchard Memorial Prize in Bioengineering. To a senior who has excelled in Bioengineering.

William H. Bloom, M.D. (1945) and Jonathan R. Bloom (1988) Poetry Prize. For the best poems or series of poems by an undergraduate.

Hans Hainebach Memorial Prize in German Literature. To a sophomore or junior who has demonstrated particular promise as a student of German literature.

Hans Hainebach Memorial Prize in Judaica. To a student who has offered the best performance in the field of Judaica.

Hedda Hainebach Memorial Prize in Music and Theater. Alternating annually between music and theater, to the best performer of classical music as a soloist, with accompanist or with a group; or to a student who has written the best short play or to the best actor or actress.

Edward Everett Hale, Jr. Prize. For the best essay written by a sophomore or junior.

Joel A. Halpern (1961) Prize. To a student or students who have reached out beyond the campus to make a commitment in service to the community

Oswald Heck (1924)-Irwin Steingut Prize. To the student who has consistently done the best work in Political Science.

Eugene W. Hellmich (1923) Memorial Prize. To seniors who demonstrate excellence in mathematics and are planning to teach math.

Victor Herbert Prize. To the student who shows the most promise of making a contribution to American music.

Albert Hill Recognition Award. To a senior who has held a leadership position and has demonstrated exceptional commitment to enhancing the college community.

Kurt W. Hillig (1975) Biochemistry Prize. To a senior who demonstrates outstanding work, ability, and promise in biochemistry.

Julian B. Hoffman, M.D. Memorial Award. To the student (preferably premedical) for distinguished interest, devotion, and contribution to the arts and/or intellectual climate at Union College.

Hollander Convocation Music Prize. To a musician or ensemble for musical performance.

Roger H. Hull Community Service Award. To a senior who has rendered the greatest sustained service to the greater Schenectady Community and who has initiated or is actively engaged in an ongoing community service project.

Charles B. Hurd Prize. To a student of physical chemistry.

Albert C. Ingham (1847) Prize. To the student in the Social Sciences judged to have done the most outstanding piece of scholarly work.

Ingvar V. Ingvarsson Prize. To a senior in electrical engineering chosen for high scholarship.

John Iwanik Prize. To an outstanding Russian language student.

William B. Jaffe (1926) Art Award. For exceptional achievement by an art major, marked by excellence in the study of art history, independent scholarship, and interest in the work of the department.

William B. Jaffe (1926) Athletic Award. To the member of the graduating class to be the outstanding athlete of the year, taking into account the character and motivation of the individual in addition to athletic excellence.

Thomas J. Judson (1966) Memorial Book Prize. To a sophomore who has shown academic excellence as well as sincere interest in the study of modern languages.

David S. Kaplan (1982) Prize. To a student applying to participate in a term abroad. Preference to students majoring in political science.

Warner King (1906) Prize. To the senior in engineering who has contributed most to the traditions and ideals of the College.

Ethel Kirchenbaum Memorial Prize. To the senior who, in the opinion of the Engineering Departments, shall be deemed to possess the best potential for furthering the ideals of the engineering profession.

Harold A. Larrabee Prize. To the student who has done the best work in philosophy during the year.

William E. Lasnik (1968) Prize. To a junior or senior premedical student on the basis of scholarship and character.

Anthony C. LaVecchia (1998) Memorial Award. To a student who demonstrates a keen interest and passion in journalism, especially with a focus in political journalism.

Stephen F. Leo, M.D. (1884) Prize. To the premedical student on scholarship who attained the highest grades in the graduating class and who has been accepted in medical school.

Alice P. and Donald C. Loughry (1952) Prizes. To students completing the best senior projects in computer science, computer engineering, and electrical engineering.

Edith Emilee MacCoy Prize. To the student who excels in botany.

John Lewis March Prize. To a senior who has shown increased interest and ability in psychology during the final two years of college.

Minerva Prize. Awarded to the female student whose work best combines the scholarly study of women or gender with activities that enhance the life of women on campus.

Lewis Henry Morgan (1840) Prize. To the anthropology major who produces the best senior thesis.

R. E. Morgan Memorial Award. To a senior in computer engineering chosen for high scholarship.

Harold and Ellen Nagorsky Memorial Prize. Awarded to a premedical junior student who contributes the most to the Union College community through extracurricular activities.

Alvin F. Nitchman (1924) Prize. To the most promising senior who plans to attend law school.

Ronald M. Obenzinger (1961) Prize. To a premedical student who is selected for high academic merit and personal worthiness.

Robert G. O'Neale (1878) Prize. To a Bachelor of Arts candidate with the highest standing in Classics.

Hans Pasch Memorial Prize. Awarded for the best essay written about the Holocaust.

Elias Peissner Prize. To an economics major who has done work of outstanding merit.

William A. Pike Memorial (1960) Trophy. To a junior for attitude, ability, participation, and achievement in intercollegiate sports.

President's Commission on the Status of Women at Union College Prizes. To seniors who have contributed significantly to promoting equality between the sexes on campus in areas such as scholarship, college and community service, and athletics.

Daniel F. Pullman Prizes. To a senior of high scholastic standing in Humanities and Engineering.

Rennes Lecturer/Lectrice Prize. To a senior planning to serve as a lecturer or lectrice pursuant to Union College's teacher exchange program in Rennes, France.

Martin Terry Resch Prize. To the senior who shows the greatest promise for advanced study in pure or applied mathematics.

Mrs. Edwin L. Rich Prize. To a student majoring in English who has demonstrated outstanding scholarship.

Charles Alexander Richmond Prizes. One for excellence in the fine arts, the other for excellence in the appreciation of music.

Robert B. Ridings Award. To a senior female athlete for her attitude, ability, participation, and achievement in intercollegiate sports.

Paul Rieschick (1974) Prize. In appreciation of the time and effort he devoted to the basketball program and individual players.

Mark Rosenthal (1976) Memorial Prize. To a senior involved in community activities, in good academic standing and planning to attend medical school after graduation.

Rotary Foundation Endowed Prize for International Study. To the senior who shows the greatest promise and interest in an area of international relations. Preference to a student from Schenectady County.

Robert L. Royal (1938) Award. To a financially deserving student who has been accepted by Albany Medical College, to be applied to the purchase of instruments and equipment necessary to medical studies.

Mortimer F. Sayre Prize. To the senior with the best potential for furthering the ideals of the mechanical engineering profession.

Calvin G. Schmidt (1951) Prize. To the member of the junior class who has contributed most to the betterment of student life on campus.

J. Richard Shanebrook Prize. To a student of any religious tradition who has contributed the most to the betterment of religious life on campus.

Daniel Shocket (1972) Memorial Award. To a student majoring in English with a strong interest in creative writing.

Aime Simon (1991) Term Abroad Prize. To students of high academic standing and promise with strong interests in French studies, participating in a term abroad program in a French-speaking country.

Edward S.C. Smith Geology Prize. To a senior majoring in geology who demonstrates high professional potential.

Freling H. Smith (1865) Prize. To the History major with the best senior thesis.

Dr. Reuben Sorkin (1933) Award for Proficiency in Premedical Studies. To a senior demonstrating proficiency in undergraduate studies with an outstanding aptitude for continuing work leading to a degree in medicine.

Ralph W. Stearns (1907) Prize. To the outstanding student or students in electrical or computer engineering.

Milton Hymes Sternfeld (1916) Prize. For the best original essay in philosophy by a member of the senior class.

Roger Thayer Stone (1928) Prize. To the sociology major who produces the best senior thesis.

William W. Thomas Award in French and Francophone Studies. To a senior who has excelled in and contributed most to French and Francophone Studies on the basis of academic, personal and extracurricular achievement

Charles M. Tidmarch Prize. To a senior political science student.

Frances Travis Award. To a student who is working his or her way through college and who has demonstrated unusual responsibility and self-reliance.

James Henry Turnbull (1929) Prize. To a sophomore student who excelled in physics.

UNITAS Diversity Leadership Award. To the student who has made a significant contribution toward fostering diversity on campus.

Wessel Ten Broeck Van Orden (1839) Prize. To a first-year student excelling in English composition.

Edward Vilella, L.H.D. 1991 Prize. To the student for the best dance performance.

David Wagenseil (1978) Memorial Award. To a senior fraternity man for outstanding participation and leadership in intramural sports.

Horatio G. Warner (1826) Prize. To a student of high personal character who has the highest scholastic standing in the Bachelor of Arts program.

Mildred Wilder Prize. To the senior majoring in political science who has written the best piece of scholarly work pertaining to the subject of women and politics.

George H. Williams Prize. To a graduating senior for excellence in Computer Science.

Lee and William Wrubel Memorial Prize. To a senior preparing for dentistry or medicine, based upon both academic achievement and character.

Eugene I. Yudis (1955) Prize. To the student in any class who has produced the best piece of prose fiction.

Special Awards and Prizes

John Bigelow Medal (2008). Recognizes friends of the College who have contributed to the advancement of humanity.

Eliphalet Nott Medal. Established by President Roger H. Hull. Recognizes the perseverance of alumni who have attained great distinction in their fields. The medal is named for Eliphalet Nott, president of Union College from 1804 to 1866.

Founders Medal. Established by action of the Board of Trustees in 1968. Presented at irregular intervals in recognition of unusual and distinguished service to Union College in a particular area of institutional life.

Gideon Hawley Teacher Recognition Award: Nominated by first-year and sophomore Union College students, to a secondary school teacher who has made a difference in their lives.

John H. Jenkins Award. Awarded for the best bibliography or bibliographical work published during the year, or for a bibliographical research project of significance while in process of preparation. Determination of the recipient of the award shall be at the sole discretion of Union College or such agents as it shall engage.

Stillman Prize. To a faculty member to encourage outstanding teaching.

UNITAS Community-Building Award. To the Union College student, administrator, staff or faculty member who best demonstrates leadership in bringing together as many segments as possible of the campus community for purposes such as community service, fundraising for a worthy cause or celebration of College history.

Endowed Scholarships

The scholarships listed below are available to qualified students in any course of study unless there is a notation to the contrary.

Stephen C. Ainlay and Judith Gardner Ainlay Scholarship. Established by the Board of Trustees in honor of President Stephen C. Ainlay and Judith Gardner Ainlay. For students who have demonstrated need but are also eligible for a merit award, whose attendance at Union will enhance the diversity of the College..

Robert Carter Alexander (1880) Memorial Scholarship. The gift of friends in memory of Robert Carter Alexander, Class of 1880, a lawyer, journalist, and life trustee of Union. Income awarded as a scholarship to encourage academic excellence in classical studies.

Floyd E. Allen (1909) Memorial Scholarship. Established by Helen M. Allen in memory of her husband, Floyd, Class of 1909, a graduate engineer, to establish a scholarship in the Division of Engineering.

William Allen (1895) Scholarship. The gift of Judge William Allen, Class of 1895.

Ann and Bruce Allison Scholarship. Established by Robert M. DeMichele, Class of 1966, a life member of the Board of Trustees of Union College. Preference given to a high academic achieving member of the men's lacrosse team.

Alpha Delta Phi Scholarship. Established in 1998 by Union College and Alpha Delta Phi. Awarded annually to students majoring in English or the humanities.

Alumni Graduate Council Scholarship. (Previously named "Graduate Council Scholarship"). Established by the Graduate Council (now called Alumni Council) at its meeting October 13, 1935, reserving income from the Losee estate for this purpose.

Carlos Alvarez (1982) Memorial Scholarship. Created from the gifts of the Kappa Sigma brothers and friends.

Ronald Amiraian (1980) Memorial Scholarship. Established by Dr. and Mrs. Kenneth Amiraian in honor of their son, Ronald, Class of 1980. Preference to modern language students participating in the Terms Abroad program.

A.M. and S.M. Anderson Scholarship. Created by A. Melcher Anderson, Class of 1945, and his wife, Shirley M. Anderson. Preference shall be given to students majoring in engineering and related technologies, or in the natural sciences including physics, chemistry and mathematics.

Albert E. Anderson (1950) Endowed Scholarship. Established by Joan Anderson, widow of Albert E. Anderson, for students with financial need, with first preference given to members of Alpha Delta Phi; second preference to a student majoring in economics or history.

Cecil E. Angell (1941) and Jane S. Angell Memorial Scholarship. Created in memory of Cecil E. Angell, Class of 1941, by his family and friends. Income awarded annually to students pursuing courses in engineering who require financial assistance.

Applegarth Memorial Scholarship. Created from the bequest of Lillian E. Applegarth, former secretary and assistant to several Union College presidents, in memory of William R. Applegarth, Gladys M. Applegarth, and Lillian E. Applegarth.

Jeremy April (2005) Memorial Scholarship. Created from the gifts of Union College and the April family and friends.

Michael J. Arato Memorial Endowed Scholarship. Established by Michael Arato, M.D. (1980) for students requiring financial assistance to attend Union College.

Arkell Hall Foundation Scholarship. A gift of The Arkell Hall Foundation in memory of Bertell Arkell Barbour. Income used to aid a student or students selected on the basis of character, financial need, and academic performance. Further qualifications in order of priority are: (1) students from

the Canajoharie (N.Y.) Central School District; (2) students from other parts of Montgomery County; (3) students from the general area of New York State.

Clarence S. Arms (1905) Scholarship. The gift of Clarence S. Arms, Class of 1905, an engineer in the steel and wire industry and a leading consultant on wire mills in Europe, the United States, and Canada. Preference to a deserving applicant from Sidney (N.Y.) High School.

Thomas Armstrong (1871) Scholarship. The gift of Thomas Armstrong of Plattsburgh, N.Y. Restricted to residents of Clinton County.

R. Douglas Arnold (1972) Scholarship. Created from the gifts of R. Douglas Arnold, Class of 1972.

Robert D. Arnold (1941) & Miriam H. Arnold Endowed Scholarship. A gift from the estate of Robert & Miriam Arnold.

Thomas E. Axelson Endowed Scholarship. For qualified students based upon need and merit.

Brayton R. Babcock Memorial Scholarship. The gift of Brayton R. Babcock, Jr., in memory of his father, Brayton Babcock, Class of 1893.

Marian A. Baciewicz (1977) Memorial Scholarship. Established by Mr. and Mrs. Frank A. Baciewicz in memory of their daughter, Marian, Class of 1977. Annual income awarded on the basis of need to a female member of Union's senior class whose goal is furthering human understanding. Preference to a female student studying biology, chemistry, or biochemistry.

Frank Bailey, Jr., Fund. A gift from Dr. and Mrs. Frank Bailey, in memory of their son, class of 1931 who died during his senior year in Union. Preference will be given to members of the Alpha Delta Phi Fraternity.

Frank Bailey, Jr., (1931) Memorial Fund. A gift from the members of the Class of 1931 in memory of their classmate, Frank Bailey, Jr., and contributed to by the Bailey family. Frank Bailey, Jr., died a few days before his class graduated. He was the son of Frank Bailey, Class of 1885, long-time treasurer of Union College and a life trustee.

James F. Bailey (1999) Endowed Scholarship. Created from the gifts of the Bailey family in memory of James F. Bailey '99, for students who require financial assistance to attend Union College.

Richard M. Baird (1930) Scholarship. Created from the gifts of Richard M. Baird, Class of 1930.

May I.C. Baker Scholarship. The gift of Mrs. Harriet C. Moore in memory of her sister, Mrs. Walter C. Baker. Income awarded to a student pursuing a course of study in humanities. May I.C. Baker was the wife of Walter C. Baker, Class of 1915, a past chairman of the Board of Trustees and a life trustee of the College.

May I.C. Baker Scholarship. The gift of Mrs. Anna C. Newberry in memory of her sister, Mrs. Walter C. Baker. Income awarded to a student pursuing a course of study in humanities.

Walter C. Baker (1915) Scholarship. Established by Walter C. Baker, Class of 1915, a member of the Board of Trustees of Union College.

Walter R.G. Baker (1916) Scholarship. Established by the Baker Charitable Foundation in honor and memory of Walter R.G. Baker, Class of 1916. Preference to students pursuing a degree in engineering.

Thomas A. Baltay (1987) Memorial Scholarship. Established by Charles Baltay, Class of 1958 in memory of his son, Thomas, Class of 1987.

Barandes Scholarship. (Formerly the Max and Helen B. Barandes Scholarship) Created from the gifts of Gerald Barandes, Class of 1954, Dr. Martin Barandes, Class of 1959, and Robert Barandes, Class of 1969 in honor of their parents.

Richard I. Barstow (1929) Scholarship. Established by Richard I. Barstow, Class of 1929.

Dr. David J. Becker (1979) Scholarship. Created from the gifts of Dr. David J. Becker, Class of 1979, on the occasion of his 25th Class ReUnion.

Stanley R. Becker (1940) Scholarship. Created from the bequest of Stanley R. Becker, Class of 1940. Awarded to junior and seniors majoring in political science.

John W. Belanger Scholarship. Created by the bequest of John W. Belanger, a former trustee. Awarded to students pursuing courses in engineering.

Randi Sue Bell (1985) Scholarship. Established in memory of Randi S. Bell, Class of 1985 through gifts of her family and friends.

Rett (1964) and Michele Benedict Endowed Scholarship. Created from the gifts of Rettig P. Benedict Jr, a member of the class of 1964, and his wife, Michele A. Benedict. Awarded to students who are majoring in either the fine arts and/or the physical sciences.

Ralph D. Bennett (1921) Scholarship. Established by his family and friends. Mr. Bennett was a trustee of the College from 1946 to 1994. Preference to students pursuing courses in engineering or physics.

Mitchell D. Bernstein (1985) Memorial Endowed Scholarship. Created from the gifts of Richard B. Bernstein in memory of his son, Mitchell D. Bernstein, a member of the Class of 1985. Awarded to students with a strong interest in theater arts as demonstrated by a major or minor in Theater.

John A. Best (1898) Memorial Scholarship. Created by gifts of Harriet and Elizabeth Best, in memory of their father, with income awarded annually to humanities students.

Gertrude Robinson-Bianchi Scholarship. Created from the gifts of Gertrude Robinson Bianchi.

Alfred F.H. Bischoff (1935) Scholarship. Established by Alfred F.H. Bischoff, Class of 1935. Preference is given to students majoring in electrical engineering.

Shelley Carol Blank Endowed Scholarship. Created from the gifts of Howard Blank, Class of 1970, and Giovannina Perrone to support a student who demonstrates financial need.

Milton Blatt Memorial Scholarship. Created by Gustave L. Davis, MD, Class of 1959, and his wife, Susan, in memory of Milton Blatt. Preference to graduates of public high schools in the five boroughs of New York City.

Anne E. Blodgett and Harold E. Blodgett (1911) Scholarship Fund. Established under the will of Harold E. Blodgett, Class of 1911. Primary consideration to students from Schenectady County.

Catherine A. Blodgett Memorial Scholarship. The gift of Harold E. Blodgett, Class of 1911 to establish a scholarship fund in memory of his mother, Catherine Ann Blodgett. First preference to residents of Herkimer and Fulton counties in New York.

James Seymour Blodgett Memorial Scholarship. Established by Harold E. Blodgett, Class of 1911 in memory of his father. Preference to students from Schenectady County.

Professor Joseph B. Board Endowed Scholarship. Established by family and friends of Professor Joseph B. Board, the Robert Porter Patterson Professor of Political Science from 1965-2003. A committee of political science faculty will choose the recipient.

Esther Levitz Bocian and Emanuel H. Bocian (1908) Scholarships. Established by Emanuel H. Bocian in memory of his wife, Esther Levitz Bocian, and himself, to be used for two scholarships awarded at the discretion of the president of Union College.

Madison E. Brainard, Class of 1911, Memorial Scholarship. Established by the estate of Lucille Clancy.

Donald C. Brate (1945) Scholarship. Established by Donald C. Brate, Class of 1945, with preference to students pursuing a degree in engineering.

David A. Braver Memorial Scholarship. Established by Andrew Braver, Class of 1991 and Marcie Daniels Braver, Class of 1989. Preference to students from the Northeast of the United States, studying liberal arts.

David M. Brind (1982) Scholarship. Established in memory of David M. Brind, Class of 1982, a pre-law student. Awarded to juniors or seniors who possess a love of the outdoors, particularly as expressed through active participation in field and stream activities, with second preference for students who plan a career in law.

Bronner Family Endowed Scholarship. Established by Frederick Van Voorhees Bronner (1946) for students who require financial assistance to attend Union College, with preferences for students from the state of Florida.

Stephen P. Brown (1953) Scholarship. Created from the gifts of Herbert R. and Charlotte L. Cooper, sister of Stephen P. Brown '53. Preference will be given to students who are U.S. citizens.

Fred W. Bruhn (1932) Endowed Scholarship. Established by members of the family of the late Fred W. Bruhn '32. Preference will be given to students who are members of the Men's Baseball and Women's Softball Teams.

Meade Brunet (1916) Scholarship. A gift of Meade Brunet, LLD, Class of 1916, a member and former chairman of the Board of Trustees of Union College. It is hoped that recipients of the scholarship will repay the grant within ten years of graduation. Preference first to students from Petersburg, VA, then to students from Richmond, VA, finally to students from the State of Virginia.

