

## 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

## Vision Statement of the College

Union College will be a leader in educating students to be engaged, innovative, and ethical contributors to an increasingly diverse, global, and technologically complex society.

From Union's Strategic Plan, affirmed by the Board of Trustees on Feb. 10, 2007.



# The Academic Program

Union College offers studies in the humanities, the social sciences, the sciences, and engineering. Perhaps the most distinctive feature of Union's academic program is the existence within the liberal arts framework of a strong engineering program. Union was the first college of arts to offer engineering (in 1845) and its curriculum has a range that is unusual among small colleges.

Major fields of study may be centered in one of the College's 21 academic departments or a student may choose an interdepartmental major involving work in two or more departments; an organized interdisciplinary program; or a personally-designed "organizing theme major" organized around a central, unifying topic cutting across disciplinary lines. Students may also elect to take up to two minors.

In cooperation with Union Graduate College, Union also offers five-year, two-degree programs leading to a bachelor's degree and a master's degree in selected fields. The College has an eight-year, three-degree program in cooperation with Albany Medical College and Union Graduate College and a six-year, two-degree program in cooperation with Albany Law School (see "Accelerated Joint Degree Programs" for details).

As a college committed to liberal education, Union requires that a substantial portion of each student's education be devoted to study far outside the area of the major. Through the Union College General Education curriculum, students are encouraged to strive for a breadth of learning that will complement the expertise acquired through studies in the major. Intellectual curiosity may also be served by the selection of purely elective courses.

The College is also 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, which has been required of students for a number of years, is the foundation of Union's writing requirements. It is followed by the newly instituted Sophomore Research Seminar. The College's Writing Center is described in the following section, "Courses of Instruction."

## Degree Requirements

Union offers the following undergraduate degrees: Bachelor of Arts, Bachelor of Science, Bachelor of Science (computer engineering), Bachelor of Science (electrical engineering), and Bachelor of Science (mechanical engineering).

A Union education is a four-year integrated living/learning experience. Students are expected to be enrolled at Union College for 12 trimesters (at least 36 courses), except in situations noted below under "Accelerated Graduation." Our curriculum is put together 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. Normally it takes four years of work to achieve these goals. To qualify for a degree, a student must:

1. Satisfactorily complete a minimum of 36 term courses in all programs except engineering, which may require up to 40 courses (in two-degree programs, nine courses beyond the requirements for the professional degree);
2. Satisfactorily complete requirements in the General Education Curriculum;
3. Satisfactorily complete requirements in the major field, degree program, or interdepartmental major, including the major field examination and/or 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 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 sent to the Registrar not later than October 24, 2008.

Accelerated Graduation: Any student entering the College with three or more pre-matriculation

## 4 / The Undergraduate Program

credits (see Advanced Placement and International Baccalaureate sections below) may graduate one trimester early (or take a term off their senior year), provided that they have not used these credits to make up deficiencies incurred during their time at the College. Students in the Union Scholars and Seward Scholars programs may use any additional course credits they earn at Union to accelerate their graduation. Any student seeking early graduation must obtain approval from the Office of the Dean of Studies by the end of the junior year.

In all other cases, it is expected that students will be in full-time residence for 12 terms through the spring term prior to graduation. However, the College does afford the opportunity for students who are successful at the College to take additional courses to enhance their Union education. These course credits will be considered beyond the 36 required for graduation (see Fourth Course Policy).

All transfer students must spend at least two years pursuing full-time studies (a minimum of half the required number of credits for their degree) at the College. After matriculation, students who are behind in credits can transfer in a maximum of three course credits and incoming first-year students can bring in a maximum of the equivalent of four course credits.

### The Academic Calendar and Course Load

Union divides the nine-month academic year into three terms of 10 weeks each. The normal course load for a full-time student is three courses in each of the three terms, or nine courses a year. To complete the entire curriculum in four years, engineering students should expect, on occasion, to take more than three courses per term. Credits are computed on a course-unit system. With few exceptions, each course unit is complete within itself, concluding with an examination period. Many courses are, of course, parts of a continuing sequence and, while it is quite possible to take isolated segments of the overall sequence, most students find it advantageous to complete the sequence in order.

### The General Education Curriculum

An important underlying assumption of the College's General Education Curriculum is that as a liberal arts college, Union is devoted to offering the sort of education that will allow students to flourish in this rapidly changing world, a world with melting geographic, intellectual and cultural boundaries. Accordingly, the College has adopted a new General Education curriculum that went into effect for students entering in 2006.