William E. Bruyn and Beatrice V. Bruyn Endowment Fund. A bequest from Beatrice V. Bruyn in memory of her husband, William, and herself. First preference to students from families in Ulster County, N.Y.

Joseph and Antoinette Bucci Memorial Scholarship. Created from the gifts of Cesare A. Bucci, Class of 1951.

Gary R. Burch M.D. (1962) Scholarship. Created by Elizabeth Burch in memory of her late husband, a commissioned medical officer in the Army.

Roger N. Burgess (1938). A gift from the estate of Roger N. Burgess, Class of 1938.

Andrew M. Burke (2005) Endowed Scholarship. Established by Dr. Linda Rachele Burke, parent of Andrew M. Burke '05', for students with financial need who major in Computer Science or Engineering.

Louis Calder Foundation Scholarship. Created by the Louis Calder Foundation. Preference to students from the five boroughs of the City of New York.

Edward D. Cammarota (1937) Scholarship. Created by Edward D. Cammarota, Class of 1937. First preference to students whose families reside in Schenectady County.

Michael R. Cappiello (1939) Scholarship. Established by Michael R. Cappiello, Class of 1939, and awarded to an entering first-year student. Preference will be given in the following order: (1) students who are residents of Bourne or Wareham, Mass.; (2) students who are children of members of the Ancient & Honorable Artillery Co. of Massachusetts.

William (1974) and Barbara (Dewey) (1975) Carmody Endowed Scholarship. Created to honor Bill Scanlon, Head Basketball Coach at Union College for 23 years with the most wins in Union basketball history. Income awarded to a student with financial need who demonstrates the teaching and leadership qualities that Coach Scanlon personifies.

Josephine C. and Bryan L. Carpenter (1921) Scholarship. Created from the gifts of Josephine C. Carpenter, in memory of her husband, Bryan L. Carpenter, Class of 1921).

Todd M. Carr (1977) Memorial Scholarship. Established in memory of Todd Carr, Class of 1977, through the efforts of classmate Charles Flanagan to honor the courage and example set by Todd in his battle against Lou Gehrig's disease. Income is awarded to a student selected on the basis of character, financial need, academic performance, and extracurricular activities.

Edward L. Carroll (1927) Scholarship. A gift from a trust established by Edward L. Carroll, Class of 1927, to students studying theater, fine arts, or music.

Edward W. Carsky (1950) Scholarship. Established by Edward W. Carsky, Class of 1950, to benefit an incoming first-year student who is a graduate of Johnstown High School, Johnstown, N.Y.

Bradford H. (1952) and Margery S. Cauvet Endowed Scholarship. Created from the gifts of Bradford H. '52 and Margery S. Cauvet, for students requiring financial assistance to attend Union College.

David (1959) and Elaine Chapnick Scholarship. Created from the gifts of David Chapnick, Class of 1959, and his wife, Elaine. Preference to students studying history and liberal arts.

Roland David Ciaranello M.D. (1965) Scholarship. Created from the gifts of Roland and Carmella Ciaranello in memory of their son, Roland, Class of 1965. Preference to pre-med students living in Schenectady County.

Adam F. Ciesinski (1941) Scholarship. Established by Stephen J. Ciesinski, Class of 1970, and his brothers and sisters in honor of their father, Adam Ciesinski, Class of 1941.

George W. Clark (1942) Endowed Scholarship. Preference given to students from Clinton County, NY giving consideration to those with need, scholastic ability, reliability, diligent work habits and responsibility.

Travis J. (2000) & Shanna Putnam Clark (2000) Memorial Scholarship. Established by family, friends and members of the Union community in memory of Travis J. and Shanna Putnam Clark, members of the Class of 2000.

Gaylord Judd Clarke (1859) Scholarships. Established by Mrs. Anna L. Giles in honor of her father, Gaylord Judd Clarke (1859), a lawyer and a journalist.

Class of 1895 Scholarship. Gifts from members of the Class of 1895.

Class of 1912 Scholarship. Gifts from members of the Class of 1912.

Class of 1920 Scholarship. Gifts from members of the Class of 1920.

Class of 1936 Scholarship. Part of the General Pooled Endowment Funds of the College; no restrictions on use.

Class of 1937 Memorial Scholarship. A memorial to classmates who lost their lives in World War II. Preference to descendants of members of the class.

Class of 1950 Scholarship. Gifts from members of the Class of 1950.

Class of 1951 Scholarship. Gifts from members of the Class of 1951.

Class of 1952 C. William (1934) and Lee H. Huntley Memorial Scholarship. Gifts from members of the Class of 1952.

Class of 1956 John A. Davidson (1956) Memorial Scholarship. Established by members of the Class of 1956 on the occasion of their 50th ReUnion in memory of their classmate and friend, John A. Davidson, Class of 1956.

Class of 1957 Endowed Scholarship. Established by members of the Class of 1957 for students who require financial assistance to attend Union College, with preference given to descendants of a member of the Class of 1957.

Class of 1958 Donald T. Stadtmuller Memorial Scholarship. Created by members of the Class of 1958 in memory of their classmate Donald T. Stadtmuller. Awarded to students of diverse interests.

Class of 1960 Endowed Scholarship. Established by members of the Class of 1960 in honor of their 50th Reunion, with first preference given to a sophomore who has earned a place on the Dean's List and who also makes significant contributions to campus life outside of the classroom and in the community.

Class of 1961 Endowed Scholarship. Established by members of the Class of 1961 on honor of their 50th Reunion, for students who require financial assistance to attend Union College.

John C. (1975) and Eileen S. Clegg Scholarship. Created from the gifts of Eileen S. Clegg, in memory of her husband, John C. Clegg, member of the Class of 1975. Preference shall be given to students with electrical engineering majors.

David James (1942) and Doris Nord Clowe Memorial Endowed Scholarship. Established by Kevin Nord Clowe 72' in honor of his parents and other family members who have attended Union. For students with financial need with preference given to those interested in studying literature or history.

Student Assistance Fund in Memory of Henry J. Clute. The bequest of Anna Clute Newcomb in memory of her father, Henry J. Clute.

Elaine and Myron J. Cohn (1932) Scholarship. Created by Myron J. Cohn, Class of 1932.

Morris Mandel Cohn (1921) Scholarship. Created from the gifts of Dr. Cohn's two children, Jay N. Cohn, M.D., Class of 1952 and Grayce Cohn Cohen. Preference shall be given to students from the Capital District of New York who have an interest in studying environmental science.

William T. Colburn (1979) and Susan T. Marcolina, MD, FACP (1980) Scholarship. Created by William T. Colburn and Susan T. Marcolina. Preference shall be given to students pursuing careers in science and technology fields.

Robert C. Connell (1942) Memorial Scholarship. Created by James Cushing in memory of his long-time friend.

Connolly Family Endowed Scholarship. Created by Thomas (1989) and Laura Connolly to benefit students who are in need of financial aid and are from one of the five boroughs of New York City.

Continuing Education Fund. Established to encourage the "nontraditional" student who engages in academic pursuits through the continuing education undergraduate program. A student may attend classes part-time or full-time in the evening program or as a special student in the day program.

Harry Cook (1906) Memorial Scholarship. The gift of Harry Cook, Class of 1906, and his wife, Lavinia. Income awarded as a scholarship. Harry Cook was a lawyer practicing in Albany, N.Y.

Gerald F. Cooke (1973) and Cooke Family Scholarship. Created from the gifts of Estelle Cooke-Sampson, Class of 1974 and Lawrence E. Cooke, Class of 1977 in memory of their brother, Gerald Cooke. Preference will be given to African American students.

Harris Lee Cooke Scholarship. Established by Lucy E. Williams, in memory of Harris Lee Cooke, her brother. Mr. Cooke practiced law in Cooperstown, N.Y., for forty-five years and was awarded an honorary Doctor of Humane Letters degree in 1934.

Frances King Corrigan Scholarship. Established from the gifts of Joseph Corrigan, Class of 1929 in memory of his wife. Income awarded annually to physically handicapped students.

Leslie F. Couch (1952) Scholarship. Created by Leslie F. Couch, Class of 1952.

CPS Chemical, Inc. Scholarship. Established from a gift from CPS Chemical, Inc. for deserving biology major students.

Professors Edward Craig and Yu Chang Merit Scholarship. Created from the gifts of David M. Madden, Class of 1984, on the occasion of his 20th ReUnion, honoring Professors Craig and Chang. Preference shall be given to students majoring in electrical and/or computer engineering.

Eugene G. Crippen (1919) Memorial Scholarship. Established by Eva Hayes Crippen in memory of her husband, Eugene, Class of 1919, who pioneered in the development of radio and electronic communications before becoming a teacher of aeronautics in the Civil Service Administration. Preference to a promising student pursuing a course leading to a career in aeronautical engineering, electrical engineering, or medicine.

Clarence Livingston Crofts (1872) Memorial Scholarship. The gift of Frederick S. Crofts, in memory of his father, Clarence Livingston Crofts. Frederick S. Crofts, a publisher and journalist in New York City, received an honorary degree of Doctor of Humane Letters in 1939.

William J. Curtin (1982) Scholarship. Created from the gifts of William J. Curtin, Class of 1982. Preference to students from Potsdam, N.Y.

Oscar and Elva Dahlquist Memorial Scholarship. Established by Donna E.D. Phillips, Class of 1979, in memory of her parents.

Charles A. Dana Scholarships. Established by a grant from The Charles A. Dana Foundation for students who have completed at least one year of college and who have demonstrated leadership in college and/or community activities.

Dr. Richard G. Day (1939) Memorial Scholarship. Established by the family and friends of Dr. Day. Preference given to students majoring in pre-med.

Harold S. and Margaret N. Deal Memorial Scholarship. Created from the estate of Margaret N. Deal. Preference shall be given to students who have interest in a career in pharmacy and who are majoring either in biochemistry or pre-health programs.

Kenneth B. Dean (1948) and Susanne Dean Endowed Scholarship. Created from the gift of Susanne Dean in memory of her husband Kenneth, Class of 1948, for students who require financial assistance to attend Union College.

Leslie J. De Groot (1948) and Elyse D. De Groot (1980) Endowed Scholarship. Created from the gift of Leslie De Groot, Class of 1948, for students who require financial assistance to attend Union College.

Judith G. Dein (1976) & Alan M. Reisch (1975) Scholarship. Created from the gift of Judith G. Dein and Alan M. Reisch. Preference shall be given to students majoring in political science.

Burton and Violet Delack Scholarship. Created from the gifts of the Delack family in memory of Burton B. Delack, Class of 1936, and his late wife, Violet. Preference shall be given to undergraduates who are from Schenectady and Niskayuna.

Edward I. Devlin (1881) Memorial Scholarship. The gift of Jean Dickson Devlin in memory of her husband, Edward, Class of 1881. Annual income used to award a scholarship or scholarships.

Dewar Scholarship. Established by the Dewar Foundation, Inc. Preference to graduates of Oneonta (N.Y.) Senior High School.

William Thompson Dewart Scholarship. The gift of William Thompson Dewart for a scholarship in his name.

Harry K. Dewitt (1928) Endowed Scholarship. Award to students who require financial assistance.

Louis M. DiCarlo (1932) Scholarship. Established by Dr. DiCarlo during his fiftieth reunion year for a scholarship for humanities students who demonstrate potential for making contributions to the improvement of the quality of human life.

Corey Dietrich (2013) and Darby Dietrich (2016) Endowed Scholarship. Established by Martin A. and Susan Dietrich for students requiring financial assistance to attend Union College.

Janine N. Donikian Scholarship. Created in her honor by her brother, Andre R. Donikian, Class of 1965, and Dr. Marc Donikian, her father. Awarded to students from the state of Indiana and adjoining Midwestern states.

Molly Stark and André R. Donikian (1965) Scholarship. Created from the gifts of Molly S. and Andre R. Donikian, Class of 1965. Preference will be given to students who are planning to continue studies at Albany Law School.

C. E. Donnellon Fund. The gift of C. E. Donnellon, a friend of Union College, made out of friendship for Frank Bailey, Class of 1885, who was a business associate.

Dr. Robert N. Downer (1966) and Martha E. Downer (1990) Scholarship. Established by gifts from Dr. Robert N. Downer, Class of 1966, and his daughter, Martha E. Downer, Class of 1990, in honor of Martha's graduation and the Bicentennial Campaign for Union College.

Anna Draves Great Expectations Scholarship. Created from the gift of John R. Draves, Class of 1948, in memory of his mother. Preference to promising and aspiring students with potential for attaining Union's academic standards and who have great financial need.

Esther C. and Oswald E. Drescher, Jr. Scholarship. Created from the gifts of John E. Drescher, Class of 1956, in honor of his mother and father.

Harwood Dudley (1875) Memorial Scholarship. The bequest of Frances Selmser Dudley, wife of Harwood Dudley, Class of 1875, a trustee of Union from 1908 until his death in 1915. Income awarded as a scholarship to a needy student who, at the end of the first year, has attained the highest scholastic average.

Thomas W. Duffy (1971) Scholarship. Created from the estate of Thomas W. Duffy, who was killed in the September 11, 2001 terrorist attack on the World Trade Center.

James M. Dunn (1912), M.D., Memorial Scholarship. Created by gifts from his wife, Marguerite Dunn, and awarded to a student or students pursuing a full-time course of study leading to a career in medicine.

Dr. Joseph H. Dusenbury (1945) Memorial Scholarship. Established by Mrs. Joseph H. Dusenbury in memory of her husband, Joseph, Class of 1945.

William H. Eagleson, Jr. (1929) Memorial Scholarship. Established by his widow, Mae Eagleson, for a scholarship in his memory for humanities students, including, but not necessarily limited to, history, philosophy, languages, linguistics, literature, archaeology, jurisprudence, history and criticism of the arts, ethics, comparative religion, and those aspects of the social sciences employing historical or philosophical approaches.

Edgar W. (1906) and Maude M. Earle Scholarship. A gift from a trust established by Edgar W. Earle, Class of 1906.

Early Alumni Endowed Scholarship. A compilation of the George F. Allison, Class of 1884; Richard M. Blatchford, Class of 1885; Donald Coulter, Class of 1915; and James A. Goodrich, Class of 1879; Alexander Duane, Class of 1878 funds.

William C. Eiseman (1945) & Burton Grusky (1951) Veterans Scholarship. Created from the gifts of Hope H. Eiseman and Robert R. Grusky (1979), to honor their fathers, both of whom graduated from Union and were Army veterans. Awarded to students who were formally active duty members in the United States of America's armed forces.

Dr. Edward Ellery Scholarship. Established by Rudolph A. Schatzel, Class of 1921, in memory of Dr. Edward Ellery, professor of chemistry (1905-1937) and dean of faculty (1918-1937) at Union College. Awarded annually to students pursuing courses in the sciences.

Eppler Family Scholarship. Established by Mr. and Mrs. Heinz Eppler to support the College's financial aid program.

Louis Epstein Scholarship. Established by Michael J. Epstein, Class of 1959, MD, in honor of his father, Louis Epstein.

Robert P. Ericson (1941) Scholarship. Preference to students wishing to study the classics.

Judson R. Escalante (1953) Scholarship. Established by gifts from Judson R. Escalante, Class of 1953 to students who are pursuing a course of study in the humanities and who demonstrate potential for making contributions to the improvement of the quality of human life.

Harry C. Ewens (1914) Endowed Scholarship. A gift from the estate of Harry & Dorothy Ewens.

Henry C. Fagal Scholarship. Created from gifts of Frederick F. Fagal, Class of 1938 and Janet Beardsley Fagal. First preference to students residing in the Schenectady area. Second preference to students from the Amsterdam area.

William and Adeline Fairlee Scholarship. Established by the bequest of Alvah Fairlee, Class of 1893 in memory of his parents. The donor was a Schenectady attorney who served as city judge and police justice.

David (1939) and Elynor Falk Scholarship. The gift of Elynor R. and David Falk, Class of 1939, MD, awarded to motivate a student to strive for continuing improvement in academic and personal development, with preference to a major in the biological sciences including but not limited to premedical preparation.

Elynor Rudnick Falk Endowed Scholarship. Established by David Falk, M.D. (1939), for students with financial need, with preference given to students majoring in engineering.

Samuel W. Farr (1938) Scholarship. Created from the gifts of Samuel W. Farr, Class of 1938.

Victor H. Fazio (1965) Scholarship. Established by Victor H. Fazio, Class of 1965. Preference to students planning to enter a career in public service.

Franklin L. Fero (1917) Scholarship. Established by a bequest from Franklin L. Fero, Class of 1917.

John H. Fisher, Jr. (1952) and Virginia M. Fisher Scholarship. Created from the gifts of Virginia M. Fisher in memory of her husband.

Roland V. (1943) and Nancy Fitzroy Scholarship. Established by Roland V. Fitzroy, Class of 1943 and given to students majoring in electrical engineering.

Edward P. Fliegel Endowed Scholarship. Created from the gifts of Edward P. Fliegel, Class of 1942, with first preference given to students who are from Fulton County, N.Y. and second preference given to students from either Montgomery County, N.Y. or Hamilton County, N.Y.

Dr. Leon B. Foote (1909) Memorial Scholarship. A bequest from the estate of Ruth Z. Foote, widow of Dr. Leon B. Foote, Class of 1909.

Dr. Dixon Ryan Fox Memorial Scholarship. The gift of friends and alumni of Union College made during the Sesquicentennial Campaign (1945-46) in memory of Dixon Ryan Fox, president of Union College from 1934-1945.

Dr. Dixon Ryan Fox Memorial Scholarship. The gift of Mrs. E. E. Gilbert of Schenectady, a friend of Union College, in memory of Dixon Ryan Fox, president of Union from 1934-45.

Helen Marlette Fox Scholarship. Created from the gift of Helen Marlette Fox, a former employee of the College, whose husband, Norman W. Fox, is a member of the Class of 1943.

Herbert O. Fox (1939) and Jean M. Fox Scholarship. Created from the gift of Jean M. Fox, in memory of her husband, Herbert O. Fox, Class of 1939. Mr. Fox was the son of Dixon Ryan Fox, Union College president from 1934-45.

Nicholas V.V. Franchot (1875) Memorial Scholarship. The gift of Mr. Franchot's three daughters, Janet Wilder, Anna Godley, and Louise Munson, in his memory. Mr. Franchot (1875) was a life trustee of Union College from 1895 until his death in 1943.

Juel Frankel Memorial Scholarship. Created through the gifts of friends and family of Juel W. Frankel, the wife of Jacob Frankel (1917).

Dr. Herbert Freeman (1947) Scholarship. Created from the gifts of Dr. Herbert Freeman, Class of 1947 on the occasion of the Class of 1947's fiftieth ReUnion.

James (Wes) Fry (1946) Scholarship. Created from the bequest of Wes Fry, Class of 1946, to graduates of Lake George High School, Lake George, N.Y., who are good citizens and a credit to the community and country.

Joseph F. Furlong (1942) Scholarship. Created by Joseph F. Furlong III, Class of 1970 and his wife, Dixie Furlong, in recognition of Joseph F. Furlong, Class of 1942 in honor of Union's Bicentennial.

Howard Cogswell Furman Scholarship. The gift of Howard Cogswell Furman, a friend of Union College, to provide tuition or funds for other college expenses for students attending Union.

James Gage (1931) Scholarship. Established by Sally Gage in memory of her husband. Preference is given to pre-law or liberal arts students.

George R. Galbraith (1917) Scholarship. Established by a gift from George R. Galbraith, Class of 1917.

Lt. Edward C. Gelslechter Memorial Scholarship. Established by his brother, F.D. Gelslechter, Class of 1933, and supported by gifts from the Gelslechter family.

Richard D. Gersten Endowed Scholarship. Established by Richard D. Gersten (1988) for students requiring financial assistance to attend Union College.

Burdett Gibson (1923) Scholarship. The gift of Charles Gibson, in memory of his father, Burdett Gibson, Class of 1923.

William A. Gietz (1949) Scholarship. Established by a gift of Barbara M. Brugh, in memory of her husband, William A. Gietz, Class of 1949. Preference shall be given to students who show interest in pursuing a career in communications or broadcasting.

Ambrose H. Gilligan (1926) Scholarship. Established by Kenneth J. Whalen, Class of 1949, a life trustee, to honor his former high school principal and coach, Ambrose H. Gilligan, Class of 1926.

Gilmartin Family Scholarship. Created from the gifts of Raymond Gilmartin '63 and his wife Gladys Gilmartin, for students who require financial assistance to attend Union College.

Charles A Gilmore, Jr. (1936) Scholarship. Created from the bequest of Charles A. Gilmore, Jr., Class of 1936, with preference given to a student majoring in English.

W.S. Girling (1917) Scholarship. The gift of Wallace S. Girling, Class of 1917, and a long-term member of the Board of Trustees. Preference given to residents of Long Island.

Gold Star Scholarship. The gift of alumni and friends of Union College during the Sesquicentennial Campaign (1945-46) for scholarships in memory of alumni who lost their lives as members of the Armed Forces during World War II.

Arthur S. Golden (1901) Memorial Scholarship. The bequest of Mildred V. Golden in memory of her husband, Arthur S. Golden, Class of 1901.