The new curriculum seeks to create 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, and that one cannot produce an educated person in four years.

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 and incentives.

Union has designed a liberal learning curriculum that 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 seminar that emphasizes critical reading and writing using the perspectives of multiple disciplines, and a sophomore seminar that focuses on learning research skills necessary to assess through informed reflection the enormous varieties of information to which we have access today. Because we know the importance of integrating information, we require a three-course cluster in which students learn to bridge and integrate information on a common topic from diverse perspectives. We also insist on the breadth that defines a liberal arts education through requirements in linguistic and cultural competency, quantitative reasoning, and science and technology. Our curriculum is designed to enable students to truly become life-long learners—the most critical ability in today's world. We do this by teaching them to: analyze, synthesize (integrate), communicate at the highest level, and obtain an appreciation of different disciplines and areas of knowledge.

A brief description of the new program, as well as a detailed description of the previous one, can be found under "Courses of Instruction."

### The Major

Depth of knowledge and understanding in a particular field of study is provided by the major.

## The Undergraduate Program / 5

Courses in this area of special study will also count toward meeting some General Education 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 closely related departments.

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 freshman year. At the end of the year, the major may still be 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.

### Interdisciplinary Studies

For students whose intellectual passion falls outside a standard academic discipline, Union offers 18 different interdisciplinary programs. Some are available as a major, others as a minor. A special subset of Union’s interdisciplinary programs which link engineering and the sciences are called Converging Technologies (see below). Descriptions of these programs are included in the alphabetical list of “Courses of Instruction.”

Interdisciplinary Programs offered at Union College:

- Africana Studies
- American Studies
- Biochemistry
- Bioengineering (minor)
- Computer Engineering
- East Asian Studies
- Energy Studies (minor)
- Environmental Science & Policy
- Film Studies (minor)
- Latin American & Caribbean Studies
- Law & Public Policy
- Nanotechnology (minor)
- Neuroscience
- Organizing Theme
- Religious Studies
- Russian & East European Studies
- Science, Medicine & Technology in Culture
- Women’s & Gender Studies

### Converging Technologies

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 received recognition for its leadership in general education, study abroad and undergraduate research. This tradition continues with the concept of Converging Technologies. As technology reshapes our world, the forces of change are increasingly emerging at the boundaries of traditional disciplines. Converging Technologies programs bring together faculty from diverse academic backgrounds so that students can graduate with an understanding that goes beyond that provided by a traditional disciplinary major. Students thus prepared are ready to communicate, work, and think within and beyond their area of specialty. Students may explore such intersectional areas as bioengineering, robotics, nanotechnology, neuroscience, and digital arts, learning

## 6 / The Undergraduate Program

about the new technologies and their implications for society.

### Interdepartmental Programs

The College offers formal interdepartmental programs in Africana Studies, American Studies, East Asian Studies, Latin American and Caribbean Studies, Russia and Eastern Europe Studies, and Women's and Gender Studies, all of which combine history, literature, and other disciplines; a new program in Science, Medicine, and Technology in Culture; in Biochemistry; in Environmental Studies, involving studies in environmental engineering, environmental science, and environmental policy; in Managerial Economics, which includes work in economics, mathematics, engineering, and sciences; and in Neuroscience, involving work in psychology and biology.

The Departments of Biological Sciences and Political Science have developed a program designed to serve the interests of students wishing to combine those two fields. The aim is to provide a broader background in both areas for students seeking careers that involve questions of biology and public policy, e.g., in law and environmental protection or health services.

In addition, subject to the requirements listed below, other interdepartmental major combinations of two fields may be arranged, but they will be approved only if the student presents a clear and sufficient rationale for the scholarly relationships among the various components of the major. Computer Systems, Electrical Engineering, or Mechanical Engineering may not be used as a component of interdepartmental majors.

Requirements for the Interdepartmental Major in Humanities or Social Sciences: Subject to the requirements set by the departments, at least 16 courses in the Divisions of Humanities and Social Sciences, with at least eight courses from each of two departments. An interdepartmental program may consist entirely of work from one division, or it may include departments in both divisions.

Requirements for the Interdepartmental Major in Science: At least 18 courses in the Division of Science, distributed (1) so that at least eight courses are from a single department, and not fewer than six are from a second department, or (2) so that at least eight courses are from a single department and not fewer than four courses are from each of two other departments. Normally, two courses in mathematics will be included.

Requirements for the Interdepartmental Major in Any Two Divisions: In special circumstances, interdepartmental programs may be developed to include work in departments drawn from any two divisions of the College; work in computer science may be included in such a program. Such a major will require eight courses in one department; six in another; and four from departments closely allied to one or both of the principal departments; or eight courses from each of two departments. As is the case with all interdepartmental majors, such a program must be worked out with the student's advisor and then approved by the chairs of the principal departments.

Students, at the time of declaring an interdepartmental major, should indicate how they plan on fulfilling any senior thesis or comprehensive exam requirement. Where a student and his or her advisors determine that special requirements exist which can be met only by a distribution of courses differing from the foregoing, a petition for waiver of the normal requirements may be made to the Dean of Studies.

The Organizing Theme Major: The student with a well-defined intellectual curiosity in a particular topic involving multiple disciplines may develop and request permission to pursue an "organizing theme" major. Such a program, which requires the approval of the advisor, the Organizing Theme major committee and the Dean of Studies, may be proposed no sooner than the third term of the freshman year and no later than the second term of the junior year. The approved program, which must be filed with the Registrar, shall consist of at least 12 courses related to the organizing theme and a senior project based upon the integration of knowledge and skills contributed by various courses in the major. The program must conform to disciplines already established at Union. No organizing theme major will be approved that requires students to study elsewhere to meet the requirements for the major.

Dual-Degree Programs: Union offers a variety of two-degree programs permitting a student to receive a general bachelor's degree and an engineering degree, or two engineering degrees. Also offered are two-degree programs in cooperation with Union Graduate College, leading to a bachelor of science in a science or engineering field and a master of science in engineering or computer science; to a bachelor of arts or bachelor of science and a master of business administration; or to a bachelor of science degree from Union, an M.S. or M.B.A. degree from Union Graduate College, and an M.D. from Albany Medical College. There is also a two-degree program leading to a bachelor of arts degree from Union and a law degree from Albany Law School.

## The Undergraduate Program / 7

Changes in Major Program: Students may change their major program upon application to the Registrar, but the change must have the consent of the department chairman or the Dean of Studies. If questions arise, the final decision rests with the Dean. A request for a change of major submitted after the first week of the final term of study at the College will not be approved. Students should realize that changes may entail extra course work.

### 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 or program. Students may design an Organizing Theme minor according to the requirements specified in the Organizing Theme section following.

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. No changes will be made once the degree has been conferred.

## Special Curricular Opportunities

### Union Scholars Program

The Union Scholars Program offers selected students the opportunity to take full advantage of the diverse intellectual experiences at Union. The program provides an enriched educational experience by allowing students to take more classes, smaller classes, and more intensive classes. Specific features of the Scholars Program are an enriched 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 (295-296H) with a professor of the student's choosing; and, in the senior year, a Scholars Colloquium (SCH 400), where students invite faculty to present their research. Union Scholars need 38 course credits to graduate and use their additional courses to create an enriched program that meets their specific needs and interests. There is also an option for accelerated study. New opportunities for scholars, such as summer research fellowships and special classes, are available in selected years. The Admissions Office selects the preliminary pool of potential candidates for the program, and a faculty committee makes the final selection of those invited to participate.

### Seward Interdisciplinary Fellows

The Seward Interdisciplinary Fellows program gives students an opportunity to develop their own program of study exploring connections between disciplines. The program is open to students from any discipline who have demonstrated excellence in their first year at Union College. Seward Fellows build an interdisciplinary minor that includes a faculty-supervised independent project, ORT 295-296H. The program includes the privilege of taking extra courses. By exploring important ideas from diverse perspectives, the Seward Fellows exemplify the values embodied in a liberal arts education.

Students apply for the Seward Fellows Program at the end of the fall term of their sophomore year. All Union College students are eligible to apply. Applications from sophomores submitted later than the beginning of winter term will be considered only if there is room in the program. Normally applicants should have at least a 3.5 grade point average; however, the committee will also take into consideration the extent to which students have challenged themselves by taking more advanced introductory courses, honors courses (when available), and a diverse curriculum.

### Independent Study and Undergraduate Research

With the approval of a faculty advisor, a student who has shown the requisite depth of interest and the necessary intellectual skills may register for independent study, a plan designed to free the student from the mechanics of conventional course work. The precise form of independent study

## 8 / The Undergraduate Program

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 successfully completed. These courses cannot be taken Pass/Fail.