Vivian J. and Joseph D. (1945) Goldreich Endowed Scholarship. Created from the gifts of Joseph D. Goldreich, Class of 1945, for students who require financial assistance to attend Union College.

Nancy A. Gordon Memorial Scholarship. Created by Dr. Neal J. Gordon, Class of 1969 in memory of his wife, Nancy.

William C. Gotshall Scholarship. The bequest of William C. Gotshall, a friend of Union College. Preference to worthy students in any branch or course of engineering.

Graduate Council Scholarship. Established by the Graduate Council (now called Alumni Council) at its meeting Oct. 13, 1935, reserving income from the Losee estate for this purpose.

John L. Grant (1945) Memorial Scholarship. Awarded to an undergraduate student majoring in Economics and enrolled in the joint MBA program.

William V. and Adelaide M. Grant Memorial Scholarship. Established by William R. Grant, Class of 1949, a trustee of Union College, in memory of his parents. Preference to qualified students in the following order: graduate of Chaminade High School, graduate of Portsmouth Abbey School, discretion of the College.

J. Alfred Greene, Jr., (1919) and Harriette W. Greene Scholarship. Established through a bequest from Harriette W. Greene in memory of her husband, J. Alfred Greene, Jr., Class of 1919.

J. William Greve (1951) Scholarship. Created by J. William Greve, Class of 1951.

Dickinson E. Griffith, Jr., (1941) Memorial Scholarship. The gifts of friends of Dickinson E. Griffith, Jr., Class of 1941.

Carroll C. Grinnell (1919) Memorial Scholarship. Established by the gifts of the members of the Class of 1919 in memory of their classmate, Carroll Grinnell.

Robert Shepard Griswold (1952) Memorial Fund. Established through a bequest from his mother, the late Clare S. Griswold. The income is to be used to further the musical career study of a student.

James R. Gross (1963) Scholarship. Established by James R. Gross, Class of 1963.

Jerome D. Guthmann (1914) Scholarship. Established under the will of Mrs. Fannie D. Guthmann in memory of her son, Class of 1914.

Denise Kitsock Gutstein (1986) Scholarship. Established by Denise Kitsock Gutstein, Class of 1986.

Hans and Hedda Hainebach Humanities and Arts Scholarship. Established through bequest of Hedda Hainebach. Awarded to students who are majoring in the humanities or arts.

Hallenbeck Family Scholarship. (Previously named "Potter Hallenebeck (1910) Scholarship"). Established by the gifts of the Hallenbeck family in memory of J. Potter Hallenbeck, Class of 1910; Lewis W. Hallenbeck, Class of 1940, and Robert P. Hallenbeck, Class of 1942.

Joel A. Halpern (1961) Memorial Scholarship. Established by the Halpern family in memory of Joel A. Halpern, Class of 1961. Awarded to a member or members of the first-year class. The scholarship will be renewed in the sophomore, junior, and senior years provided the recipient(s) continues to qualify for financial aid. Preference to students from Westchester County, N.Y.

Joseph K. and Mary Jane Handler Scholarship. Established by Joseph Handler, Class of 1952, and his wife Mary Jane. Preference given to students living west of the Mississippi.

Thomas E. Hanigan, Jr., (1944) Scholarship. Established by life trustee Thomas E. Hanigan, Class of 1944, for students in the humanities.

Thomas E. Hanigan, Jr., (1944) Memorial Scholarship. Established by the W.R. Grace Foundation in honor of Mr. Hanigan, Class of 1944, who served as trustee of Union College and officer and director of W.R. Grace Co.

John C. Hanson, Sr. Memorial Endowed Scholarship. Created from the gift of John C. Hanson, Sr., by his son John C. Hanson, Jr. (1978) and his daughter-in-law Kathleen M. Hayes (1976), for students who require financial assistance to attend Union College.

John J. Hardiman (1938) Memorial Scholarship. Established in his memory by three of his classmates in the Class of 1938. Mr. Hardiman lost his sight in 1954 but continued to operate the Hardiman Liquor Store in Watertown, N.Y., until his death, demonstrating great courage.

Dr. and Mrs. David M. Harvey Scholarship. Established by Dr. David M. Harvey, Class of 1951. Preference given to students who reside in Schenectady County.

Mortimer T. Harvey (1917) Scholarship. Created from the gift of Mortimer T. Harvey, Class of 1917, with preference to students studying or majoring in chemistry who would like to pursue a career in research.

Haviland Family Scholarship. Created from a trust established by Dr. and Mrs. James W. Haviland, Class of 1932 in honor of Morrison L. Haviland, Class of 1898; Karl F. West, Class of 1904; James W. Haviland, Class of 1932 and Donald S. Haviland, Class of 1970.

Hawkes Family Scholarship. Established by Donald C. Hawkes, Jr., Class of 1937, to honor all the members of the Hawkes family who have attended Union College.

E. Zeh Hawkes (1926) Scholarship. Gift of Dr. Stuart Z. Hawkes, Class of 1926, in tribute to his father, Class of 1887 and a former life trustee of Union. Preference first to candidates from Essex County, N.J., and second to other residents of New Jersey.

Reuben D. Head (1925) Scholarship. Established by Mr. Head, Class of 1925, with the. Preference to graduates of Greenville (N.Y.) Central School.

William Randolph Hearst Foundation Scholarship. Created by the William Randolph Hearst Foundation with preference given to minority students from the five boroughs of the City of New York.

Oswald D. Heck (1924) Memorial Scholarship. Established under the will of Oswald D. Heck, Class of 1924, member of the New York State Assembly from 1931 to 1959 and Speaker of the Assembly from 1937 to 1959, and supplemented by contributions from friends and associates.

Eugene W. Hellmich (1923) Scholarship. Created from the bequest of Eugene W. Hellmich, Class of 1923.

Rutson R. Henderson (1923) Scholarship. Established by James A. Henderson in memory of his father. Preference shall be given to a student(s) selected on the basis of character, and academic performance. Further qualifications are: 1) students from Oneonta High School, and 2) students from Otsego and Delaware counties.

Seward Daniel Hendricks (1910) and Sarah Winifred Hendricks Trust Fund. The gift of Seward Daniel, Class of 1910 and Sarah Winifred Hendricks.

Robert J. Henkel (1976) and Roseanne Chismar Henkel Family Endowed Scholarship. Earnings distributed to a student who demonstrates financial need.

David L. Henle Merit Scholarship. Created by David L. Henle, Class of 1975.

Hequembourg Family Scholarship. Created in memory of members of the Hequembourg family: Louis Hequembourg, Class of 1910, Charles L. Hequembourg, Class of 1912, and Frederick W. Hequembourg, Class of 1939. Preference to students from either Albany, Rensselaer, Saratoga, or Schenectady counties.

William Parker Hesse (1949) Financial Need Scholarship. Established by William Parker Hesse, Class of 1949.

Joseph M. (1947) and Barbara B. Hinchey Scholarship. Established by Joseph M. Hinchey, Class of 1947. Awards given annually with preference to students studying electrical engineering.

Betsy Ann Hochman (1989) Scholarship. Established by Harold M. and Merle E. Hochman, in memory of their daughter. Awarded in collaboration with the Harry A. (1925) and Bess Kaplan Kappa Nu Scholarship to an upperclass student or students with a demonstrated need and without regard to sex.

Rose L. and Philip Hoffer Family Scholarship. Created from the gifts of Rose and Philip Hoffer.

Thomas R. (1945) and Barbara P. Hoffman Scholarship. Created from the gifts of John R. Peckham, Class of 1978.

Valerie J. Hoffman (1975) Scholarship. Established by Valerie J. Hoffman, Class of 1975.

Lawrence J. Hollander Bicentennial Scholarship. Established by Lawrence J. Hollander (professor and dean of engineering, 1986-93). Awarded to students enrolled in the undergraduate engineering program.

Alice Holmes Scholarship. Established by a bequest from Alice Holmes. Preference is given to students graduating from Schenectady city or county schools.

Elizabeth W. Holt Scholarship. Established by a bequest from the late Mrs. Holt for students entering from the public schools of Mechanicville and Stillwater or, if no one from these towns, any other public school graduate in Saratoga County, N.Y.

Anthony J. Hornsby (1899) Memorial Scholarship. Established under the will of Mrs. Mabel H. Hornsby in memory of her husband, Class of 1899. Available to students studying engineering.

Henry J. Horstman (1928) Scholarship. Established by Henry J. Horstman, Class of 1928.

Raymond H. Horstman (1923) Scholarship. Established by Raymond H. Horstman, Class of 1923.

Henry L. Howe III (1943) Scholarship. Established by Henry L. Howe, Class of 1943. Preference to sophomore(s) who pursue a full-time course of study leading to a career in business management and/or manufacturing, and to a student who is a well-rounded individual, involved in various aspects of college life.

George Howard Hoxie (1893) Scholarship. The gift of Dr. and Mrs. George Howard Hoxie, Class of 1893 for a scholarship for a premedical student. Dr. Hoxie founded the School of Medicine at the University of Kansas and was dean of that school.

Lester T. Hubbard (1900) Scholarship Fund. Established from the bequest of Emily A. Hubbard in memory of her husband, Lester, Class of 1900. Mr. Hubbard, a lawyer, was a member of the Alumni Council from its founding in 1910 until 1925.

Frederick Hubbell Scholarship. Established under the will of Frederick Brooks Hubbell in memory of Levi Hubbell, Class of 1827; Walter Hubbell, Class of 1814; Walter Seymour Hubbell, Class of 1894; Ferdinand Wakeman Hubbell, Class of 1819; and Horatio Hubbell, Class of 1818.

Hudson-Champlain Scholarship. Established by members of the Hudson-Champlain Alumni Association. Preference given to candidates from Warren, Saratoga, Washington, and Essex Counties upon recommendation of the association.

O. LeRoy Huntington (1932) Memorial Scholarship. Established by his widow, Margaret Huntington. Awarded to a student pursuing a full-time course of study in the humanities, preferably with emphasis on political theory and/or international relations, and who is planning a career in government.

Ann Huppert and Perry Hubbert Endowed Scholarship. Created from the gifts of Ann Hubbert to support a student with financial need who is studying mechanical engineering.

Thomas D. Hurst Scholarship. Established under the will of Thomas D. Hurst. Preference given to applicants from Brooklyn.

Lillian Babbitt Hyde Foundation Scholarship. The gift of the Lillian Babbitt Hyde Foundation of New York City. The annual income is used to secure a distinguished, well-rounded candidate for a course of study at Union. The gift was made by the foundation with the consideration of Charles Foster Brown, Class of 1916, life trustee, in recognition of his devotion to the College and its worthiness.

IBM Scholarship. Funded by a grant from the International Business Machines Corporation to establish an endowed scholarship for women and minority engineering students.

Indigent Students Scholarship. Established by proceeds of lotteries authorized by the State of New York in 1805.

Inez S. and Joseph Jacobs (1931) Memorial Scholarship. (Previously named "Joseph Jacobs (1931) Memorial Scholarship"). Created by the family and friends of Joseph Jacobs, Class of 1931.

Dolores R. Jacobson Memorial Scholarship. Created by the children and grandchildren of Dolores R. Jacobson to honor her memory. Preference given to students entering junior or senior year, majoring in neuroscience with intent to pursue graduate work at the doctoral level in the neurosciences. Second preference will be given to a junior or senior student planning to attend medical school, regardless of major.

Leo E. Jandreau Memorial Scholarship. Established through public contributions and administered by Union. Awarded annually to an upperclassman majoring in the social sciences or humanities, at least one member of whose immediate family is or has been a member of a labor union. Mr. Jandreau was a founder of the national electrical workers union, served for more than 30 years as business agent of IUE Local 301, and was a vice-president of the New York State CIO, chairman of the National GE Conference Board, and president of the Schenectady Central Labor Council. Union awarded him an honorary Doctor of Laws degree in 1978.

Carl B. Jansen (1922) Scholarship. Established by the gift of the Dravo Corporation in honor of Carl B. Jansen, Class of 1922, former chairman of the board directors of the corporation.

Ronald Quentin Jennett and Margaret Anne Jennett Scholarship. Established by Ronald Q. Jennett, Class of 1952. Preference shall be given to students from Clinton, Essex and Franklin counties of New York State or from Ft. Worth, Texas or Tarrant County, Texas.

Christian A. Johnson Scholarship. Established by a grant from the Christian A. Johnson Endeavor Foundation.

Mary Louise Johnson Memorial Scholarship. Established by the gift of Mrs. Anna C. Newberry, in memory of her mother, Mrs. Mary Louise Johnson. Preference to a student majoring in the Division of Social Studies.

Rachel Burke Johnson (2003) Endowed Scholarship. Established by Dr. Linda Rachele Burke, parent of Rachel Burke Johnson '03, for students with financial need who major in art history.

Raymond S. (1957) and Cecilia E. Joseph Endowed Scholarship. Established by Raymond S. Joseph '57, for students with financial need pursuing majors in electrical engineering, mechanical engineering, chemistry or physics.

Harry R. (1925) and Bess Kaplan Kappa Nu Scholarship. Established by the trustees of Kappa Nu, Harry Kaplan, Class of 1925, president. Awarded in collaboration with Mr. Kaplan to an upperclass student or students with a demonstrated need and without regard to sex.

Hyman V. (1928) and Dorothy G. Kaplan Scholarship. Created from a gift of Red-Kap Sales, Inc. in honor of Hyman V. and Dorothy Kaplan. Preference to a student of high moral and ethical character from a rural area.

The Irving D. Karpas, Jr., (1947) and Suzanne T. Karpas Scholarship. Created by a gift from Irving D. Karpas, Jr., Class of 1947. Annual income awarded as scholarship support with preference to an upperclass student or students who plan to enter medical school.

Norman D. Kathan (1926) Scholarship. Established by a gift from Dr. Norman D. Kathan, Class of 1926. Preference to students pursuing a course of study in preparation for graduate study in medicine and who demonstrate potential for making contributions to the improvement of the quality of human life.

Karp Family Posse Scholars Program Endowed Fund. Created from the gifts of the Karp Family Foundation for Union College Posse scholars who require financial assistance to attend Union College.

William G. Keens (1902) Scholarship. Established under the will of William G. Keens, Class of 1902.

John Kelleher (1970) Memorial Scholarship. Established by classmates and friends of John Kelleher, Class of 1970.

Dr. Ellis Kellert Memorial Medical Society Scholarship. Established by the Medical Society of Schenectady County in memory of Dr. Ellis Kellert, head pathologist at Ellis Hospital. The fund provides scholarships for premedical students, with first preference to children of present or former members of the society.

William L. Kennedy (1888) and William L. Kennedy, Jr., (1918) Scholarship. A scholarship created by combining the bequest of William L. Kennedy, Jr., Class of 1918 and a gift by Edwin O. Kennedy, Class of 1921, in memory of his father, William L. Kennedy, Class of 1888 and brother, William L. Kennedy, Jr. Awarded annually to students pursuing a course of study in the humanities. Preference to students from Johnstown, N.Y., and the surrounding area.

Kenneth A. Kesselring Memorial Scholarship. Created by Jane Kesselring Collamer and Nelson P. Collamer, Class of 1933, in memory of Kenneth A. Kesselring. Preference to students whose major is within the Division of Engineering.

Bill and Mabel Ketz Scholarship. Created in honor of Bill and Mabel Ketz by Kenneth J. Whalen, Class of 1949, a life trustee of Union, to recognize and honor them for many years of dedication and service to the College.

Richard J. Killeen (1951) & Patricia M. Killeen Scholarship. Created from the gifts of Richard J. Killeen '51 and Patricia M. Killeen. Awarded to U.S. citizens who are from the capital district of New York State with intended majors in engineering and/or mathematics and/or the technical sciences.

Robert K. (1942) and Evelyn Killian Scholarship. Created from the gifts of Robert K. Killian, Class of 1942 and Robert K. Killian, Jr., Class of 1969 in honor of Evelyn Killian, wife and mother. Preference to students from Connecticut.

Howard William Kitchin Scholarship. Established by Alma Harris Kitchin, widow of Howard William Kitchin, Class of 1908, for students in a liberal arts curriculum.

Dr. Clarence E. Klapper (1932) Memorial Scholarship. Established by Dr. Margaret E. Klapper in memory of her husband.

Frederick A. and Eleanor G. Klemm Scholarship. Established by Eleanor G. and Frederick A. Klemm, professor of German (1947-1978) and founder of the Terms Abroad Program, to help students with travel expenses on the Terms Abroad Program or similar programs.

Charles A. Koch Scholarship. Established from the estate of Charles A. Koch, father of the late Charles A. Koch, Class of 1954.

Mr. and Mrs. Stanislaus Kosinski Memorial Scholarship. Established from the gifts of Alexander Kosinski, Class of 1935 and his wife, Barbara, in memory of his parents. Awarded to a promising student in music.

Kruesi Scholarship Fund. Established by Paul J. Kruesi, Class of 1900, as a memorial to five Kruesi brothers: August H., Class of 1898, Walter E., Class of 1902, Frank E., Class of 1908, and John, Class of 1914.

Rear Admiral Lee E. Landes (1945) Scholarship. Established by Lee E. Landes, Class of 1945. Awarded to students majoring in economics with first preference given to students from Michigan.

Olin G. Landreth Scholarship. Established by Miss Helen A. Landreth in memory of her father, Olin H. Landreth, professor of engineering from 1894-1917. Awarded annually to students pursuing courses in engineering.

Robert P. Larsen (1953) Scholarship. Established by Robert P. Larsen, Class of 1953. Awarded to students studying engineering, involved in extracurricular activities and who graduated from a high school located in Geneva, N.Y., or Fullerton, Calif.

Alan A. Lascher (1963) Scholarship. Created from gifts of The Weil, Gotshal & Manges Foundation, family and friends, in memory of Alan A. Lascher, Class of 1963.

Laudise Family Scholarship. Originally established by Robert A. Laudise, Class of 1952, in honor and memory of his father.

Karges Lauterbach (1927) Scholarship. A gift from the estate of Karges Lauterbach, Class of 1927, for the benefit of students studying engineering.

John Y. Lavery (1895) Scholarship. Established under the will of John Y. Lavery, Class of 1895. Preference to a student working his or her way through college.

Joseph L. Lawrence D.D.S. (1939) Scholarship. Established in memory of Joseph L. Lawrence, Class of 1939, D.D.S., by his family, including his wife, Pearl Lawrence; son, David B. Lawrence, MD, Class of 1965; and daughter, Barbara Lawrence Scharf.

Katherine Spencer Leavitt Scholarship. Established under the will of Mrs. Katherine S. Leavitt.

Craig LeDuc (2005) Memorial Scholarship. Created from the gifts of Union College and others. Preference is given to students majoring in economics.

Alexander M. Lee '03 Memorial Scholarship. Established by Union College and the family and friends of Alex Lee, Class of 2003, who lost his life in a tragic accident at the end of his sophomore year.

Max Len (1939) Endowed Scholarship. Established from the gifts of Max Len '39 for students who require financial assistance to attend Union College.

John J. Leonard (1949) Scholarship. A gift from the estate of John J. Leonard, Class of 1949, for the benefit of students enrolled in pre-med.

Laurence W. Levine (1953) Scholarship. Created by Laurence W. Levine, Class of 1953.

Patricia Bohlen Levinson (1975) Scholarship. Created by Richard D. Levinson, Class of 1973, to honor his wife, Patricia, Class of 1975. Preference to students who are involved with the arts and/or humanities.

Ruth Lewin Endowed Scholarship. Established by Ruth Lewin, friend of Union College.

John V. Lewis (1914) Memorial Scholarship. Established by bequest of his late wife, Mary McDonnell Lewis, in his memory.

Stanley R. Liebman (1939) Scholarship. Established by the bequest of Stanley R. Liebman, Class of 1939, and awarded based solely on scholastic merit.

Gilbert R. Livingston (1924) Memorial Scholarships. Established by bequest of Mr. Livingston, Class of 1924, a scholarship fund that annually designates 30 first-year students as Gilbert R. Livingston Scholars. Awarded on the basis of financial need, academic excellence, and potential for contribution to the quality of life at Union.

Susan Davis Lloyd Scholarship. Created from the gifts of Mr. and Mrs. Randolph Meyer, Class of 1957, and others to benefit students with a medical disability.

Thomas B. Lockwood Scholarship. Established by Thomas B. Lockwood in memory of his father, Daniel Lockwood (1865). Available to students from Buffalo, N.Y.

Guy Christopher Logan Scholarship. Established by Pamela and Guy T. Logan, Class of 1990, in memory of their son.

Frederick J. (1942) and Beatrice J. Longe Scholarship. Established by Frederick J. Longe, Class of 1942. Awarded to students pursuing courses in science or engineering.

Eunice E. Lord Scholarship. Created by Frank E. Lord, Class of 1951, in memory of his mother, Eunice E. Lord.

Lubart Family Scholarship. An endowed fund created from the gifts of Mitchell R. Lubart (1975) for students in need.

William G. Lutz (1914) Scholarship. Established with a bequest from William G. Lutz, Class of 1914, who died on May 25, 1971. Preference to engineering students.

Harold S. MacGowan (1933) Scholarship. Established from the estate of Harold S. MacGowan, Class of 1933, to benefit a student excelling in a course or courses in the fields of business management and/or industrial engineering.