### International Programs

The College considers its commitment to study abroad 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 College in all cases do so through the following Union-sponsored programs:

**Terms Abroad Programs:** The most extensive and popular of the College’s formal arrangements for foreign study are the Terms Abroad programs. Most involve credit in General Education and language study, as well as regular course credit for additional study performed abroad. Currently, terms abroad are offered for study in China, England, France, Germany, Greece, Italy, Japan, Mexico, and Spain. A Marine Term Abroad is offered biennially, and an anthropology field research term is offered in Fiji and Tasmania in alternate years. During the summer, Union offers the opportunity for the study of National Health Systems in Canada and several European countries. Additionally, Union College is part of The Partnership for Global Education, a consortium with Hobart & William Smith Colleges, whereby students can study abroad in Australia, Brazil, Central Europe, Ireland, and Vietnam.

**Exchange Programs:** The College has six formal exchange programs:

The Antwerp Exchange is an exchange for Economics majors at the University of Antwerp in Belgium.

The Barbados Exchange is an exchange for students interested in educational studies. The students practice teaching in Barbadian schools.

The Czech Exchange, at the Czech Technical University in Prague, is for engineering majors only.

The Lille Exchange is an exchange for Economics majors at the Catholic University of Lille in France.

The Japan Exchange is operated in conjunction with the Kansai Gaidai University of Foreign Studies. The Union exchange student participates in the Asian Studies Program, which gives students with no previous training in Japanese an opportunity to study the culture and mores of the people of East Asia. All classes are conducted in English.

The Korean Exchange is a reciprocal program with Yonsei University in Seoul. Union students spend the fall term in Seoul, studying Korean language and culture.

**Independent Study Abroad:** Students, working with a faculty member or members, design their own study abroad experience that can occur anywhere in the world. Examples of an ISA include internships, service learning, language study, or research on a subject or interest to the student. An ISA must take place during the winter and/or spring term.

**Non-Union Study Abroad:** The Committee on Study Abroad will approve a limited number of non-Union programs, provided that they address curricular needs that cannot be met by a Union program and take place during the winter and spring terms. Normally, programs take place in countries where Union does not have a program.

**Mini-Term Programs:** On an occasional basis, Union offers three-week mini-terms during summer or December break. The College has had mini-term programs in Argentina, Brazil, China, France, Jamaica, India, Martinique, South Africa, Spain, and New Zealand.

Please refer to the Fees section on charges related to International Programs.

The timing and details regarding each above-mentioned program may change on a periodic basis. Updated information is available in the International Programs Office in the Humanities Building.

### Combined Degree Programs

Union 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

## The Undergraduate Program / 9

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.

Students may also pursue any two recognized undergraduate departmental majors, with the exception of interdepartmental majors. Except as indicated above, a student satisfactorily completing such a program does not earn two degrees. The double major will be noted on the permanent record of the student, who will be eligible for departmental honors in both majors. 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 General Education 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.

In conjunction with Union Graduate College, students may also choose combined degree programs. A five-year program leading to an undergraduate degree from Union College and an M.B.A. degree from the School of Management of Union Graduate College is available. There is also a five-year program leading to an undergraduate degree from Union College and an M.A.T. degree from the School of Educational Studies of the Union Graduate College, as well as five-year programs in mechanical engineering, electrical engineering, and computer science, combining a Union College degree with a degree from Union Graduate College. The decision to enter all such programs must be made by the end of the winter term of the senior year.

Application for master's degree status is made to Union Graduate College. A fifth year is usually needed to complete the double-degree requirements and a combination of undergraduate and graduate credits is taken in the students' fourth year. The normal term of most two-degree programs would be five years. In some circumstances, it is possible for up to three upper-level courses taken in fulfillment of undergraduate degree requirements at Union College to be credited toward the master's degree from Union Graduate College upon approval by the student's graduate department chairman or program director.

Union undergraduate students who want to enter combined bachelor's-master's degree programs should apply for graduate admission no later than the end of the winter term of their senior year and must have a grade point average of 3.0. Acceptance into a program may enable students to apply up to three graduate courses at Union Graduate College for credit in fulfillment of both undergraduate and graduate degree requirements, depending upon their program of study. A petition requesting overlapping degree credit must be approved by the undergraduate and graduate advisors and filed with the graduate office.

### The Educational Studies Program

Students at Union can become certified to teach at the secondary school level through two different paths: a one-year graduate program through the School of Educational Studies of Union Graduate College leading to the master of arts in teaching (M.A.T) degree following completion of the undergraduate program; and a five-year, combined-degree program in cooperation with Union Graduate College. Students can be certified to teach grades 7-12 in the following academic areas: English, languages (French, German, Greek, Latin, and Spanish), mathematics, science (biology, chemistry, earth science, physics, and general science), and social studies.

### Accelerated Joint Degree Programs

Union and Albany Law School have established a six-year program that leads to the B.A. and J.D. degrees. Ten freshmen each year are admitted jointly by the two institutions and major in law and public policy at Union. If at the end of three years a student has maintained a cumulative average of at least 3.00 and has comported themselves in a manner consistent with the standards of the legal profession, the student will automatically be accepted into Albany Law School. After successful completion of the first year at Albany Law School, Union confers a B.A. degree for the formal Law and Public Policy major. Because of the timing of events, the Union College degree may not be awarded until the year following the completion of the first year of law school.

An accelerated Leadership in Medicine/Health Systems program leading to a B.S. degree from Union College, an M.S. or M.B.A. degree from Union Graduate College, and the M.D. degree from Albany Medical College has been organized by the three institutions. Work leading to the degrees is completed in eight calendar years. Each year a group of secondary school seniors will be selected for participation. Admission leads automatically to entrance into Albany Medical College after four calendar years of study at Union College and Union Graduate College (completion of 41 courses),

## 10 / The Undergraduate Program

provided that the student maintains satisfactory standards of academic achievement. Students are expected to maintain minimum cumulative grade point averages of 3.40 both in overall course work and in their mathematics and science courses. Students falling below this standard at the end of any term may be given warnings, put on formal probation, or asked to leave the program by the Union College-Albany Medical College Policy and Promotions Committee, which oversees the program and reviews student records regularly.

At the completion of the fourth winter term (the 11th term), a minimum cumulative grade point average of 3.40 is required both in overall course work and in the sciences for “promotion” to the medical portion of the curriculum; these averages must be maintained through the following spring and summer terms, including the two courses at Albany Medical College. Required course work may not be taken on a pass/fail basis. A grade of “D” or “F” in any science course can lead to dismissal from the program. Grades of “I” (Incomplete) or “W” (Withdrawal) will not be acceptable without justification involving illness or extenuating circumstances. Promotion to the medical portion of the curriculum is based not only on academic achievement but also on the fitness of the student to enter the profession of medicine. Students may transfer into the regular four-year undergraduate program at Union at any time during the premedical portion of the Medical Education program.

### HMAC (Consortium) Courses

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 trimester. 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. ROTC courses do not carry credit toward graduation. 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 and Union Graduate College, are Adirondack Community College, Albany College of Pharmacy, Albany Law School, Albany Medical College, The College of Saint Rose, Columbia-Greene Community College, Empire State College, Fulton-Montgomery Community College, Hartwick College, Hudson Valley Community College, Junior College of Albany, Maria College, Massachusetts College of Liberal Arts, Rensselaer Polytechnic Institute, Russell Sage College, Schenectady County Community College, Siena College, Skidmore College, the State University of New York at Albany, and the State University of New York College at Cobleskill.

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.

### Courses taken at other colleges and universities

To graduate, students are expected to be enrolled at Union College for twelve full terms (at least 36 courses) except for the circumstances described above in the section entitled “Accelerated Graduation.” Normally, permission is granted for courses taken at other colleges only when a student has withdrawn from courses started at Union and as a result is “behind” in credits. 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.

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 specifically 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.

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 36 courses required for graduation will not be granted in such circumstances, 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.

### Advanced Placement

Union participates in the Advanced Placement program of the College Entrance Examination Board. Students who pass examinations taken under this program with a grade of four or higher (three for calculus) are given credit for the corresponding course in the college curriculum and exempted from any requirements to take it. Freshmen who have taken Advanced Placement examinations should consult their academic advisors before fall term registration to ascertain what advanced placement and credit they have received. (For college courses taken by high school students and for policies on Advanced Placement/GenEd and Mathematics Placement, see “Advanced Placement Program” in the chapter on Admissions.)

Under no circumstances may a student receive credit toward graduation for any course in a foreign language that duplicates the level of material already covered in secondary school. The Departments of Classics and of Modern Languages and Literatures should be consulted about language placement before enrolling in a course in which the student already has experience.