Edward A. & Neva Jean Sharpe Mahoney Endowed Scholarship. Created from the gifts of Neva Madeline Mahoney in memory of her parents, Edward A. and Neva Jean Sharpe Mahoney. Preference to students pursuing courses in psychology who reside in the Capital District of New York State.

Sigmund Makofski (1926) Scholarship. Established by gifts from friends and admirers of Sig Makofski, Class of 1926. Preference to graduates of Schenectady High School.

C. T. Male (1913) Scholarship. Established by Charles T. Male, Class of 1913, and supported by contributions from members of the Male family.

C.T. Male Associates Scholarship. Created from the gifts of Kenneth J. Male, Class of 1945, C.T. Male Associates, and others. Awarded to students entering their junior year and renewed for the senior year.

Mandeville Scholarship. Created from the estate of David C. Mandeville, Class of 1945.

Joseph T. Maras Memorial Scholarship. Created from the gifts of the family and friends of Joseph T. Maras, former football coach and admissions officer at Union College.

John Lewis March Scholarship. Established by Miss Mildred March in memory of her brother, John L. March, professor at Union College from 1915 to 1948.

A.J. Martini Memorial Scholarship. Established by Paul J. Martini, Class of 1973, and Peter P. Martini, Class of 1978, in honor and memory of their father.

Thomas J. Marvin (1826) Scholarship. Established by the gift of Mrs. Mary L. Sackett in memory of Thomas J. Marvin, Class of 1826.

George Mason Memorial Scholarship. Established under the will of John J. Mason in memory of his brother

Victor F. (1949) and Shirley Mattson Scholarship. Established by Victor Mattson, Class of 1949. Preference to students majoring in chemistry, physics, or mathematics.

McCabe Family Scholarship. Established by Timothy McCabe '73 and Karen Fasoli McCabe '74 in honor of Paul Fasoli '12. For students requiring financial assistance to attend Union, with preference for students who have immigrated to America.

Alice W. and Fred W. McChesney Scholarship. Established by the bequest of Alice and Fred McChesney.

Carl E. McCombs (1904) Memorial Scholarship. The bequest of Alice Losee McCombs in memory of her husband, Carl E. McCombs, Class of 1904, a physician, author, and former manager of the New York Bureau of Municipal Research.

Jay McDermott (1982) and Lisa McDermott Family Scholarship Fund. Created from the gifts of Jay McDermott '82 and Lisa McDermott, for students who are involved in extracurricular activities or from a single-parent family showing financial need or studying Economics.

Alfred H. McKinlay (1951) Scholarship. Established by Mark A. McKinlay, Class of 1973. Preference shall be given to students who have demonstrated outstanding humanitarian concern and a willingness to help others.

John J. McManus (1942) Memorial Scholarship. Created by the friends and family of John J. McManus, Class of 1942, and by McManus, Longe, Brockwehl, Inc., of which he was a co-founder.

Charles B. McMurray (1887) Scholarship. Established by Charles B. McMurray, Class of 1887, and former life trustee of Union. Preference to applicants from Lansingburgh High School, from Troy, N.Y., and from Rensselaer County, N.Y., in the order named.

Walter S. McNab (1908) and Duncan S. McNab (1935) Endowed Scholarship. (Previously named "Walter S. McNab (1908) Scholarship"). Created by Duncan S. McNab, Class of 1935, in memory of his father, Walter S. McNab, Class of 1908. Awarded to students who require financial assistance.

Kenneth J. Meaney (1944) Memorial Scholarship. Created by Henriette Thomas in memory of her brother. Preference shall be given to students from Schenectady majoring in history.

Elma C. and Dominick Mele (1937) Scholarship. Established by Dominick Mele, MD, Class of 1937, a Schenectady pediatrician who has provided a lifetime of service to the community and the College. Preferences in the following order: students from three high schools in Billings, Mont.; the Montana area; Schenectady, N.Y.

Meola Family Endowed Scholarship. Created from the gifts of Carol Behrendt Meola, Class of 1976, and Peter Meola Class of 1977. Awarded to a graduate of Schenectady High School.

Frank L. Messa (1973) Endowed Scholarship. Created by Frank L. Messa, Class of 1973. Preference to students from (1) the state of Texas and (2) the Southwest region of the United States.

John Wells Meyer and Kevin Michael Meyer Scholarship. Established by Randolph W. Meyer, Class of 1957, and others in memory of John Wells Meyer and Kevin Michael Meyer. Awards will be made to students who have demonstrated self-discipline, persistence, and the desire to succeed, who require a substantial amount of financial assistance to attend Union.

Robert J. Mielke (1960) Memorial Endowed Scholarship. First preference given to students from Montgomery County, N.Y. and second preference given to students from Schenectady County, N.Y.

Dr. Joseph (1936) and Betty Milano Scholarship. Created by gifts of family and friends in memory of Dr. Joseph Milano, Class of 1936.

Dr. David B. Miller (1939) Scholarship. Created from the gifts of David B. Miller, Class of 1939.

Allen (1966) and Linda Miller Endowed Scholarship. Established by Allen Miller, Class of 1966 and Linda Miller with preference given to a first-year student studying engineering or physical/natural sciences who requires financial assistance to attend Union College.

Franklyn B. (1932) and Irma Millham Scholarship. Established by a gift from Mr. and Mrs. Franklyn B. Millham to provide scholarship funds for students pursuing a course of study in engineering.

Louis D. Miltimore (1929) Memorial Scholarships. Created from the gifts of the family and friends of Louis D. Miltimore, Class of 1929. Mr. Miltimore served as a trustee of the College from 1953 to 1996.

Miltimore Scholarship Fund. Established by Frances Ross Miltimore in memory of her husband, Louis D. Miltimore, Class of 1929 and former trustee. Preference given to students majoring in American History or English.

John E. Mitchell (1945)-Kathryn L. Mullaney (1974) Scholarship. Established by gifts from John E. Mitchell, Class of 1945, and his daughter, Kathryn L. Mullaney, Class of 1974. Preference to students who are children of U.S. Navy personnel.

Mitchell-Rosenthal Scholarship. Established under the will of Mrs. Ruth Elise Walton.

Laurence and Dawn Moister Memorial Scholarship. Established by the employees of Union College in memory of Laurence Moister, the college printer, and his wife, Dawn. Preference to a student from Schoharie County who has completed his/her first year and has demonstrated outstanding humanitarian qualities and a willingness to help and serve others.

W. Dennis Moran (1964) Scholarship. Created by W. Dennis Moran, Class of 1964.

Carolyn Morrison Scholarship. Miss Morrison, a Schenectady resident, willed her home to Union College. The proceeds from its sale established this scholarship fund, with preference to a student in the social sciences curriculum.

Charles N. Morrison Memorial Scholarship. Created in memory of Charles N. Morrison, Union College hockey Coach from 1978-1988. Awarded to students involved in extracurricular activities.

George F. Mosher (1918) Citizenship Award. Established by George F. Mosher, Class of 1918, to attract outstanding students to Union. Candidates selected on the basis of citizenship, as evidenced by school, church, and community activities; character, responsibility, and self-reliance; and academic interest and achievement.

George E. (1917) and Lester T. (1927) Moston Scholarship. Created from a gift from Lester T. Moston, Class of 1927, in memory of his brother, George E. Moston, Class of 1917.

Herman Muehlstein Foundation Scholarship. A grant from the Herman Muehlstein Foundation for scholarship assistance to students from the New York metropolitan area.

Donald E. Mullen (1949) Scholarship. Established through gifts of General Electric employees and corresponding matching gifts from General Electric. Donald E. Mullen, Class of 1949, was a GE employee who died at age 49 as a result of an accident in Brazil. Preference given to foreign students.

Natalie M. and Oscar J. Muller, MD (1937) Scholarship. Created by Oscar J. Muller, Class of 1937. Preference to students who are pre-med majors.

M. William Munno (1970) Scholarship. Established by M. William Munno, Class of 1970.

Hans W. Munzer (1939) Scholarship. Established from the gifts of Grace Elaine Munzer. Preference shall be given to students pursuing courses of study with a concentration in modern languages and/or history who possess above average aptitude for these subjects.

Sean Matthew Murphy Memorial Scholarship. Created from the gifts of family and friends in memory of Sean Murphy '13, for students who require financial assistance to attend Union College.

David Murray (1852) Scholarship. Established by the gift of Mrs. Martha Nelson Murray in memory of her husband, Class of 1852.

Harold and Ellen Nagorsky Memorial Endowed Merit Scholarship. Awarded annually based on merit with preference given to a pre-medical student who also contributes to the Union College community through extracurricular activities.

Anna C. Newberry Scholarship. Established by the gift of Mrs. Anna C. Newberry.

George Chapman Newbury (1906) Memorial Fund. The bequest of Florence B. Newbury in memory of her husband, George Chapman Newbury, Class of 1906. Awards to students who are studying for the B.S. degree in engineering.

Gordon F. Newell (1946) Scholarship. Established by Gordon F. Newell, Class of 1946. Awards made to students majoring in physical sciences or engineering (except computer science).

Niedermeyer Endowed Scholarship. Established by Thomas Niedermeyer, in honor of Monica Niedermeyer, a member of the Class of 2010. Preference will be given to a student who will participate in a term abroad program during the current academic year.

Sture and Hilda Nilsson Scholarship. Created by Sture H. Nilsson, father of Harold Nilsson, Class of 1965.

Dr. Donald and Marie Nitchman Scholarship. Established by Marie Nitchman in memory of her husband, Donald E. Nitchman, Class of 1933. Preference to premedical students showing promise of compassion and selflessness.

Robert C. North and Dorothy North Scholarship. Created by the Norths to honor the memory of Arthur Walbridge North and Irene Davenport North. Preference to encourage and support students who have achieved junior class status and who have, in the judgment of the Department of Political Science, demonstrated promise and skill in the field of international relations, employing quantitative, systemic, and interdisciplinary approaches to the field.

Eliphalet Nott Scholarship. Established by a gift from the Francis L. Pruyn estate to provide scholarships for worthy engineering students in memory of Mr. Pruyn's great-grandfather, Dr. Eliphalet Nott, president of Union College from 1804-1866, who inaugurated the first course in engineering at a liberal arts college.

Michael R. Novack (1990) Scholarship. Established from the gift in memory of Michael R. Novack, Class of 1990. Preference shall be given to students who have exhibited aptitude and dedication toward biotechnology.

Lisa M. Novak (1979) Memorial Scholarship. (Previously named "Lisa Novak Peretz (1979) Memorial Scholarship"). Created from the gifts of family and friends in memory of Lisa Novak Peretz, Class of 1979 and Gregg Peretz.

Ronald Matthew Obenzinger (1961) Memorial Premedical Scholarship. Created by his parents, Nathan and Romana Obenzinger.

Gerald and Anna O'Loughlin Scholarship. Created by Arthur D. O'Loughlin, Class of 1960, in honor of his parents. Preference to engineering or science students who demonstrate leadership in student activities.

Paul (1959) and Josephine O'Neil Endowed Scholarship. Established by Paul O'Neil, Class of 1959, and Josephine O'Neil for students who require financial assistance to attend Union College.

Anna and Harry Ortner Scholarship. Established by their son, Herbert T. Ortner, a friend of Union College, to honor his parents, and in particular to give recognition to Harry Ortner's interest in the English language and literature.

C. Rolland Oswald and Dorothy C. Oswald Scholarship. Established from the gifts of Mr. and Mrs. C. Rolland Oswald in memory of their daughter, Karen Oswald Janaitis, for students requiring financial assistance to attend Union College.

William L. Oswald Scholarship. Established by the gift of William L. Oswald.

Nicandro and Amelia Ottaviano Scholarship. Established by Orazio Ottaviano, Class of 1947, and Gioia Ottaviano in honor of their parents.

Jonathan Stanley Parry Scholarship. Created from the gifts of Sherman W. Parry, Class of 1940, in memory of his son, Jonathan Stanley Parry. Preference shall be given to students from Washington County, New York, or the state of Tennessee.

Moses and Issac Parshelsky Scholarship. Established by the gift of Issac Parshelsky. Available to students from Brooklyn, N.Y.

James S. Parson (1919) Scholarship. Awarded to students majoring in one of the natural sciences.

Levi Parsons Scholarship. Established by the gift of Levi Parsons of Gloversville, N.Y. Available to students from Fulton, Montgomery, or Hamilton counties.

Robert Porter Patterson (1912) Scholarship. Established by Margaret W. Patterson in loving memory of her husband, Robert Porter Patterson, Class of 1912, a trustee of Union, U.S. Secretary of War, a distinguished judge, attorney, scholar, leader, and humanitarian. Preference to students who intend to pursue a career in the field of law.

George L. Peck (1940) Memorial Scholarship. Established by bequest of his mother, Mrs. Florence L. Wells of Gloversville, N.Y., in memory of George L. Peck, Class of 1940, an advertising executive in Schenectady.

Roger P. Penny (1958) Scholarship. Established by Roger P. Penny, Class of 1958.

Jim Perlstein (1942) Endowed Scholarship. Created from the gifts of the Perlstein family in honor of Jim Perlstein '42, with preference given to a student majoring in mathematics.

Peter C. Persico Endowed Scholarship. Created from the gifts of Charles J. Persico '85 for students studying electrical engineering who require financial assistance to attend Union College, with first preference given to students from the NYS Capital District.

Joseph I. and Virginia M. Petrucci Memorial Scholarship. Created from the gifts of Dr. Ralph H. Petrucci, Class of 1950, and his wife, Ruth P. Petrucci. Preference will be given first to students who are the first generation in their family to attend college and, second, from Schenectady and/or the Capital District of New York State.

Donna E.D. Phillips Scholarship. Established by Donna E.D. Phillips, Class of 1979.

Ronald F. Plumb (1980) Scholarship. Created by the family and friends of Ronald Plumb. Preference shall be given to juniors whose background experiences demonstrate the commitment and ability to have served and, to continue to serve, in a leadership capacity and who have an excellent record of extracurricular activities.

Posse Scholarship. For students who are part of the Union College Posse Scholars Program.

Horatio M. Pollack (1895) Scholarship. Established under the will of Horatio M. Pollack, Class of 1895. For a needy and deserving student, with preference to graduates of the Middleburgh and Cobleskill, N.Y., high schools.

Daniel F. Pullman Scholarship. Established by Daniel F. Pullman. Available to students taking the regular classical curriculum. Preference to qualified students who are members of the Methodist Church.

Dr. Marshall W. Quandt (1933) Scholarship. Established by Dr. Marshall Quant, Class of 1933. Awarded to a resident of the Town of Waterford and made in the following order: 1) graduates of Waterford-Halfmoon High School; 2) graduates of Lansingburg High School, Troy, N.Y. or Catholic Central High School, Troy, N.Y.; 3) graduates of other schools nearby the schools designated in 1 and 2. If none are applicable, the recipient can be from any high school located in Saratoga County, N.Y.

Andrew V.V. Raymond (1875) Scholarship. Gift of Nicholas V.V. Franchot, Class of 1875, in memory of Andrew V.V. Raymond, Class of 1875, president of Union College from 1894 to 1907.

Reader's Digest Foundation Scholarship. Established to provide scholarships for worthy students.

William Friedrich (1970) & Susan Reville (1972) Endowed Scholarship. Created from the gifts of William Friedrich, Class of 1970, and Susan Reville, Class of 1972, with preference for students who demonstrate exceptional talent and academic potential, but require financial assistance to attend Union College.

Dr. Edwin W. Rice, Jr., Scholarship Fund. The College received, under the will of Dr. Edwin W. Rice, Jr., \$5,000 as a trust fund, the interest to be used to aid needy students.

Jeanie C. Robb Endowed Scholarship. Created from the gifts of Donald J. Marshall, Class of 1966, for students requiring financial assistance to attend Union College. First preference shall be given to students pursuing a degree in engineering; second preference given to students studying either physics or mathematics.

Phil Alden Robinson (1971) Scholarship. Created from the gifts of Phil A. Robinson, Class of 1971.

S. Jesse and Jessie Robinson Scholarship. Established by Phil A. Robinson, Class of 1971, in honor of his parents.

Sam & Roslyn Roden and Charles (1960) & Leslie Roden Family Scholarship. Created from the gifts of Charles Roden, Class of 1960.

Thomas Romeyn (1797) Scholarship. Established by the grandsons and great-grandsons of Thomas Romeyn, Class of 1797, a prominent clergyman of the Dutch Reformed Church.

Peter V. Roosa (1974) Memorial Scholarship. Created from the gifts of the Roosa Family Foundation. Preference will be given to students majoring in environmental science and/or biology.

Nathan and Jennie Rosenberg Scholarship. Established by Henry E. Montross, Class of 1919 to aid a student who, by grades and general comportment, gives promise of becoming a substantial contributing citizen of the United States of America.

Harry A. Rositzke (1931) Scholarship. Created from the gifts of Harry A. Rositzke, Class of 1931.

Joseph Rotundo (1929) Scholarship. Gift of alumni and friends in memory of Prof. Joseph Rotundo, Class of 1929, member of the faculty from 1929-1953.

John A. Royce (1913) Scholarship. Established under the will of Mrs. Blanche C. Royce in memory of her husband.

Christian and Verna Rumpf Scholarship. Awarded to two academically outstanding students who demonstrate financial need.

Bernard Salad (1937) & Geraldine Demar-Salad Scholarship. Established by Maureen Demar Hall in memory of her mother and step-father.

Robert J. Sallick (1959) Scholarship. Established by Robert J. Sallick, Class of 1959.

Saperstone Family Scholarship. Created by Peter S. Saperstone, Class of 1989, and family. Preference given to students from Northern Virginia.

Nicholas T. Saviano (1951) Scholarship. Established by Nicholas Saviano, Class of 1951, awarded to an electrical engineering graduate.

Rose Ann and Nicholas T. Saviano Scholarship. Created by Nicholas T. Saviano, Jr., Class of 1951, in memory of his parents.

Harold L. Saxton (1924) Scholarship. A gift from a trust established by Harold L. Saxton, Class of 1924.

Mortimer F. Sayre Scholarship. Established by Harrison S. Sayre, Class of 1934, in memory of his father, Mortimer F. Sayre, a professor of mechanical engineering. Awarded to students pursuing mechanical or civil engineering.

Edwin W. Scantlebury (1941) Scholarship. Established from gifts of Edwin W. Scantlebury, Class of 1941.

R.A. Schatzel (1921) Scholarship. Created from gifts of Rudolph A. Schatzel, Class of 1921.

Jessie Scheman and Lillian Rosen Memorial Scholarship. Created from the gifts of Robin J. Scheman, Class of 1984.

Calvin G. Schmidt (1951) Scholarship. Created by the Student Council, Inc. in honor of Calvin G. Schmidt, Class of 1951, who retired in 1984 after thirty years of service to Union, the last twenty as registrar.

Roland W. and Claire K. Schmitt Scholarship. Created from the gifts of Roland W. Schmitt, Class of 1985-H and Claire K. Schmitt.

Jack J. Schneider, (1962), M.D. Scholarship. Established by Jack J. Schneider, MD, Class of 1962. Preference is given to students preparing for a career in medicine.

Kyle Schrade (2005) Memorial Scholarship. Created from the gifts of Union College and others. Preference is given to students majoring in history.

Murray D. Schwartz (1969) Scholarship. Established by Murray D. Schwartz, Class of 1969, and his friends. Income used to aid students studying in the humanities.

Daniel Seymour (1866) Scholarship. A bequest from Harris P. Wetsell in memory of his uncle, Daniel Seymour, Class of 1866, a lawyer. Awarded by the president of the College to students who show promise of future success.

Hester Shapiro '73G Scholarship. Created from the gifts of Rochelle, Sarah and William Shapiro, in memory of William's mother. Preference will be given to a female student majoring in chemistry or English and residing in the Boston area or Schenectady, N.Y.

Morris A. Shapiro (1932), M.D., Scholarship. Created by Hester Shapiro '73G, in honor of her husband, Dr. Morris A. Shapiro, Class of 1932. Preference to students who plan to enter medical school.

Samuel R. Sharp (1981) Memorial Scholarship. Established by the Sharp family and Steven A. Klinger, Class of 1981. Preference to students majoring in political science.

Howard Sheffer (1939) Chemistry Scholarship. Established by the family of Prof. Howard Sheffer, Class of 1939, for a worthy chemistry major in his or her junior or senior year.

Kenneth S. Sheldon (1920) Scholarship. Established by Mildred L. Steele, in memory of her father. Preference shall be given to juniors or seniors.

Sherman Family Scholarship. Created from the gifts of Andrew Sherman '70, son of Lee Sherman '42, for students who require financial assistance to attend Union College.

Daniel Shocket (1972) Memorial Scholarship. Created from the gifts of Carol and Sheldon Shocket in memory of their son. Preference given to students majoring in English with a strong interest in creative writing.

Anna Shriber Memorial Scholarship. Created from the gifts of Marlene C. Gilbert '83, with preference given to students who require financial assistance to attend Union College.

Scott M. Siegler (1969) Scholarship. Created by Dr. Edward Siegler and Scott M. Siegler, Class of 1969. Preference to students majoring in English.

Joseph E. Silver (1976) Memorial Scholarship. Established by a bequest from the estate of Charlotte E. Silver. Preference to students majoring in political science.

Jamie Silverberg (1979) Scholarship. Created by Dr. Doris Silverberg in memory of her daughter, Jamie, Class of 1979. Awarded to a senior pursuing a career in medicine.

Jerry and Sandra Silverman Scholarship. Created from the gifts of Dr. Mitchel U. Silverman, Class of 1976, as a permanent tribute to his parents, Jerry and Sandra Silverman. Preference will be given first to students who are the first generation in their family to attend college, secondly from the state of California or thirdly to students in the pre-med program.

Coletta S. & J. Jay Sitney (1934) Scholarship. Established through bequest of Coletta S. & J. Jay Sitney, Class of 1934.

Jeanne L. and Robert L. Slobod (1935) Scholarship. Created from the gifts of Jeanne L. and Robert L. Slobod. Preference will be given to students of Iroquois heritage and then to Native American students.

Robert Avon Smith (1952) Scholarship. Established by Robert Avon Smith, Class of 1952. First preference to premedical students from the Binghamton, Johnson City, and Endicott areas of New York State. Second preference to electrical engineering students from that area, then other students from that area.

Stanley M. Smith, Jr. (1950) Scholarship. A gift from the estate of Stanley M. Smith, Jr., Class of 1950.

Walter C. Smith (1914) Memorial Scholarship. Established through a bequest of his widow, Josephine Hull Smith, in memory of her husband, Walter, who graduated in 1914 with a bachelor of science in engineering degree.

Frank B. Snell (1895) Scholarship. Established by Mrs. Katherine B. Snell in memory of her son, Frank B. Snell (1895). Available to a student who is working his or her way through college.

Johnson Ide Snell (1865) Scholarship. Established by Mrs. Katherine B. Snell in memory of her husband, Johnson Ide Snell, Class of 1865. Available to a student who is working his or her way through college.

George W. Spaine Memorial Scholarship. Established through the gifts of the community in memory of George W. Spaine, principal of Mont Pleasant High School from 1931-1954. Awarded to graduates of Schenectady High School.

Ichabod Spencer (1822) Scholarship. Established by Mrs. Katherine Spencer Leavitt in memory of her father, the Reverend Ichabod S. Spencer, Class of 1822.

Walter A. Spencer (1972) Scholarship. Established by Walter A. Spencer, Class of 1972.

Dr. Jonathan R. Spicehandler (1970) Scholarship. Established by Debra F. Spicehandler in memory of her husband. Awarded to a student majoring in the sciences.

Nancy and Ross H. Spicer (1947) Scholarship. Created by Ross H. Spicer, Class of 1947. Preference shall be given to students majoring in Engineering.

Dorothy Golub Spira Scholarship. Established by Dorothy Golub Spira.

Leo Winston Spira (1927) and Dorothy Golub Spira Scholarship. Created by Dorothy Golub Spira in honor of her husband, Leo Winston Spira, Class of 1927.

Ronald W. (1958) and Carol A. Spira Endowed Scholarship. Created from the gifts of Ronald Spira '58 and Carol Spira, with preference for students studying English or humanities and require assistance to attend Union College.

Robert C. Sprong (1950) and Anna Sprong Scholarship. Created from the gifts of Robert C. Sprong, Class of 1950, to students majoring in engineering.

Dr. Frank R. (1926) and Adelaide H. Stansel Scholarship. Created by Dr. and Mrs. Frank Stansel.

Eric T. Starck (1990) Memorial / Alumni Club of Boston Scholarship. Created from the gifts of family and friends of Eric T. Starck '90 and the Union College Regional Alumni Club of Boston. Preference to student(s) from the Greater Boston area, majoring in Political Science.

Starr Foundation Scholarship. Established in 1995 by a grant from the Starr Foundation to support an engineering student studying abroad.

Frederick Starr Scholarship. The gift of the Frederick Starr Contracting Co. Available to students from New York City.

Ralph W. Stearns (1907) Memorial Scholarship. Created from the gifts of Emma L. Stearns in memory of her husband.

Christian Steenstrup Memorial Scholarship. Established by the bequest of Laura Auer in memory of her father. Preference shall be given to students majoring in Mechanical Engineering.

Edward C. (1945) and Mary Regis Stefic Endowed Scholarship. Created from the gifts of Edward Stefic '45 for students who require financial assistance to attend Union College.

Earl E. Steinert (1924) Fund. Established through bequests from Earl E. and Margaret W. Steinert. Awarded to a student in the engineering division.

Charles P. Steinmetz Scholarship. A gift of the General Electric Co. Awarded first to employees or children of employees of the General Electric Co. and second to children of residents of Schenectady if there should be no GE applicants.

Charles P. Steinmetz Memorial Scholarship. Established by Marjorie Hayden, daughter of Joseph and Corrine Hayden. Charles Steinmetz adopted Joseph, his young lab assistant, in 1903 and they worked together until Steinmetz's death in 1923. Preference to students majoring in engineering or physics.

Stevens-Chadbourne Scholarship. Established by the daughters of Norman O. Chadbourne, Class of 1935, and Dorothy Stevens Chadbourne in honor of their 50th wedding anniversary. First preference to students from Schenectady County selected on a basis of character, financial need, and academic performance.

Albert Henry Stevenson (1936) Scholarship. Created from the gifts of Albert H. Stevenson, Class of 1936. Preference given to Union Students who reside at least 500 miles from the Capital District of New York State.

Charles D. Stewart (1952) Scholarship. Created by Charles D. Stewart, Class of 1952. Preference to students majoring in psychology, on the Dean's list, interested in continuing for a graduate degree and indicating an interest in an "applied" field, e.g. industrial, social clinical, counseling or organizational psychology.

Mark Stokes (2003) Memorial Scholarship. Created from the gifts of Union College and the Stokes family and friends. Preference shall be given to students who participate in extracurricular activities.

Hugh M. Stoller Memorial (1913) Scholarship. Established under the will of Prof. James H. Stoller, Class of 1884, in memory of his son, Hugh M. Stoller, Class of 1913.

Dr. William Stone Memorial Scholarship. Established by Warren Peter Wells '64 and Joan Walmsley Wells '59G and '61G for students requiring financial assistance to attend Union College.

Hyacinthia Stromillo Scholarship. Created from the gifts of Hyacinthia Stromillo, a friend of Union College.

Twitty J. Styles Endowed Scholarship. Created by Fred G. Pressley, Class of 1975, and others to honor Professor Twitty J. Styles. Preference shall be given to students majoring in biology.

A. Walter Suiter (1893) Scholarship. Established under the will of Dr. A. Walter Suiter, Class of 1893. Preference to a resident of the village or county of Herkimer, N.Y.

Surdna Foundation Scholarship. Established by a grant from the Surdna Foundation of New York City, John E. Andrus, donor of the initial gift to finance the foundation.

Henry J. Swanker (1931) Scholarship. Created from the gifts of Henry J. Swanker and Esther M. Swanker. First preference to students from Schenectady County; second preference to students from the Capital District of New York State.

Monroe M. Sweetland (1885) Scholarship. Established by the gift of Monroe M. Sweetland, Class of 1885. Preference to members of the Sweetland family.

Alfred J. Swyer, M.D. (1941) Scholarship. Established by Dr. Alfred J. Swyer, Class of 1941. First preference to a junior pre-med student who is ranked in the second quarter of his/her class.

Wilbur S. and Claire A. Tarbell Scholarship. Established by bequest of Claire A. Tarbell of Brooklyn, N.Y.

Anthony P. Tartaglia, M.D. (1954) Scholarship. Established by Dr. Anthony P. Tartaglia, Class of 1954.

Warren C. Taylor Memorial Scholarship. Established by Elizabeth L. Taylor in memory of her father, a professor of civil engineering from 1910 to 1950. Awarded to a student or students in the junior or senior year pursuing a full-time course of study in civil engineering or related fields.

Willard G. Taylor (1952) Scholarship. Established by William G. Taylor, Class of 1952.

Willard H. Taylor (1942) Scholarship. Established by Willard H. Taylor, Class of 1942. First preference to student(s) selected on the basis of character, financial need, and academic performance.

Taylor/Schneiderwind Scholarship. Established from the bequest of Helyn Taylor in memory of her husband, J. Stanley Taylor, Class of 1925, and her nephew, Harold C. Schneiderwind, Class of 1935.

Temple Family Endowed Scholarship. Created from the gifts of John E. Temple (1967), his wife Judy T. Temple and their three children. First preference will be given to students majoring in mathematics, the sciences or engineering and are from the states of Oregon, Washington, Idaho, Montana, Wyoming, or Utah. Second preference will be students majoring in mathematics, the sciences, or engineering.

Aaron Thal (1943) Scholarship. Established from the bequest of Aaron Thal, Class of 1943, awarded to a student who is a resident of the State of Ohio.

Muriel and Seymour Thickman (1944) Family Scholarship. Established by Muriel and Seymour Thickman, Class of 1944, to encourage students with a principally liberal arts education who are considering a career in the practice of medicine.

William (Billy) T. Thomas (1939) Scholarship. Established by Henriette Thomas in memory of her husband.

Chester C. Thorne (1857) Scholarship. Established under the will of Chester C. Thorne, Class of 1857. Awarded at the end of the junior year.

Denise Meigher Summerhayes Todd Memorial Scholarship. Created by Timothy A. Meigher, Class of 1975 in memory of his mother. Denise Todd graduated from Union College in 1986 at the age of 71.

Toll-Hill Scholarship. Created from the gifts of Albert Karen Hill, Class of 1946 and Perrie Jones Hill honoring members of the Toll and Hill families who have attended Union College.

Alan R. Tropp (1951) Scholarship. Created from the gifts of Mrs. Yvonne Tropp, family, and friends.

Troy Scholarship Fund. The gift of residents of the city of Troy, N.Y., secured through the efforts of Union College alumni in that city. The annual income used to award a scholarship to students who reside in the city of Troy.

James Ullman (1941) Scholarship. Established by Dr. Sanford Ullman, son of James Ullman Class of 1941. Preference will be given to students who graduated from the following high schools: Hudson, Germantown, Chatham, Ichabod Crane or Taconic Hills.

Samson O.A. Ullman Endowed Scholarship. Established by Samson O.A. Ullman, Preference will be given to students who are foreign born.

Professor James E. and Jean A. Underwood Scholarship. Created from the gifts of Richard A. Ferguson, Class of 1967, in honor of Professor and former interim President of Union College, James E. Underwood.

Union College Club of the Capital Region Ed Fitz Memorial Scholarship. Created by members of the Schenectady Alumni Club to honor Ed Fitz, athletic trainer for thirty-three years. Awarded with preference to students from Schenectady County who, it is anticipated, will enhance the reputation of the College through participation in extracurricular activities.

United States Navy V-12/V-5 Scholarship. Established by gifts from alumni who were members of the V-12/V-5 units at Union College during World War II, in memory of deceased members of these units and to honor all who served in these units. Preference to undergraduates who are children of parents who have served or are currently serving in the United States Armed Forces.

Joseph Ushkow Scholarship. Created by Jerome Serchuck and Joan Ushkow Serchuck. Mr. Ushkow received an honorary degree in 1971.

Laszlo Z. Valachi (1961) Scholarship. Created from the gifts of Laszlo Z. Valachi, Class of 1961 and Susan F. Valachi. Awarded to students who are majoring in or studying Geology.

William Henry Van Schoonhoven (1829) Scholarship. Established by Mrs. Harriet V. E. Thorne in memory of her father, William Henry Van Schoonhoven, Class of 1829.

Robert Bruce Van Valkenburg Endowed Scholarship. An endowed scholarship created from the gifts of Howard E. Van Valkenburg, Class of 1942, and his wife Betty A. Van Valkenburg, in memory of their son, Robert Bruce Van Valkenburg.

Alan B. Van Wert Scholarship. Established by Alan B. Van Wert, Class of 1937. First preference shall be given to a resident of the State of Maine in recognition of his/her scholastic accomplishments, character, and promise in extracurricular activities.

John Vanneck Scholarship. Established by Paul Rieschick, Class of 1974, in memory of John Vanneck, a benefactor to Paul Rieschick and others.

Edward F. Vassallo (1990) Memorial Endowed Scholarship. Established by members of the Class of 1990, for students requiring financial assistance to attend Union College. First preference given to students who demonstrate an interest in the Arts at Union, with an emphasis on involvement in Theatre. Second preference given to students involved in Arts-related endeavors such as dance, music, or art.

William H. Vaughn (1885) Scholarship. Established by Mrs. Jennie C. Vaughn, in memory of her husband, William H. Vaughn, Class of 1885.

Daniel Vedder Scholarship. Established by Daniel Vedder. Available at the end of the first year to a member of the first-year class who is preparing for the Christian ministry.

Cornelia Veeder Scholarship. Established under the will of Miss Cornelia Veeder.

Eugene P. Vehslage (1949) Scholarship. Established by Eugene P. Vehslage, Class of 1949. Preference to students pursuing electrical engineering or computer science.

Luciano & Pasqua Venditti Scholarship. Award to any and all direct linear descendants of Luciano & Pasqua.

Leo and Evelyn Viniar Scholarship. Created from the gifts of David A. Viniar, Class of 1976, as trustee for the Viniar Family Foundation, in honor of his parents.

Samuel Sherwood Wakeman (1864) Scholarship. Established under the will of Samuel Sherwood Wakeman, Class of 1864. Available to residents of Saratoga County, N.Y., preference to applicants from the village of Ballston Spa.

Charles Newman Waldron (1906) and Dorothy Waterman Waldron Memorial Fund. Created from the gifts of William A. Waldron, Class of 1935, and others in memory of his parents, Charles Newman Waldron, Class of 1906, and Dorothy Waterman Waldron, in honor of their long lives of devoted and fruitful service to Union College. Income is used to assist deserving undergraduate students in purchasing books and other articles necessary or desirable in their academic work.

Nicholas L. Wallace (1926) Scholarship. Created from the gifts of Mildred S. Wallace in memory of her husband, Nicholas L. Wallace, Class of 1926.

William and Dorothy Reimann Wallace Scholarship. Created from the gifts of William Wallace III (1947).

Maurice C. Walsh Memorial Scholarship. Created by Margo and Bruce Walsh, Class of 1960, in memory of Mr. Walsh's father. Preference to students studying electrical engineering or computer systems engineering.

Ruth E. Walsh Memorial Scholarship. Created by Margo and Bruce Walsh, Class of 1960, in memory of Mr. Walsh's mother. Preference to students studying electrical engineering or computer systems engineering.

Warner-Lambert/Kenneth Whalen (1949) Scholarship. Created by the Warner-Lambert Company in honor of Union's life trustee and director of Warner Lambert, Kenneth J. Whalen, Class of 1949.

Cecil M. Waterbury (1924) and John W. Waterbury (1965) Endowed Scholarship. Created from the gifts of John W. Waterbury, Class of 1965, for students requiring financial assistance to attend Union College.

Taylor Waterhouse (1923) Memorial Scholarship. Established by the bequest of Alice Waterhouse in memory of her brother, Taylor Waterhouse, Class of 1923. Awarded annually to fulltime students pursuing courses in chemistry, with preference to students who plan a career in the field of chemistry.

J. Herbert Watson (1940) Endowed Scholarship. An endowed fund created from the gifts of Rachel Watson in memory of her late husband. Preference will be given to engineering students.

Dr. Myron Weaver Scholarship. Established by friends of Dr. Myron Weaver and supplemented by the bequest of Dr. Weaver, dean of the faculty of medicine at the University of British Columbia and the Union College physician and director of health service from 1956 until his death on Dec. 26, 1963.

Abbott S. Weinstein (1946) Scholarship. Established by Natalie W. Weinstein in memory of her husband, Abbott S. Weinstein, Class of 1946.

Steven D. Weinstein (1976) Memorial Scholarship. Established with proceeds from a life insurance policy. Preference to students participating in the Terms Abroad program.

Weisburgh Scholarship. Created from the gift of Leon Weisburgh, Class of 1950 and his wife, Frankie.

Mildred and E. Glen Wells (1927) Scholarship. Created from the gifts of E. Glen Wells, Class of 1927. Preference to students pursuing courses in economics.

Mary Elizabeth Wemple Memorial Scholarship. Established by the family and friends of Betty Wemple, who was a long-time employee serving the College in many positions helping students.

Ellwood B. And Alma A. Wengenroth Scholarship. Created from the gifts of Ellwood B. Wengenroth, Class of 1935. Awarded to students pursuing courses in engineering.

Elizabeth R. Whalen Scholarship. Established by Kenneth J. Whalen, Class of 1949, in honor of his wife.

Royton F. Wheadon (1908) Scholarship. A gift from a trust established by Royton F. Wheadon, Class of 1908.

William M. Wheeler (1936) Scholarship. Established from gifts of William M. Wheeler, Class of 1936, and awarded annually to students pursuing courses in engineering.

Squire Whipple (1830) Memorial Scholarship. Established in 1999 in memory of Squire Whipple, Class of 1830.

William C. White Memorial Scholarship. Established by his wife, Mrs. Lillian McKim White, and three children, Dr. Malcolm L. White, William M. White, and Mrs. Virginia White Sargent. Awarded annually to an electrical engineering student who has demonstrated inventive and creative thinking in the field of electronics.

Willis Rodney Whitney-Peter Stephen Sykowski (1935) Scholarship. Gift of the late Dr. Peter Sykowski, Class of 1935, a prominent Schenectady ophthalmologist, in memory of Dr. Willis R. Whitney. Annual income used to award a scholarship to one or more students. Preference to a qualified graduate of St. Mary's Parochial School of Schenectady, N.Y.

Robert H. Wiese (1944), M.D., Scholarship. Created by Joyce M. Wiese in memory of her husband.

James W. Wilson (1969) Scholarship. Established by James W. Wilson, Class of 1969, and awarded to students who require financial assistance. Preference to students who demonstrate leadership in extracurricular activities as well as maintaining high academic performance.

John David Wolfe Memorial Scholarship. Established by Miss Catherine Lorillard Wolfe in memory of her father, John David Wolfe. Preference to students residing south of the Mason-Dixon Line.

The Wold Geoscience Scholarship. A merit-based scholarship established by John S. Wold, Class of 1938, and his wife, Jane Wold, for award to a first-year student, who will receive the scholarship until graduation provided the student is majoring in the geosciences and whose performance is outstanding.

Arthur S. Wright (1882) Scholarship. Established under the will of Mrs. Julia B. Wright in memory of her husband, a member of the Class of 1882.

W. Howard Wright (1895) Scholarship. Established by W. Howard Wright, Class of 1895, and his son, Henry DeForest Wright, in memory of his father. Mr. W. H. Wright and Henry D. Wright served with distinction on the Union College Board of Trustees. Awarded to outstanding full-time undergraduate students majoring in Mechanical Engineering, in recognition of scholastic achievement and leadership in extracurricular activities.

Kenneth L. Wyse (1972) Endowed Scholarship. First preference given to students who are interested in the fields of fashion and design; second preference to students who study in the visual and performing arts.

William C. Yates (1898) Scholarship. The bequest of his wife, Grace Lawrence Yates, who was the daughter of Rev. Dr. Egbert C. Lawrence, Class of 1869. William C. Yates, Class of 1898, was an honorary trustee of Kappa Alpha fraternity and the recipient of the Alumni Council Gold Medal for Notable Service.

Martha H. and Alexander J. Young (1928) Scholarship. A gift established from the estate of Martha H. Young, widow of Dr. Alexander J. Young, Class of 1928.

Shiu Kong Yuen (1942) Scholarship. Created from gifts made by the family of the late Shiu Kong (Mac) Yuen, Class of 1942. Preference to students studying science or engineering.

Albany Law School and Albany Medical College Scholarships

Union College administers scholarships for graduates of the College attending the Albany Law School and the Albany Medical College.

Carter Davidson Memorial Scholarship. Established by friends and associates of Carter Davidson, 13th president of Union College and seventh chancellor of Union University. Awarded to a graduating senior of Union College who will attend a graduate division of Union University.

Fuller Medical Scholarship. Established under the will of Dr. Robert M. Fuller, Class of 1863. Available to medical students of the Albany Medical College who have excelled in chemistry at Union.

John K. Porter (1837) Memorial Scholarship. Established by the gift of Mrs. John K. Porter in memory of her husband, John K. Porter, Class of 1837. Available to graduates attending the Albany Law School.

William C. Saxton Scholarship. Established from the estate of Anna Hotaling Saxton in memory of her husband, William C. Saxton. Available to students in the Albany Law School.

Judge Gilbert McMaster Speir (1832) Memorial Scholarship. Established by Emily Speir Arnold in memory of her father, Judge Gilbert McMaster Speir, Class of 1832. Awarded by the faculty to the graduating senior entering the Albany Law School who has the greatest proficiency in historical studies.

Harold C. Wiggers Scholarship Fund. Established by Dr. David and Elynor Falk to honor the former dean of the Albany Medical College, Harold C. Wiggers. Used at Albany Medical College and limited to graduates of Union College who have completed two years of premedical preparation at Union College. Dr. David Falk graduated from Union College in 1939 and Albany Medical College in 1943.