Students matriculating at Union are allowed to bring in a maximum of four course credits, including any AP credits.

### 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 Register, except independent study, may be taken by matriculated undergraduate students in good standing at a cost of \$125 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 130 and above. Students may not take proficiency examinations in subjects in which they have already taken courses at a higher level for credit.

## Admissions

The Admissions Committee is concerned with the ability of candidates 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 quality of courses taken, and rank in class, if available;
- the recommendations of the secondary school; and
- the personal qualities and extracurricular record of the applicant.

The Admissions Committee attempts to meet the desire of the Board of Trustees for broad geographic and socioeconomic distribution in 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 on the constructive participation of each individual in the life of the College.

### Application and Admission Procedures

Applications should be filed by Jan. 15 of the final year in secondary school, with the exception of applications to the six-year Law and Public Policy program which must be filed no later than Jan. 1. Applications to the Leadership in Medicine program are due by Dec. 15. The Admissions Committee announces its decisions before April 15.

Applications for admission to Union's four-year undergraduate program must be accompanied by a non-refundable \$50 application fee. Applications submitted on-line have no fee. Admitted candidates must reserve places by paying the \$600 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: The student planning to major in liberal arts 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 each of biology, chemistry, and physics, and at least three years of college preparatory mathematics.

Interviews and Group Information Sessions: Interviews are strongly recommended. Appointments should be made two weeks in advance of the proposed visit by calling (518) 388-6112 or 888-843-6688. To arrange for an interview with an alumnus/a go to [www.union.edu/alumniinterview](http://www.union.edu/alumniinterview). Personal

interviews are offered on weekdays from May 1 to Jan 15. All interviews must be scheduled by Dec. 15. Group information sessions are held during the summer and on selected Saturdays in the fall. Student-guided tours are available in conjunction with interviews and group information sessions. Transfers may visit at any time. Contact the Admissions Office for daily schedules.

**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 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 is confidential and should be sent directly to the Admissions Office by the teacher. All materials must be on file with the Admissions Office by Feb. 1.

**College Entrance Examinations:** Standardized testing is optional for most applicants. The SAT I and two SAT II exams are required of those applicants considering the accelerated programs in law or medicine.

Applicants to the Law and Public Policy and the Leadership in Medicine programs must take both SAT I and two SAT II subject tests. For the Leadership in Medicine program, SAT II tests must be completed in both mathematics and a science. The ACT may be submitted for either of the accelerated programs. The December date is the last available to applicants to Leadership in Medicine or the Law and Public Policy program.

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 wishing 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 on an early decision basis at Union College.)

Applications and requests for Early Decision must be received by the College by Nov. 15 for Option I, Jan. 15 for Option II. All other forms and credentials, including the early decision statement of intent, must also be received by Nov. 15 or Jan. 15, respectively. Early decision candidates will be notified of the decision by Dec. 15 for Option I, Feb. 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 in the spring.

There is no Early Decision Program for the six-year Law and Public Policy or the eight-year Leadership in Medicine programs.

**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.

**Advanced Placement Program:** Union participates in the Advanced Placement program of the College Entrance Examination Board. Students who pass examinations taken under this program with a grade of three or higher in calculus and four or five in other subject areas are considered for college course credit and are exempted from any requirement to take the equivalent college courses. Those students must elect a more advanced course if they take work in the department in which credit has been granted. Repetition of work for which credit has been granted will not be permitted.

Union College will consider granting transfer 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 offering the course and the course is available for enrollment by the students of that college and the grade was C or better. No other courses will receive Union College course credit. Students presenting courses that do not meet these conditions may, upon recommendation of the appropriate department, be placed in a more advanced course or may be exempted from some requirements, or both. Similar exemption or advanced placement (but not College course credit) may also be given for superior performance

## 14 / Admissions

in New York State College Proficiency Examinations or in the College-Level Examination Program. Inquiries regarding Advanced Placement should be directed to the Registrar.

Advanced Placement and General Education Requirements: Advanced Placement credit applies in the General Education curriculum when it has been designated for a specific course that carries General Education credit. Undesignated Advanced Placement credit does not apply. A matriculating first year student can transfer in a maximum of four course credits through any combination of Advanced Placement examinations, the International Baccalaureate program, or college courses taken at other post-secondary institutions. Appropriate scores for granting credit for AP examinations or IB courses are determined by the individual academic departments at the College. For students completing the Full Diploma in the IB program, see this Academic Register under “International Baccalaureate.”