Annual Scholarships

Walter & Naomi Baker Scholarship. Preference given to one or more students in the following order: 1. engineering students; 2. students in the field of science; 3. students in the field of mathematics.

Dr. David J. Becker (1979) Annual Scholarship. For students requiring financial assistance to attend Union College.

David J. Breazzano (1978) Scholarship. Sustained by the annual gift of David J. Breazzano, Class of 1978.

Class of 1941 Scholarship. Preference will be given to a student in good standing who has achieved the Dean's List for at least one year, is involved in extracurricular activities and has worked part time to support his or her education.

Class of 1963 Scholarship. Established by the Class of 1963 in honor of their 45th ReUnion.

Dreyfus Foundation Scholarships. Gift of the Dreyfus Foundation for National Merit scholars who are beginning their sophomore year and who plan a career in chemistry or related science.

David (1939) and Elynor Falk Annual Scholarship. Established by David Falk, M.D. to motivate a student to strive for continuing improvement in academic and personal development, with preference to a major in the biological sciences including but not limited to premedical preparation.

Geoffrey Exner Annual Scholarship. Awarded to students pursuing courses in history who require financial assistance. Students receiving this award must work the summer prior in order to contribute to their education.

Goldman Scholars - David Viniar (1976). Established through gifts from *Goldman Sachs Gives* at the recommendation of David Viniar, Class of 1976 and his wife, Susan.

Golub Annual Business Campaign Scholarship. Awarded to students from the Capital Region, NY (Schenectady, Albany, Montgomery, Saratoga, Rensselaer counties) with preference given to students from Schenectady county.

Jacobson Family Annual Scholarship. Preference given to students with financial need who demonstrate academic potential and reside in Wood River Valley, Idaho.

Ernest L. and Florence L. Judkins Scholarship. Established under the will of Mrs. Florence L. Judkins, providing for the Ernest L. and Florence L. Judkins Scholarship Fund. Selection of recipients to be made by the Scholarship Committee of the College.

Maggs Annual Business Campaign Scholarship. Awarded to students from the Capital Region, NY (Schenectady, Albany, Montgomery, Saratoga, Rensselaer counties) with preference given to students from Schenectady county.

Lothrop (1956) and Janice D. Smith Scholarship. Created by Janice D and Lothrop Smith, Class of 1956.

Albert J. Taggi (1945) Annual Scholarship. Preference given to a student studying electrical engineering.

Union College Community Scholarship (Formerly the Annual Business Campaign Scholarship). Sustained by annual gifts from Union College Community Scholars program donors. Awards will be made to students from the Capital Region (Schenectady, Albany, Saratoga, Montgomery, and Rensselaer counties) eligible for financial aid. Preference to students from Schenectady County. Annual Presidential Scholarships given by Golub Corporation, Maggs, and Greenberg Traurig.

Traurig Annual Business Campaign Scholarship. Awarded to students from the Capital Region, NY (Schenectady, Albany, Montgomery, Saratoga, Rensselaer counties) with preference given to students from Schenectady county.

The Morton H. Yulman (1936) Scholarship. Sustained by annual gifts from the children of Morton H. Yulman, Class of 1936, a life trustee of the College. Awarded to students entering their junior year. Preference given, but not limited to, students from the Capital District of New York State.

Fellowships

Alpha Phi Alpha Mohammad Omar (1994) Memorial Community Service Internship. Established by the brothers of Alpha Phi Alpha fraternity in memory of Mohammad A. Omar, a brother of the Pi Pi chapter who died in 1993 (degree awarded posthumously in 1994). The internship provides support to students volunteering for not-for-profit community organizations. Through it, and the example of Mohammad Omar, Alpha Phi Alpha strives to build awareness of and dedication to a lifetime of improving the quality of life for others, as well as promote the development of individuals to serve as strong examples of commitment to service.

David J. Bigda Summer Internship. An annual internship established by Carolyn Bigda Dulchinos '84 from the gift of her late father, David J. Bigda, to provide summer internship opportunities for students interested in progressive political, social and/or environmental activism.

Arnold Bittleman Fund for Undergraduate Summer Research. Established by students and friends of the late Professor Arnold Bittleman. Awarded to students performing summer research in the field of Visual Arts.

Booth Ferris Research Fellowship. Established by the Booth Ferris Foundation to support the Summer Science Research Endowment Fund.

Peter R. Brayton (1972) Endowed Fund. Created from the gifts of Peter R. Brayton '72 to provide assistance to undergraduate students interested in pursuing summer research projects in the biological sciences.

Andrew M. Brooks (1978) and Cassandra N. Brooks Terms Abroad Fellowship. Created by Andrew M. Brooks (1978) and Cassandra N. Brooks. Awarded to students who require financial assistance to participate in Union College's Terms Abroad Program.

Class of 1973 35th ReUnion Community Service Internship. Established by the Class of 1973 in honor of their 35th ReUnion. Awarded annually to Union College students interning in not-for-profit community service organizations.

Chelsea Leigh Cobb (2008) Terms Abroad Fellowship. Created by Ty and Leigh Stevenson Cobb to honor their daughter Chelsea Leigh Cobb. Awarded to students who require financial assistance to participate in Union College's Terms Abroad Program.

Lee L. Davenport (1937) Summer Research Fellowship. Established by Lee L. Davenport, Class of 1937, to students pursuing studies in engineering, chemistry, biology, physics, or geology.

Tracy Leigh Epstein-Pesikoff Terms Abroad Fellowship. Established by Michael J. Epstein, MD, Class of 1959, in honor of his daughter. Awarded annually to students participating in terms abroad.

Philip B. Evans (1965) Terms Abroad Fellowship. Established by Philip B. Evans, Class of 1965. Awarded to students who require assistance to participate in the terms abroad program for study in Asia.

Frank Gado Endowed Terms Abroad Fellowship. Created by Janet, Class of 1974, and Hans Black, MD, Class of 1974, to honor Frank Gado, professor emeritus of English, who retired in 1996 after more than 30 years of service. Awarded to a student who wants an international learning experience and cannot afford the full cost.

Paula Gmelch Fund for Undergraduate Summer Research. Created by George and Sharon Gmelch, faculty members in Union's Anthropology Department, in honor of their sister-in-law. Awarded to a student interested in performing summer research in the areas of anthropology or environmental studies.

Kelsey Hastings Golitz Memorial Fund for Cancer Research. Established by Rebecca Hastings and Dr. Michael Golitz in memory of their daughter, Kelsey Hastings Golitz, Class of 2010, to support summer research fellowships, senior thesis projects or other such academic undertakings related or contributing to understanding the causes of cancer or improving the diagnosis/treatment of cancer.

Roger H. Hull Community Service Internship. Created by the Trustees of Union College in honor of President Roger H. Hull's service to the College from 1990 to 2005. Awarded to a student interested in pursuing a career in community or non-profit service.

Edward R. Kane (1940) Endowed Chemistry Fund.

David S. Kaplan Term in Washington. Created from the gifts of Congressional Quarterly, its employees, and friends and relatives of David S. Kaplan, with income awarded to a student participating in Union's annual term in Washington, DC.

The Professor Frederick A. Klemm and Eleanor G. Klemm Fund for International Study and Service. Established by Frederick Klemm, professor emeritus of German, considered the "father of Terms Abroad" and his wife Eleanor, to develop College programs that prepare students for international careers in government service, non-governmental organizations and the private sector.

Laudise Summer Research Fellowship in Chemistry. Created by Robert A. Laudise, Class of 1952, in memory of his father, Anthony T. Laudise.

Ruth Lewin Endowed Fund for Students on Terms Abroad. Created by Ruth Lewin, a good friend of Union College. To assist students who choose to extend their education by taking part in terms abroad.

Kenneth N. Mathes (1935) Fund. Created by Kenneth N. Mathes, Class of 1935, for engineering students on terms abroad.

Francis C. McMath (1946) Summer Research Fellowship in Engineering. Established from the gifts of Francis C. McMath, Class of 1946, with income awarded annually to students entering senior year who wish to conduct research in the field of environmental engineering.

Byron A. Nichols Endowed Fellowship for Faculty Development. Created from the gifts of Alan and Susan Maycock and friends of Prof. Byron Nichols, to help Union College faculty develop programs and skills that reflect the quality of intellectual, social and personal interactions that Byron fostered and developed with students during his career at Union.

Merck Summer Undergraduate Research Scholarship. Established by the Merck Co. Foundation to support summer research in chemistry.

NYNEX Foundation Endowment Fund. Established in 1988 with funds applied to the teaching interns component of the Student Aid for Educational Quality.

Robert Panoff (1942) Summer Research Fellowship. Established by Kathleen Panoff in memory of her husband, Robert, Class of 1942, and supported by gifts of Mrs. Panoff and others. Made to students of high academic standing in electrical engineering who participate in a summer research program under the guidance of the electrical engineering faculty.

Harriet and Paul(1958) Rosen Endowed Summer Research Fellowship. An endowed fund created from the gifts of Dr. Paul R. Rosen and Harriet Rosen to provide assistance to students who apply and receive undergraduate summer research fellowships at Union College.

John (1981) and Michele (1984) Sciortino Cancer Research Fund. Established in 2005 by John Sciortino, Class of 1981, and Michele Sciortino, Class of 1984, in memory of Russell Sciortino, Frederick Hudson, Jr., Mark Hudson and all those whose lives have been affected by cancer illnesses. Awarded annually to a student to support a summer research fellowship, senior thesis project or such other academic undertaking that is related or might contribute to the understanding of the causes of cancer or improve the diagnosis or treatment of cancer illnesses.

Robert Avon Smith (1952) Summer Research Fellowship in Biomedical Engineering. Created by Robert Avon Smith, Class of 1952. Awarded to students in the sciences or engineering who participate in a summer research program in biomedical engineering under the guidance of College faculty.

William Cady Stone Fellowship. Established by William Stone. Awarded to help provide a full-time student with one year of study abroad.

Surdna Summer Science Research Fellowships. Established by the Surdna Foundation. Awarded to students enrolled in the sciences.

Bill Thomas Endowed Study Abroad Fund. Established by the friends of Prof. William W. Thomas to support students with financial need who wish to go on full terms abroad. Preference given to declared Modern Languages majors and minors with emphasis on those programs that involve the study of a foreign language.

Richard C. Tilghman (1969) Term Abroad Fellowship. Established by Richard C. Tilghman, Class of 1969. Awarded to a student pursuing a major in the sciences, engineering, or mathematics.

J. and P. Fisher Viglielmo Terms Abroad Fellowship. Established from the gifts of James A. Fisher '81 and Pamela Viglielmo '82. Awarded annually to students who participate in the terms abroad program.

Kelly M. Williams (1986) Terms Abroad Fellowship. Established by Kelly M. Williams, Class of 1986 to support students who require assistance to participate in Union College's Terms Abroad Program.

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Matthew Anderson, Visiting Assistant Professor of Computer Science (2014). B.S. 2004, Carnegie Mellon University; M.S. 2009, University of Wisconsin-Madison; Ph.D. 2012, University of Wisconsin-Madison

Cay M. Anderson-Hanley, Associate Professor of Psychology (2004). B.S. 1988, Gordon College; M.S. 1991, Ph.D. 1995 State University of New York at Albany

Michele P. Angrist, Professor of Political Science; Chair of the Department (2000). B.A. 1992, Washington University; M.P.A. 1995, Ph.D. 2000, Princeton University

Kenneth Aslakson, Associate Professor of History (2007). B.A. 1986, Southwestern University; J.D. 1991, Ph.D. 2007, University of Texas at Austin

Robert B. Baker, William D. Williams Professor of Philosophy (1973). B.A. 1959, City College of New York; Ph.D. 1967, University of Minnesota

Valerie B. Barr, Visiting Professor of Computer Science (2004). B.A. 1977, Mount Holyoke College; M.S. 1979, New York University; Ph.D. 1996, Rutgers University

Charles R. Batson, Professor of French (1998). B.A. 1987, Furman University; M.A. 1989, University of Virginia; Ph.D. 1997, University of Illinois

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Brittney Belz, Lecturer of Theater and Dance and Costumer (2010). BFA 2005, University of Connecticut at Storrs; MFA 2008, University of Virginia at Charlottesville

Suzanne Benack, Professor of Psychology (1981). B.A. 1975, Swarthmore College; Ph.D. 1981, Harvard University

Martin Benjamin, William D. Williams Professor of Visual Arts (Photography) (1979). B.A. 1971, State University of New York at Albany

Stephen M. Berk, Henry and Sally Schaffer Professor of Holocaust and Jewish Studies (1967). B.A. 1962, University of Pennsylvania; M.A. 1964, University of Chicago; Ph.D. 1971, Columbia University

Kristin A. Bidoshi, Associate Professor of Russian; Director of Russian & East European Studies (2001). B.A. 1991, Beloit College; M.A. 1995, Ph.D. 2000, The Ohio State University

Jennifer Bishop, Senior Lecturer in Biology (2009). B.S. 1997, Bloomsburg University of Pennsylvania; Ph.D. 2005, North Carolina State

George Y. Bizer, Professor of Psychology (2005); Chair of the Department. B.A. 1995, Indiana University; M.A. 1997, Ph.D. 2001, The Ohio State University

Robert Bovard, Lecturer of Theater and Technical Director/Lighting Designer (2011). B.S. 1974, Lehigh University; MFA 1997, Dallas Theater Center/Trinity University

Claire Bracken, Associate Professor of English (2007). B.A. 2001, University College Dublin; M.A. 2002, University College Cork; Ph.D. 2008, University College Dublin

Denis Brennan, Lecturer in History (2006). B.A. 1990, M.A. 1992, Ph.D. 2003, State University of New York at Albany

Karen Brison, Roger Thayer Stone Professor of Anthropology; Chair of the Department (1993). B.A. 1981, McGill University; M.A. 1983, Ph.D. 1988, University of California at San Diego

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Angela Commito, Visiting Assistant Professor of Classics (2016). A.B. 2003, Bowdoin College; M.A. 2010, University of Michigan, Ann Arbor; Ph.D. 2014, University of Michigan, Ann Arbor

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Kara A. Doyle, Associate Professor of English (2000). A.B. 1991, Georgetown University; M.A. 1998, Ph.D. 2000, Cornell University

Chris N. Duncan, May I. Baker Professor of Visual Arts (1988). B.A. 1975, Colby College

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Megan M. Ferry, Associate Professor of Chinese; Chair of the Department (1999). B.A. 1989, Mount Holyoke College; M.A. 1993, Ph.D. 1998, Washington University

William A. Finlay, Professor of Theater; Director of the Morton and Helen Yulman Theater; Chair of the Department (1994). B.A. 1974, Rhode Island College; M.F.A. 1980, University of Connecticut

Leo J. Fleishman, William D. Williams Professor of Biological Sciences (1989). B.A. 1978, Tufts University, Ph.D. 1986, Cornell University

Andrea R. Foroughi, Associate Professor of History; Director of Women's & Gender Studies (1999). B.A. 1990, Santa Clara University; M.A. 1995, Ph.D. 1999, University of Minnesota

Ellen Foster, Lecturer in Economics (2000). B.A. 1980 Bryn Mawr College; Ph.D. 1991, State University of New York at Albany

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Harold O. Fried, David L. and Beverly B. Yunich Professor of Business Ethics and Professor of Economics (1983). B.A. 1972, University of Michigan; Ph.D. 1978, University of North Carolina

Paul D. Friedman, Senior Lecturer in Mathematics (2001). A.B. 1989, Dartmouth College; Ph.D. 1997, State University of New York at Stony Brook

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John I. Garver, Professor of Geology (1989). B.A. 1984, Middlebury College; M.S. 1985, Ph.D. 1989, University of Washington

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Ashraf Ghaly, Carl B. Jansen Professor of Engineering; Director of Engineering (1993). B.Sc. 1982, M.Sc. 1986, Alexandria University, Alexandria, Egypt; Ph.D. 1990, Concordia University, Montreal, Canada

David Gillikin, Associate Professor of Geology (2010). B.Sc. 1994, State University of New York at New Paltz; M.Sc. 1998, Ecotechnie, UNESCO/Cousteau European Postgraduate Programme; M.Sc. 2000, Ph.D. 2005, Free University of Brussels

George Gmelch, Professor of Anthropology (1982). B.A. 1968, Stanford University; M.A. 1970, Ph.D. 1975, University of California, Santa Barbara

Sharon B. Gmelch, Professor of Anthropology (1981). B.A. 1969, M.A. 1971, Ph.D. 1974, University of California, Santa Barbara

Melinda A. Goldner, Professor of Sociology (1998). B.A. 1990, Tufts University; M.A. 1993, Washington State University; Ph.D. 1998, The Ohio State University

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Rebecca A. Koopmann, Professor of Physics and Astronomy; Chair of the Department (1998). B.S. 1989, Union College; M.S. 1992, Ph.D. 1997, Yale University

Bernhard H. Kuhn, Associate Professor of English; Chair of the Department (2000). B.A. 1991, Brown University; Ph.D. 2001, Princeton University

Jaron Koppers, Visiting Assistant Professor of Mechanical Engineering (2015). B.S. 2006, Worcester Polytechnic Institute; M.S., Ph.D. 2012, Rensselaer Polytechnic Institute

Scott M. LaBrake, Senior Lecturer in Physics and Astronomy and Accelerator Manager (2001). B.S. 1995, Siena College; M.S. 1997, Ph.D. 2003, State University of New York at Albany

Robert J. Lauzon, Professor of Biological Sciences; Chair of the Department (1996). B.S. 1982 McGill University; Ph.D. 1987, Queen's University

Melinda A. Lawson, Senior Lecturer in History (2000). B.A. 1985, State University of New York at Albany; M.A. 1987, Ph.D. 1998, Columbia University

Stephen C. Leavitt, Professor of Anthropology and Vice President for Student Affairs/Dean of Students (1993). B.A. 1981, Swarthmore College; M.A. 1983, Ph.D. 1989, University of California at San Diego

Kathryn Lesh, Professor of Mathematics; Chair of the Department (2001). B.A. 1983, Swarthmore College; Ph.D. 1988, Massachusetts Institute of Technology

Judith M. Lewin, Associate Professor of English (2000). B.A. 1991, Brown University; M.A. 1994, Ph.D. 2002, Princeton University

Bradley G. Lewis, Professor of Economics (1979). B.A. 1969, Carleton College; M.A. 1978, Ph.D. 1982, University of Chicago

Thomas Lobe, Senior Lecturer in Political Science (2002). B.A. 1965, Earlham College; M.A. 1966, London School of Economics; Ph.D. 1975, University of Michigan

Kathleen LoGiudice, Professor of Biological Sciences (2002). B.S. 1981, Boston College; M.S. 1995, Ph.D. 2000 Rutgers University

Karen A. Lou, Senior Lecturer in Chemistry (1993). B.A. 1979, Williams College; Ph.D. 1985, Massachusetts Institute of Technology

Sheri Lullo, Assistant Professor of Visual Arts (2011). B.A. 1999, University of Chicago; M.A. 2003, Ph.D. 2009, University of Pittsburgh

Katherine R. Lynes, Associate Professor of English (2006) B.A. 1991, M.A. 1994, Portland State University, Ph.D. 2004, Rutgers University

Laura A. MacManus-Spencer, Associate Professor of Chemistry (2006). B.S. 2000, College of St. Benedict; Ph.D. 2005, University of Minnesota

Joyce Madancy, Professor of History; Chair of the Department (1995). B.A. 1980, College of William and Mary; M.A. 1983, Cornell University; Ph.D. 1996, University of Michigan

Mohammad Mafi, Professor of Engineering and Leader of Environmental Science, Policy and Engineering (1985). B.S. 1977, Sharif University of Technology; M.S. 1980, Ph.D. 1985, Pennsylvania State University

Seyfollah Maleki, R. Gordon Gould Professor of Physics and Astronomy (1983). B.S. 1974, University of New Orleans; M.S. 1978, Ph.D. 1981, Rensselaer Polytechnic Institute

Nelia Mann, Assistant Professor of Physics and Astronomy (2015). B.S. 2001, Stanford University; M.S. 2003, Ph.D. 2006, University of California, Santa Barbara

Matthew R. Manon, Lecturer of Geology (2015). B.A. 2002, Franklin and Marshall College; Ph.D. 2008, University of Michigan

Jonathan M. Marr, Senior Lecturer of Physics and Astronomy (1995). B.S. 1981, University of Rochester; M.A. 1985, Ph.D. 1990, University of California at Berkeley

Lori Jo Marso, Doris Zemmurray Stone Professor of Modern Literary and Historical Studies (1997). B.S. 1985, University of South Dakota; M.S. 1986, London School of Economics; Ph.D. 1994, New York University

Victoria J. Martinez, Professor of Spanish (1991). B.A. 1971, M.A. 1986, University of Kentucky; Ph.D. 1992, Arizona State University

Jennifer M. Matsue, Professor of Music (2003). B.A. 1992, Wellesley College; M.A. 1996, Ph.D. 2003, University of Chicago

Louisa C. Matthew, Professor of Visual Arts (1991). B.A. 1972, M.A. 1975, University of Vermont; M.F.A. 1982, Ph.D. 1988, Princeton University

Rajashree Mazumder, Assistant Professor of History (2014). B.A. 2000, Delhi University; M.A. 2002, Delhi University; M. Phil 2005, Delhi University; Ph.D. 2013, University of California, Los Angeles

Therese A. McCarty, John Prior Lewis Professor of Economics (1987). A.B. 1979, Bryn Mawr College; A.M. 1981, Ph.D. 1987, University of Michigan

James McGarrah, Lecturer of Chemistry (2014). B.S. 1995, University of California, San Diego; Ph.D. 2002, University of Rochester

Dianne McMullen, Professor of Music (1996). A.B. 1976, Smith College; M.M. 1978, M.A. 1980, Ph.D. 1987, The University of Michigan at Ann Arbor

Teresa A. Meade, Florence B. Sherwood Professor of History and Culture (1987). B.A. 1972, University of Wisconsin; M.A. 1975, Ph.D. 1984, Rutgers University

Jennifer Mitchell, Visiting Assistant Professor in English (2015). B.A. 2004, Union College; M.A. 2005, Washington University, St Louis; Ph.D. 2012, City University of New York

Andrew J.F. Morris, Associate Professor of History (2003). A.B. 1991, Brown University; M.A. 1996, Ph.D. 2003, University of Virginia

Lindsay C. Morton, Visiting Assistant Professor of Psychology (2014). B.A. 2005, Bucknell University; M.S. 2008, Villanova University; Ph.D. 2014, State University of New York at Albany

Daniel O. Mosquera, Associate Professor of Spanish (1998). B.A. 1988, M.A. 1992, Cleveland State University; M.A. 1993, Ph.D. 1998, Washington University

Eshragh Motahar, Professor of Economics (1984). B.Sc. 1970, M.Sc. 1971, University of London; M.A. 1979, Ph.D. 1989, Johns Hopkins University

Claire Mouflard, Visiting Assistant Professor of Modern Languages (2014). B.A. 2005, Universite de Bourgogne; M.A. 2007, University of Montana; Ph.D. 2014, University of Washington

Miryam Moutillet, Senior Artist-in-Residence in Dance; Director of the Dance Program (1996). B.S. Skidmore College

Hans-Friedrich O. Mueller, Thomas Lamont Professor of Ancient and Modern Literature (2004). B.A. 1983, B.A. 1985, University of Wisconsin-Milwaukee; M.A. 1989, University of Florida; Ph.D. 1994, University of North Carolina at Chapel Hill

Stephanie A. Mueller, Assistant Professor of Spanish (2013). B.A. 2005, Luther College; M.A. 2007, Ph.D. 2013, The University of Iowa

Jillmarie Murphy, Associate Professor of English (2008). B.A., M.A. 1989, The College of Saint Rose; Ph.D. 2005, State University of New York at Albany

Cheikh M. Ndiaye, Associate Professor of French (2000). B.A. 1991, M.A. 1993, University of Dakar; Ph.D. 2001, University of Connecticut

Erika M. Nelson, Associate Professor of German (2007). B.A. 1990, Oberlin College; M.A. 1995, Ph.D. 2001, University of Texas at Austin

Laina Nemett, Assistant Professor of Visual Arts (2015). B.A. 2006, Brown University; M.F.A. 2012, Maryland Institute College of Arts

David Nowkowski, Visiting Assistant Professor of Philosophy (2015). B.A. 2008, Saint Vincent College, Pennsylvania; M.A. 2011, Princeton University; Ph.D. 2014, Princeton University

David C. Ogawa, Associate Professor of Visual Arts; Chair of the Department; Co-Director of Digital Media (1999). B.A. 1986, University of Missouri; M.A. 1989, Ph.D. 1999, Brown University

Robert M. Olberg, Florence B. Sherwood Professor of Life Sciences (1981). B.A. 1968, Rice University; Ph.D. 1978, University of Washington

Timothy Olsen, Associate Professor of Music (1994). B.M. 1983, Washington University; M.A. 1985, University of Minnesota; M.M. 1988, M.M.A. 1989, D.M.A. 1995, Yale University

Fernando D. Orellana, Associate Professor of Visual Arts (2005). B.F.A. 1998, The School of the Art Institute of Chicago; M.F.A. 2004, The Ohio State University

Chad R. Orzel, Associate Professor of Physics and Astronomy (2001). B.A. 1993, Williams College; Ph.D. 1999, University of Maryland at College Park

Michelle Osborn, Visiting Assistant Professor of Anthropology (2014). B.A. 2001, Vanderbilt University; M.A. 2005, Case Western Reserve University; M.S. 2006, University of Oxford, U.K.; Ph.D. 2012, University of Oxford, U.K.

Maritza M. Osuna, Senior Lecturer in Spanish (1993). B.A. 1983, University of Puerto Rico; M.A. 1988, University of Michigan; Ph.D. 2003, State University of New York at Albany

Zoe M. Oxley, Professor of Political Science; Director of American Studies (1998). A.B. 1991, Bowdoin College; M.A. 1995, Ph.D. 1998, The Ohio State University

Chandra Sekhar Pappu, Visiting Assistant Professor of Electrical and Computer Engineering (2016). B.S. 2008, Jawaharlal Nehru Technology University; M.S. 2010, University of Texas at El Paso; Ph.D. 2015, University of Texas at El Paso

Margot Paulick, Assistant Professor of Chemistry (2010). B.S. 2000, University of Wisconsin at Madison; Ph.D. 2006, University of California at Berkeley

Anastasia Pease, Senior Lecturer in English (2007). B.A. 1995, M.A. 1998, Louisiana Tech University; M.A. 2002, Doctor of Arts 2004, State University of New York at Albany

Brian J. Peterson, Associate Professor of History; Director of Africana Studies (2006). B.A. 1994, M.A. 1998, University of California at Santa Cruz; Ph.D. 2005, Yale University

Kim Plofker, Assistant Professor of Mathematics (2007). B.A. 1985, Haverford College; Ph.D. 1995, Brown University

Barbara A. Pytel, Senior Lecturer in Biological Sciences (1997). B.S. 1973, St. John's University; M.S. 1978, Ph.D. 1985, New York University

Kaywana Raeburn, Feigenbaum Assistant Professor of Behavioral Economics (2016). B.S. 2007, University of West Indies; M.A. 2009, McGill University; Ph.D. 2016, McGill University

Vijayakumar Ramalingam, Visiting Assistant Professor of Chemistry (2015). B.S. 1999, University of Madras, India; M.S. 2001, Anna University, India; Ph.D. 2009, City University of New York

Ashok Ramasubramanian, Associate Professor of Mechanical Engineering (2007). B.E. 1996, Anna University, Chennai, India; M. S. 1998, University of Massachusetts; Ph.D. 2002, Thayer School of Engineering, Dartmouth College

Andrew J. Rapoff, Professor of Mechanical Engineering (2004). B.S. 1983, University of Missouri at Columbia; M.S. 1989, University of Missouri at Rolla; Ph.D. 1997, University of Wisconsin at Madison

Stacie Raucci, Associate Professor of Classics; Chair of the Department (2004). B.A. 1997, Wellesley College; M.A. 2000, Ph.D. 2004, University of Chicago

Gary R. Reich, Professor of Physics and Astronomy (1979). A.B. 1968, Kenyon College; M.S. 1970, Northwestern University; Ph.D. 1978, Rutgers University

Michele Ricci Bell, Associate Professor of German (2006). B.A. 1993, Columbia College, Columbia University; M.A. 1997, Ph.D. 2003, Stanford University

Steven K. Rice, Professor of Biological Sciences (1998). B.S. 1983, Yale University; M.S. 1991, Ph.D. 1994, Duke University

John Rieffel, Associate Professor of Computer Science (2009). B.A., B.S. 1999, Swarthmore College; M.A. 2004, Ph.D. 2006 Brandeis University

Donald T. Rodbell, Professor of Geology (1993). B.S. 1983, St. Lawrence University; M.S. 1986, Ph.D. 1991, University of Colorado

Stephen G. Romero, Associate Professor of Psychology; Director of Interdisciplinary Studies (2001). B.M. 1990, Berklee College of Music; M.A. 1995, Ph.D. 1998, University of Colorado

Kimmo I. Rosenthal, Professor of Mathematics (1979-81, 1982). B.S. 1974, M.A. 1976, Ph.D. 1979, State University of New York at Buffalo

Jill Liann Salvo, Associate Professor of Biology (1991). B.S. 1980, Denison University; M.Phil.1982, Ph.D. 1987, Yale University

Robert Samet, Assistant Professor of Anthropology (2014). B.A. 1998 Duke University; M.A. 2004, Columbia University; Ph.D. 2012, Stanford University

Jeannette L. Sargent, Visiting Assistant Professor of English (2008). B.A. 1975, University of Massachusetts at Amherst; M.A. 1978, Bryn Mawr College; Ph.D. 1996, Bryn Mawr College

Steven D. Sargent, Professor of History (1982). B.S. 1968, Purdue University; M.S. 1970, New York University; B.A. 1973, M.A. 1975, University of Massachusetts; Ph.D. 1982, University of Pennsylvania

Krisanna Scheiter, Professor of Philosophy (2102). B.A. 2002, M.A. 2005, University of Missouri-St. Louis; M.A. 2006,, Ph.D. 2012, University of Pennsylvania

Shelton S. Schmidt, Chauncey H. Winters Professor of Economic Thought (1978). B.A. 1969, Ph.D. 1977, University of Virginia

Stephen J. Schmidt, Professor of Economics; Director of Assessment (1994). A.B. 1989, Ph.D. 1995, Stanford University

Mehmet Fuat Sener, Professor of Economics (1999). B.S. 1993, Middle East Technical University; M.S. 1995, London School of Economics; Ph.D. 1999, University of Florida

Guillermina Seri, Associate Professor of Political Science; Director of Latin American and Caribbean Studies (2007). B.A. 1986, Catholic University of Córdoba, Argentina; M.A. 1998 FLACSO, Buenos Aires; Ph.D. 2005, University of Florida

Jordan F. Smith, Edward E. Hale Jr. Professor of English (1981). B.A. 1977, Empire State College; M.A. 1978, Johns Hopkins University; M.F.A. 1981, The University of Iowa

Younghwan Song, Professor of Economics (2002). B.A. 1991, M.A. 1993, Seoul National University; M. Phil. 1996, Ph.D. 2002, Columbia University

John M. Spinelli, Professor of Electrical Engineering (1989). B.E. 1983, The Cooper Union; S.M. 1985; Ph.D. 1989, Massachusetts Institute of Technology

Timothy Stablein, Assistant Professor of Sociology (2013). B.S. 1998, Bridgewater State College; M.A. 2000, University of Massachusetts-Boston; Ph.D. 2009, University of Connecticut

Linda N. Stanhope, Professor of Psychology (1986). A.B. 1976, Wellesley College; M.A. 1980, Ph.D. 1984, University of Virginia

Charles N. Steckler, Dwane W. Crichton Professor of Theatre (1971). B.S. 1968, Queens College; M.F.A. 1971, Yale University

Wendy F. Sternberg, Professor of Psychology; Dean of Academic Departments and Programs. B.S. 1990, Union College; M.A. 1992, Ph.D. 1994, University of California at Los Angeles

Kristina I. Striegnitz, Associate Professor of Computer Science (2007). Vordiplom 1995, Diplom 2000, Saarland University; Ph.D. 2004, Saarland University and the University Henri Poincaré Nancy I

Hilary Tann, John Howard Payne Professor of Music; Chair of the Department (1980). B. Mus. 1968, University of Wales; M.F.A. 1978, Ph.D. 1981, Princeton University

Alan D. Taylor, Marie Louise Bailey Professor of Mathematics (1975). B.A. 1969, A.M. 1970, University of Maine; Ph.D. 1975, Dartmouth College

Abraham Tchako, Lecturer in Mechanical Engineering (2005). Diplom Ingenieur 1992, Technische Fachhochschule Berlin; M.E. 1995, City University of New York; Ph.D. 2004, City University of New York

Strom Thacker, Professor of Political Science; Stephen J. and Diane K. Ciesinski Dean of the Faculty and Vice President for Academic Affairs (2016). B.A. 1988, Pomona College; M.A. 1991, Ph.D. 1996, University of North Carolina, Chapel Hill

Nicole A. Theodosiou, Associate Professor of Biological Sciences (2007). B.A. 1991, Swarthmore College; Ph.D. 1999, Yale University School of Medicine

George Todd, Visiting Assistant Professor of Mathematics (2015). B.S. 2009, University of Texas; M.S. 2013, University of Arizona; Ph.D. 2015, University of Arizona

Mark S. Toher, Frank Bailey Professor of Classics (1983). B.A. 1974, Brown University; B.A. 1976, Oxford University; Ph.D. 1985, Brown University

Christina Tønnesen-Friedman, Professor of Mathematics (2001). Cand.Scient. 1995, Ph.D. 1997, Odense University, Denmark

Cherrice A. Traver, David Falk '39 and Elynor Rudnick-Falk Professor of Computer Engineering (1986). B.S. 1982, State University of New York at Albany; Ph.D. 1986, University of Virginia

Jenelle Troxell, Assistant Professor of English (2013). B.A. Johns Hopkins University; M.A., Ph. D. 2009 Columbia University

Katherine Tullmann, Visiting Assistant Professor of Philosophy (2015). B.A. 2008, Truman State University; M.A. 2010, University of Missouri, St Louis; M. Phil. 2013, City University of New York; Ph.D. 2015, City University of New York

Bunkong Tuon, Associate Professor of English; Director of Asian Studies (2008). B.A. 2000, California State University at Long Beach; M.A. 2006, Ph.D. 2008, University of Massachusetts at Amherst

Laurie A. Tyler, Professor of Chemistry (2004). B.A. 1996, University of Washington at Seattle; Ph.D. 2002, University of California at Santa Cruz

Junko Ueno, Associate Professor of Japanese (2000). B.A. 1994, Kyushu University; M.A. 1995, Indiana University; Ph.D. 2001, Indiana University

Yasmine Van Wilt, "Our Shared Humanities" Postdoctoral Fellow (2016). B.A. 2005 Eckerd College; M.A. 2007 Exeter University; Ph.D. 2015 Newcastle University

Jeremy Vanderover, Visiting Assistant Professor of Mechanical Engineering (2015). B.S. 2006, Clarkson university; M.S. 2007, Rensselaer Polytechnic Institute; Ph.D. 2010, Rensselaer Polytechnic Institute

Anouk Verheyden-Gillikin, Lecturer in Geology (2015). Licenciante Degree. 1997, Free University of Brussels; Ph.D. 2004, Free University of Brussels

Michael F. Vineyard, Frank and Marie Louise Bailey Professor of Physics and Astronomy (2002). B.S. 1978, Stockton State College; M.S. 1981, Ph.D. 1984, Florida State University

D. Catherine Walker, Visiting Assistant Professor of Psychology (2015). B.A. 2004, Rutgers College; M.A. 2008, State University of New York at Albany; Ph.D. 2013, State University of New York at Albany

Mark W. Walker, John Bigelow Professor of History; Director of Advising; Director of Science, Medicine & Technology in Culture (1987). B.A. 1981, Washington University; M.A. 1983, Ph.D. 1987, Princeton University

Jue Wang, Assistant Professor of Mathematics (2007). B.S. 2001, Peking University; M.A. 2003, Ph.D. 2007, University of Wisconsin-Madison

Patricia Wareh, Associate Professor of English (2010). B.A. 1993, University of Florida; Ph.D. 2002, University of California at Berkeley

Heather C. Watson, Assistant Professor of Physics and Astronomy (2015). B.S. 2000, University of Toronto; M.S. 2002, Rensselaer Polytechnic Institute; Ph.D. 2004, Rensselaer Polytechnic Institute

Nicholas Webb, Assistant Professor of Computer Science (2011). B.S. 1995, M.Sc. 1996, University of Essex; PH.D. 2010, University of Sheffield

Kirk Wegter-McNelly, Visiting Assistant Professor of Religious Studies (2014). B.A. 1990, Central College, Iowa; M. Div. 1995, Princeton Theological Seminary; Ph.D. 2003, Graduate Theological Union, California

Terry S. Weiner, Visiting Professor of Political Science and Chauncey H. Winters Professor of Comparative Social Analysis Emeritus (1974-2010). B.A. 1970, University of Illinois; M.A. 1972, Ph.D. 1975, University of North Carolina

Carol Silvia Weisse, Professor of Psychology; Director of Health Professions Programs (1988). B.S. 1983, Quinnipiac College. Ph.D. 1988, Uniformed Services University

Richard D. Wilk, Professor of Mechanical Engineering (1989). B.S. 1980, M.S. 1982, Ph.D. 1986, Drexel University

Francis P. Wilkin, Senior Lecturer in Physics and Astronomy; Observatory Manager (2004). B.S. 1989, University of Massachusetts at Amherst; M.A. 1991, Ph.D. 1997, University of California at Berkeley

R. Paul Willing, Senior Lecturer in Biological Sciences (1989). B.A. Humboldt State College; M.A. University of Hawaii at Honolulu; M.S. University of California at Riverside; Ph.D. 1981, University of Massachusetts at Amherst

Sandra S. Wimer, Senior Lecturer in Visual Arts (1997). B.S. 1974, Pittsburgh State University; B.F.A. 1987, University of Oklahoma; M.F.A. 1990, State University of New York at Albany

Jeffrey Witsoe, Associate Professor of Anthropology (2008). B.A. 1998, University of California at Santa Cruz; M.A. 2000, University of Chicago; Ph.D. 2005, University of Cambridge

Suthathip Yaisawarnng, Thomas Armstrong Professor of Economics (1989). B.B.A. 1977, Thammasat University, Thailand; M.B.A. 1983, Howard University, Ph.D. 1989, Southern Illinois University

Roman Yukilevich, Assistant Professor of Biological Sciences (2012). B.S. 2000, University of Illinois at Chicago; Ph.D. 2008, State University of New York at Stony Brook

Leo Zaibert, Professor of Philosophy; Chair of the Department (2009). LL.B 1989, Universidad Santa Maria, Caracas, Venezuela; Ph.D. 1997, State University of New York at Buffalo

Zhen Zhang, Associate Professor of Chinese (2007). M.A. 1998, Beijing University; M.A. 2001, State University of New York at Stony Brook; Ph.D. 2007, University of California at Irvine

William S. Zwicker, William D. Williams Professor of Mathematics (1975). A.B. 1971, Harvard University; Ph.D. 1975, Massachusetts Institute of Technology

Departmental Assistants and Technicians

Gene E. Davison, Electrical Engineering (1980)

Stanley J. Gorski, Mechanical Engineering (1997). A.A.S. 1975, A.A.S. 1976, Hudson Valley Community College

Robert Harlan, Engineering Machine Lab (2016)

Patrick D. Healy, Visual Arts (2014). B.A. 2009, the New York State College of Ceramics at Alfred University

Mark Hooker, Bioengineering (2006)

Adam Michael Jones, Computer Science (2016). B.S. 2002, Rochester Institute of Technology

Amy M. Kelley, Biological Sciences (2000). B.S. 2014, Union College

Robin Macduffie, Theatre & Dance

William Neubeck, Geology (1990). B.S. 1976, State University of New York at Oneonta; M.A. 1980, State University of New York at Binghamton

Frank Rapant III, Visual Arts (2006).

Marcus Rogers, Theatre & Dance (2008).

Kathleen M. Ryan, Chemistry (1989). A.S. 1989, Schenectady County Community College

Audrey Sartiaux, Modern Languages and Literatures (2004). DEUG Lettres et Civilisations Etrangères Anglais 1994, Licence Langues Vivantes Étrangères Anglais, 1996, University of Paris - Sorbonne Nouvelle; M.A. French and Francophone Studies 1997, Ph.D. French and Francophone Studies 2006, University of Connecticut

Kelly Sawyer, Biology (2015). B.S. 2014, The College of Saint Rose

John T. Sheehan, Physics and Astronomy (1997). A.A.S. Electrical Engineering Technology, 1984, Mohawk Valley Community College

Paul Tompkins, Engineering Machine Lab (2006)

Endowed Professorships

(Date is year chair was established.)