### Transfer Students

Union will consider the applications of students wishing to transfer from other two-year and four-year colleges. In making its decisions, the Admissions Committee leans heavily upon the work completed and upon the recommendations of appropriate officials at the college presently attended. Students should arrange for transcripts of all college work and recommendations to be sent to the Admissions Office at Union. A secondary school transcript should also be sent to the Admissions Office. An interview is recommended. Financial aid for transfer students depends on the academic and extracurricular promise and the economic need of the student. 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 at least two months before the application deadline. On-campus residential spaces are available but not guaranteed.

After reviewing transcripts of work completed at other colleges, the Admissions Office will indicate to admitted transfer students those courses for which credit will be given at Union. 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. Two-year college graduates holding the associate degree in arts or sciences, if accepted for transfer, may normally anticipate receiving two full years of credit and junior standing at Union.

To facilitate the transfer process, Union has an affiliation program with several community colleges in New York State.

Transfer students must complete two years of study at Union College to qualify for a Union degree.

The admissions process for transfer students follows a separate timetable. For admission to the fall term, transfer applicants must submit their completed applications, including all supporting materials, by May 1. Notification of decisions is sent after June 1. For entry into the winter term, the deadline is Oct. 1. For entry into the spring term, the applicable date is Feb. 1. All applicants are notified of admissions decisions on a rolling basis. Admission for spring and winter terms is on a space available basis only.

### International Students

Students living abroad should inquire about admission as early in the year as possible, since much time is involved in correspondence and procuring records. Limited financial aid is available to non-U.S. citizens. Union expects international applicants to be able to contribute a minimum of \$5,000 (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 Student Financial Aid Application and certification of finances with their application. This form is due no later than Jan. 15. The form is available from the Admissions Office ([admissions@union.edu](mailto:admissions@union.edu)). Canadian citizens are required to file the PROFILE form with the appropriate agency before Feb. 1.

English is the language of instruction at Union. All students from abroad must be proficient in reading, writing, and speaking English. The Admissions Committee requires that all international students (for whom English is not the first language) submit the results of the Test of English as a Foreign Language (TOEFL) examination for consideration in the application procedure. All first-year students and most advanced-standing students must start the academic program in September.

All non-U.S. citizens who matriculate must complete the International Students’ Certification of Finances upon application.

### International Baccalaureate

Union College welcomes the International Baccalaureate diploma as a credential for admission and tends to favor successful participants in the admissions process. Credit may be awarded for higher-level examination scores of six or better upon approval by the appropriate academic department. Total credit granted will not exceed four courses, unless a student has enrolled in and completed the full diploma in which case credit may be granted to the equivalent of a full year of Union College course work.

### Academic Opportunity Program

The Academic Opportunity Program (AOP) and Higher Education Opportunity Program (HEOP) assist students who, because of educational and economic circumstances, would otherwise be unable to attend Union College. Special features of the program include a prerequisite summer session, tutoring services, and academic, career and personal counseling by Academic Opportunity Program staff.

The program is open to candidates who have graduated from high school with either an academic diploma or its equivalent, and to transfer students who have participated in an opportunity program at the college from which they are transferring. For additional information regarding eligibility requirements, please contact the Academic Opportunity Program office.

### Part-Time Undergraduate Study

Union College makes a limited number of its undergraduate programs of study, specifically computer science and 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 take these courses on a non-degree basis. Registration is handled for all part-time students by the Registrar's Office in Silliman Hall.

Students wishing to matriculate in an engineering or computer science program on a part-time basis are required to meet with the Dean of Engineering. Before registering for their first course, all degree seeking part-time students must complete an application form and submit it to the Admissions Office along with a non-refundable \$50 application fee. Application forms are available from the Admissions Office in Grant 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 for undergraduate education 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. Registration materials are available from the Registrar's Office during the seventh week of the term. Students registering for the first time must do so in person 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.

Some courses intended for part-time students are offered in the evening, but matriculated students will generally need to take courses that meet during the daytime in order to complete degree requirements. Many day courses have restricted enrollments. In some cases, it may be necessary to obtain permission from the academic department offering the course during the seventh or eighth week of the preceding term. All students in the part-time undergraduate program both matriculated and non-degree will be charged \$4,285 per course.