Thomas Armstrong Professor of Economics (2006) - Suthathip Yaisawarng

Frank Bailey Professor of Classics (1945) - Mark S. Toher

Frank and Marie Louise Bailey Professor of Physics (1949) - Michael F. Vineyard

Marie Louise Bailey Professor of Mathematics (1952) - Alan D. Taylor

May I. Baker Professor of Visual Arts (1979) - Chris Duncan

John Bigelow Professor of History (1916) - Mark W. Walker

Donald C. Brate '45 - Stanley G. Peschel '52 Assistant Professor of Statistics (2012) - Roger W. Hoerl

Dwane W. Crichton Professor of Theatre (2006) - Charles N. Steckler

Horace E. Dodge III Professorship of Electrical and Computer Engineering (1997) -

Joseph C. Driscoll Professor of Sociology and Marine Policy (2006) - Ilene M. Kaplan

David Falk '39 and Elynor Rudnick-Falk Professor of Computer Engineering (2007) - Cherrice A. Traver

Feigenbaum Professor of Behavioral Economics (2016) - Kaywana Raeburn

R. Gordon Gould '41 Professor of Physics and Astronomy (1995) - Seyfollah Maleki

Edward E. Hale, Jr. Professor of English (1980) - Jordan F. Smith

Carl B. Jansen Professor of Engineering (1992) - Ashraf Ghaly

Thomas Lamont Professor of Ancient and Modern Literature (1948) - Hans-Friedrich Mueller

John Prior Lewis Professor of Economics (2016) - Therese A. McCarty

Gilbert R. Livingston Professor of Psychology (1970) - Daniel J. Burns

Gilbert R. Livingston Professor of Behavioral Sciences (1994) - Kenneth G. DeBono

John D. MacArthur Assistant Professor (1982) - Luke Dosiek

Agnes S. Macdonald Professor of Mechanical Engineering (2006) - Ann M. Anderson

Robert Porter Patterson Professor of Government (1956) - Clifford W. Brown Jr.

John Howard Payne Professor of Music (2006) - Hilary Tann

Henry and Sally Schaffer Professor of Holocaust and Jewish Studies (2003) - Stephen M. Berk

Kenneth B. Sharpe Professor in Management (1993) - J. Douglass Klein

Florence B. Sherwood Professor of History and Culture (1993) - Teresa A. Meade

Florence B. Sherwood Professor of Life Sciences (1994) - Robert M. Olberg

Florence B. Sherwood Professor of Physical Sciences (1994) - Janet S. Anderson

Doris Zemurray Stone Professor in Modern Literary and Historical Studies (1976) - Lori J. Marso

Roger Thayer Stone Professor of Anthropology (1989) - Karen Brison

Thomas J. Watson, Sr., and Emma Watson Day Professor of Mechanical Engineering (1989) - David Hodgson

William D. Williams Professor of Biological Sciences (2008) - Leo J. Fleishman

William D. Williams Professor of Mathematics (2006) - William S. Zwicker

William D. Williams Professor of Philosophy (2006) - Robert B. Baker

William D. Williams Professor of Visual Arts (2006) - Martin Benjamin

Chauncey H. Winters Professor of Economic Thought (1978) - Shelton S. Schmidt

John and Jane Wold Professor of Geology (1988) - Kurt Hollocher

John and Jane Wold Professor of Religious Studies (2007) - Peter R. Bedford

David L. and Beverly B. Yunich Professor of Business Ethics (2005) - Harold O. Fried

The Administration

Office of the President

Stephen C. Ainlay, President; Professor of Sociology (2006). B.A. 1973, Goshen College; M.A. 1977, Ph.D. 1981, Rutgers University

Brandie M. Dingman, Director of Institutional Studies (2015). B.A. 2005, M.A. 2010, Ph.D. 2015, State University of New York at Albany

Gretchel Hathaway, Dean of Diversity and Inclusion/Chief Diversity Officer (1998). B.A. 1979, Manhattanville College (1998); M.A. 1983, Yeshiva University; Ph.D. 1993, University of Pittsburgh

Melissa Kelley, Title IX Coordinator (2015). B.S. 2002, State University of New York at Cortland; M.S. 2007, St. John Fisher College; Ed.D. 2016, University of Rochester

Robert Kelly, Chief of Staff (2014). B.A. 1994, Loyola University; M.Ed. 1996, the University of Vermont; Ph.D. 2005, University of Maryland

Lester Ko, Assistant Director of Institutional Studies (2009). B.A. 1998, Vassar College; J.D. 2003, CUNY School of Law at Queens College

Bobbi Nelson, Executive Assistant to the President (2016). B.S. 2015, State University of New York, Empire State

Caleb Northrop, Special Assistant to the President's Office and Kelly Adirondack Center (2015). B.A. 2014, Vassar College

Office of Academic Affairs

Strom Thacker, Professor of Political Science; Stephen J. and Diane K. Ciesinski Dean of the Faculty and Vice President for Academic Affairs (2016). B.A. 1988, Pomona College; M.A. 1991, Ph.D. 1996, University of North Carolina, Chapel Hill

Academic Deans

Wendy F. Sternberg, Professor of Psychology; Dean of Academic Departments and Programs. B.S. 1990, Union College; M.A. 1992, Ph.D. 1994, University of California at Los Angeles

Mark E. Wunderlich, Dean of Studies. B.A. 1995, Harvard College; Ph.D. 2001, University of Arizona

Nic Zarrelli, Dean of Academic Planning and Resources. B.A. 1997, Union College; M.B.A. 2009, Union Graduate College

Academic Support Services

Rhona-Jane Beaton, Assistant Director of Health Professions Programs. B.A. 1985, Suffolk University; M.A.T. 1989, Boston College

Rebecca Cortez, Director of Undergraduate Research and Associate Professor of Mechanical Engineering. B.S. 1988, Washington University; Ph.D. 1992, Northwestern University

Lorraine M. Cox, Director of Faculty Development and Associate Professor of Visual Arts. B.F.A. 1992 Virginia Commonwealth University; M.A. 1996, Ph.D. 2001, University of Illinois at Urbana-Champaign

John R. Cramsie, Director of General Education and Associate Professor of History. B.A. 1987, University of Minnesota; Ph.D. 1997, University of St. Andrews

Lynn Evans, Director of National Fellowships & Scholarships. B.A. 1998, Witterberg University; M.S. 2000, University of California, San Diego; Ph.D. 2004, University of California, San Diego

Ashraf Ghaly, Carl B. Jansen Professor of Engineering; Director of Engineering (1993). B.Sc. 1982, M.Sc. 1986, Alexandria University, Alexandria, Egypt; Ph.D. 1990, Concordia University, Montreal, Canada

Carolyn G. Fielder, Counselor of AOP/HEOP. B.S. 1991, The College of Saint Rose

Joanne Fitzgerald, Director of Leadership in Medicine. B.S. 1979, University of Delaware; M.B.A. 2001, Union College

Philip Heusser, Academic Advising Facilitator (2015). B.A. 2009, Bloomsburg University; M.A. 2014, University of Wyoming-Laramie

Joseph Johnson, Director of Writing Center (2015). B.A. 2000, Saint Michael's College; M.A. 2005, Villanova University; Ph.D., Emory University

Gale Keraga, Director of Academic Achievement. B.S. 1977, M.A. 1979, University of Massachusetts at Amherst

Stephen G. Romero, Director of Interdisciplinary Studies and Associate Professor of Psychology (2001). B.M. 1990, Berklee College of Music; M.A. 1995, Ph.D. 1998, University of Colorado

Philip Poczik, Director of AOP/HEOP. B.A. 2001, Hobart and William Smith Colleges; M.A. 2002, Carnegie Mellon University

Stephen J. Schmidt, Director of Assessment and Professor of Economics. A.B. 1989, Ph.D. 1995, Stanford University

Margaret Graham, Director of the Scholars Program and Academic Internship Support. B.S. 1992, Clarkson University; M.S. 1995, New Mexico Institute of Mining & Technology

Mark W. Walker, John Bigelow Professor of History; Director of Advising; Director of Science, Medicine & Technology in Culture (1987). B.A. 1981, Washington University; M.A. 1983, Ph.D. 1987, Princeton University

Athletics

James M. McLaughlin, Director of Athletics. B.A. 1993, Union College; M.B.A. 1997, Union College

Erik Ackerman, Assistant Athletic Trainer. B.S. 2010, Central Connecticut State University

David M. Baglio, Coordinator of Varsity Sports Services

Mitchell Baker, Assistant Women's Hockey Coach. B.A. 2008, Bethel University

Jeffrey Behrman, Head Football Coach. B.A. 1995, John Carroll University; M.S. 1998, West Virginia University

Rick Bennett, Head Men's Ice Hockey Coach. B.A. 1990, Providence College

Brian Bowman, Head Men's and Women's Tennis Coach. B.A. 2010, University of Rochester; M.Ed. 2012, St. Lawrence University; M.B.A. 2015, University of Rochester

Adam M. Brinker, Assistant Director of Athletics/Facilities. B.S. 1987, M.A. 1993, Kent State

Andrew Brown, Women's Head Volleyball Coach. B.A. 2011, Ramapo College

Peter W. Brown, Assistant Football Coach. B.A. 1983, Union College

Mary Ellen Burt, Head Women's Basketball Coach and Women's Golf Coach. B.S. 1982; University of Southern California; M.A. 1989, St. John Fisher College

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Christopher Jones, Professor of Physics Emeritus (1967-2000). B.S. 1957, Hobart College; M.A. 1960, Johns Hopkins University; Ph.D. 1967, Iowa State University

Sigrid Kellenter, Thomas Lamont Professor of Ancient and Modern Literature Emerita (1977-2003). B.A. 1967, M.A. 1969, University of California; Ph.D. 1978, SUNY at Albany

Richard Kenyon, Dean of Engineering Emeritus (1993-1998). B.M.E. 1954, Clarkson College of Technology; M.S. 1956, Cornell University; Ph.D. 1965, Syracuse University

Thomas R. Kershner, Associate Professor of Economics Emeritus (1968-1998). A.B. 1963, Oakland University; A.M. 1968, Ph.D. 1972, Harvard University

Jan K. Ludwig, Professor of Philosophy Emeritus (1969-1999). B.A. 1963, Gettysburg College; Ph.D. 1971, Johns Hopkins University

Eli Majlaton, Director of Union College Bookstore, Central Mail and Copy Center Emeritus (1988-2006).

Mary Mar, Director of Writing Services Emerita (2002-2014). B.A. 1971 University of Illinois, Champaign-Urbana; M.Ed. McGill University, Montreal; Ph.D. McGill University, Montreal.

Harry Marten, Edward E. Hale Jr. Professor of English Emeritus (1976-2012). B.A. 1965, Harpur College; M.A. 1967, Ph.D. 1970, University of California, Santa Barbara

James D. McCord, Professor of English Emeritus (1977-2011). B.A. 1968, M.A. 1971, Ph.D. 1976, University of California at Santa Barbara

Thomas McFadden, College Librarian Emeritus, (1997-2012). B.A. 1968, College of Idaho; M.A. 1973, Brown University; MLS 1977, University of Pittsburgh

George McMillan, Purchasing Director Emeritus (1982-2004). B.S. 1964, University of Steubenville

Frank F. Milillo, Professor of Mechanical Engineering Emeritus (1974-2001). B.S. 1966, M.S. 1968, Ph.D. 1974, Polytechnic Institute of Brooklyn

Carolyn Mitchell, Professor of English Emeritus (1998-2003). B.A. 1960, Hunter College; M.A. 1962, Michigan State University; Ph.D. 1977, Boston College

Cara Molyneaux, Associate Librarian/Head of Access Services Emerita (1987-2011)

John S. Morris, President Emeritus and Research Professor of Philosophy (1979-1993). B.A. 1951, University of Wales; B.A. 1953, M.A. 1957, Cambridge University; M.A. 1961 Colgate University; Ph.D. 1961, Columbia University

Pilar Moyano, Professor of Modern Languages and Literatures Emerita (1986-2015). B.A. 1976, M.A. 1978, Ph.D. 1985, State University of New York at Albany

Jay E. Newman, R. Gordon Gould Professor of Physics and Astronomy Emeritus (1978-2015). B.S. 1967, City University of New York; M.S. 1970, Ph.D. 1975, New York University

Byron A. Nichols, Professor of Political Science Emeritus (1968-2008). A.B. 1964, Occidental College; M.A. 1966, Ph.D. 1969, Johns Hopkins University

Susan B. Niefeld, Professor of Mathematics Emerita (1981-2015). B.A. 1974, Ph.D. 1978, Rutgers University

Rudy Nydegger, Professor of Psychology Emeritus (1977-2015). B.A. 1966, M.A. 1969, Wichita State University; Ph.D. 1970, Washington University

Filadelfo Panlilio, Professor of Mechanical Engineering Emeritus (1955-1987). B.S. in M.E. 1938, University of Philippines; M.S. 1942, Ph.D. 1946, University of Michigan

Linda E. Patrik, Professor of Philosophy Emerita (1978-2012). B.A. 1971, Carleton College; M.A. 1973, Ph.D. 1978, Northwestern University

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Peter A. Prosper, Jr., Professor of Economics Emeritus (1964-1999). B.S. 1958, Pennsylvania State University; Ph.D. 1970, Cornell University

Frederick Puliafico, Associate Director of Facilities/Utilities Construction and management Emeritus

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Bruce L. Reynolds, Professor of Economics Emeritus (1974-2002). B.A. 1966, Yale University; M.A. 1971, Ph.D. 1975, University of Michigan

George Richards, Personnel Director Emeritus (1977-1997). B.A. 1958, Wilkes College; M.Div. 1961, Episcopal Seminary

Alan Roberts, Professor of French and Spanish Emeritus (1953 - 1980). A.B. 1939, Haverford College; M.A. 1940, Ph.D. 1952, Harvard University

Donald E. Robison, Associate Professor of Management Emeritus (1971-1996). B.S. 1952, University of Oregon; M.S. 1956, Ph.D. 1962, The Ohio State University

Michael Rudko, Horace E. Dodge III Professor of Electrical and Computer Engineering Emeritus (1984-2012). B.S.E.E. 1965, M.S.E.E. 1969, Ph.D. 1974, Syracuse University

Richard B. Russ, Professor of Electrical Engineering and Computer Science Emeritus (1941-42, 1948-1983). B.E. 1940, M.E.E. 1956, Yale University

Eleanor M. Sarnacki, Head Nurse Emerita (1946-1978). R.N. 1937, St. Peter's Hospital

Kenneth L. Schick, Frank and Marie Louise Bailey Professor of Physics Emeritus (1959-2000). A.B. 1951, Columbia University; Ph.D. 1959, Rutgers University

George Schiller, Associate Director (Information and Systems), Human Resources Emeritus (1972 - 2014). A.O.S. 1968

Josef Schmee, Kenneth B. Sharpe Professor of Management Emeritus (1972-2006). Magister 1968, University of Vienna; M.S. 1970, Ph.D. 1974, Union College

Ann M. Seemann, Director of Schaffer Library, Professor Emerita (1973-1990). A.B. 1956, Oberlin College; M.S. in M.L.S. 1964, Simmons College

Gwen Sellie, Manager of Support Services Emerita

Bruce Senn, Senior Systems manager/Administrative Systems Emeritus

Arnold Seiken, Professor of Mathematics Emeritus (1967-1996). B.A. 1951, Syracuse University; M.A. 1954, Ph.D. 1963, University of Michigan

J. Richard Shanebrook, Professor of Mechanical Engineering Emeritus (1965-2001). B.S. in M.E. 1960, M.S. in M.E. 1963, Ph.D. 1965, Syracuse University

Robert S. Sharlet, Chauncey H. Winters Professor of Political Science Emeritus (1967-2003). B.A. 1960, Brandeis University; M.A. 1962, Ph.D. 1968, Indiana University

George H. Shaw, John and Jane Wold Professor of Geology Emeritus (1988-2011). B.S. 1967, University of Rochester. M.S. 1969, Ph.D. 1971, University of Washington

Jeane A. Sinnenberg, Assistant Registrar Emerita (1967-2003). B.A. 1981, Union College

Barry K. Smith, Associate Professor of Performing Arts (Theater) Emeritus (1971-1999). B.A. 1960, Westminster College; M.F.A. 1971, Yale University

George W. Smith, Professor of Biological Sciences Emeritus (1974-2005). B.S. 1962, Cookman College; M.S. 1966, Virginia State College; Ph.D. 1974, University of Virginia

John R. Sowa, Professor of Chemistry Emeritus (1967-2002). B.S. 1956, Notre Dame University; Ph.D. 1964, University of Pennsylvania

Donald E. Spring, Assistant Professor of Psychology and Director of the Counseling Service Emeritus (1973-2007). B.S. 1969, Springfield College; M.A. 1972, Ph.D. 1973, University of Rhode Island

Ruth M. Stevenson, Thomas Lamont Professor of Literature Emerita (1972-2013). A.B. 1961, Smith College; M.A. 1962, University of Richmond; Ph.D. 1972, Duke University

Carmela St. George, Associate Registrar Emerita (1964-1989)

Twitty J. Styles, Professor of Biological Sciences Emeritus (1965-1997). B.S. 1948, Virginia Union University; M.S. 1957, Ph.D. 1963, New York University

Ann Thomas, Slide Curator Emerita (1979-2013). A.B. 1962, Manhattanville College

Donald R. Thurston, Professor of Political Science and History Emeritus (1966-1996). B.A. 1951, Syracuse University; M.A. 1956, Ph.D. 1970, Columbia University

Peter L. Tobiessen, Professor of Biological Sciences Emeritus (1970-2006). B.A. 1963, Wesleyan University; M.S. 1966, Pennsylvania State University; Ph.D. 1971, Duke University

James E. Underwood, Chauncey H. Winters Professor of Political Science Emeritus and Dean of the Faculty Emeritus (1963-2003). A.B. 1959, Franklin and Marshall College; M.P.A. 1960, Ph.D. 1968, Syracuse University; L.L.D. 2005, Union College

W. Loretta Walker, Head of Information Services at Schaffer Library, Associate Professor Emerita (1968-1981). B.S. 1949, Howard University; M.L.S. 1968, SUNY at Albany; M.A. 1977, The College of Saint Rose

Anton R. Warde, Professor of German Emeritus (1969-1999). B.A. 1964, Union College; M.A. 1966, Ph.D. 1969, University of Nebraska

Charles F. Weick, Professor Chemistry Emeritus (1958-1996). B.S. 1953, Mount Union College; Ph.D. 1959, University of Rochester

Terry S. Weiner, Chauncey H. Winters Professor of Comparative Social Analysis Emeritus (1974-2010). B.A. 1970, University of Illinois; M.A. 1972, Ph.D. 1975, University of North Carolina

Robert V. Wells, Chauncey H. Winters Professor of History Emeritus (1969-2013). B.A. 1965, Denison University; Ph.D. 1969, Princeton University

Thomas C. Werner, Florence B. Sherwood Professor of Chemistry Emeritus (1971-2008). B.S. 1964, Juniata College; Ph.D. 1969, Massachusetts Institute of Technology

Frank E. Wicks, Associate Professor of Mechanical Engineering Emeritus (1988 - 2016). B.S. 1961, State University of New York Maritime College; M.S. 1966, Union College; Ph.D. 1976, Rensselaer Polytechnic Institute

George H. Williams, Professor of Computer Science Emeritus (1970-2003). A.B., B.E.E. 1965, Union College; M.S. 1966, M. Phil. 1968, Ph.D. 1970, Yale University

Brenda Wineapple, Doris Zemurray Stone Professor of Modern Literary and Historical Studies Emerita (1976 - 2016). B.A. 1970, Brandeis University; M.A. 1972, Ph.D. 1976, University of Wisconsin

Dwight S. Wolf, Associate Dean for Academic Services and Planning Emeritus (1977-2007). B.A. 1968, Union College; M.A. 1974, Ed.D. 1980, University of Virginia

Jane S. Zacek, Director of Grant Support Emerita (1993-2008). B.A. 1960, Cornell University; M.A. 1962, Ph.D. 1967, Columbia University

Karl Zimmermann, Professor of Mathematics Emeritus (1981-2015). B.S. 1974, Tufts University; M.S. 1976, University of New Hampshire; Ph.D. 1985, Brown University

Degrees Offered

Degree Program	Degrees	HEGIS
Africana Studies	B.A.	0305
American Studies	B.A.	0313
Anthropology	B.A.	2202
Asian Studies	B.A.	0301
Astronomy	B.A.	1911
Biochemistry	B.S.	0414
Bioengineering	B.S.	0905
Biology	B.S.	0401
Chemistry	B.S.	1905
Chinese	B.A.	1107
Classics	B.A.	1504
Computer Engineering	B.S.	0909
Computer Science	B.S.	0701
Economics	B.A.	2204
Electrical Engineering	B.S.	0909
English	B.A.	1501
Environmental Policy	B.A.	1999.10
Environmental Science	B.S.	1999.20
French and Francophone Studies	B.A.	1102
Gender, Sexuality, and Women's Studies	B.A.	4903
Geology	B.S.	1914
German Studies	B.A.	1103
History	B.A.	2205
Humanities	B.A.	4903
Interdepartmental Program	B.A., B.S	4901
Latin American and Caribbean Studies	B.A.	0308
Managerial Economics	B.A.	0517

Mathematics	B.S.	1701
Mechanical Engineering	B.A.	0910
Modern Languages	B.S.	1101
Music	B.A.	1005
Neuroscience	B.A.	0425
Philosophy	B.A.	1509
Physics	B.S.	1902
Political Science	B.A.	2207
Psychology	B.S.	2001
Religious Studies	B.A.	1510
Russian and East European Studies	B.A.	0307
Science	B.S.	4902
Science, Medicine and Technology in Culture	B.A.	4902
Social Science	B.A.	2201
Sociology	B.A.	2208
Spanish and Hispanic Studies	B.A.	1105
Theater	B.A.	1007
Visual Arts	B.A.	1001

Joint Programs in Conjunction with Other Institutions

Eight-Year Leadership in Medicine	B.S.	0499
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