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.

## 16 / Admissions

With the addition of several new options, engineering students can now satisfactorily complete the full General Education curriculum, including section IV. Students intending to graduate by June of the current academic year must submit a letter of intent to the Union College Registrar's Office by Oct. 24, 2008.

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

### 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 may inquire about that possibility at the Admissions Office.

## Costs

The costs included in this Academic Register 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 for the year 2008-09, is \$48,552. 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 registration. 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. Last-term seniors will be permitted to register for only two courses; however, payment for full tuition is still required.

Each additional course above the normal course load will cost \$2,856 in 2008-09. Students who, by virtue of their academic major, are required to have more than 36 courses for graduation will be exempt from additional course charges, but only to the extent warranted by this requirement. (For example, if 38 courses are required for graduation, a student may take without extra charge up to two extra courses.) Students who are making satisfactory progress in their program of study are allowed to enroll in one fourth course per academic year at no extra charge, provided they have a grade point average of at least 3.3. These courses can be used to enhance the student's academic experience at Union, as can any additional fourth courses, for which there will be a fee. All such courses will appear on the transcript and can be used to fulfill program requirements; however, they cannot be used for the purposes of accelerated graduation. Fourth courses can also be used to make up a deficiency in credits because of withdrawals or failure. This requires the written approval of the Dean of Studies and there will be a fourth course fee.

Should a student drop or withdraw from a course for any reason and, as a result, take less than a full course load for the term in question, tuition will not be prorated for that particular term. If a student drops or withdraws from a course for documented medical reasons, he or she may take an additional fourth course during the academic year, at no extra charge, if he or she paid for the original course in full. Should a student drop or withdraw from a course for any other reason, he or she may take an additional fourth course during the academic year, at no extra charge, with approval from the Dean of Studies at the time of the drop or withdrawal.

**Food Services:** All resident students are required to be on one of the following meal plans: 19 meals per week plus \$125 declining balance, 15 meals per week plus \$200 declining balance, 10 meals per week plus \$265 declining balance, 7 meals per week plus \$300 declining balance, or 5 meals per week plus \$325 declining balance. All freshmen are required to be on the 19-meal plan. Upperclass students may choose any of the meal plans offered. Each meal plan includes declining balance credit per term. Full time undergraduate students living off campus may elect the declining balance meal plan, which includes \$200 per term, for a total of \$600 per year. Students who choose this meal plan will receive a rebate on their student bill equal to \$1,051 per term, for a total of \$3,153 per year.

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. The declining balance credit can be used in any of the College's dining service facilities:

**Dutch Hollow Restaurant** - open seven days a week for hot fresh baked goods, lunches, late afternoon snacks, New York-style deli sandwiches, pizza, grilled items, and dinner. Cash or Declining Balance cards are accepted. Monday through Thursday, 7:30 a.m. to midnight; Friday, 7:30 a.m. to 10 p.m.; Saturday, 10 a.m.-10 p.m.; Sunday, 10 a.m. to midnight.

**Rathskellar** - operates Monday through Friday from 11 a.m. to 7 p.m., and for "Late Night" on Friday and Saturday, from 9 p.m. to 1 a.m. Declining Balance cards will be honored any time for all items including the purchase of prepackaged snacks or deli items.

**Upperclass Dining Hall** - serves a variety of full entrees, deli items, salads, and grilled selections.

## 18 / Costs

It is open Monday through Friday, 11 a.m. to 2 p.m., for lunch, and for evening meals from 5 to 7:30 p.m. It features “all-you-can-eat” format and is open to upperclass students on the meal plan and any others who choose to purchase fixed-price meals. Entrance may be obtained by using the meal plan, cash, or Declining Balance credit.

West College Dining Hall - operates seven days per week and serves a full breakfast, lunch, and dinner with unlimited servings, Monday through Friday, and brunch and dinner on Saturday and Sunday. West College Dining is open Monday to Thursday 7:30 to 10 a.m. for breakfast, 11 a.m. to 2 p.m. for lunch, and 4:30 to 7 p.m. for dinner. West College is open only for breakfast and lunch on Fridays. Weekend hours are 10 a.m. to 2 p.m. for brunch and 4:30 to 7 p.m. for dinner.

All students will receive 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. 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 Service.
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 \$1,482 per term, for a total of \$4,446 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 Register, 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 with no connection or service charges 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. 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. Students who are covered by their parents’/responsible party’s insurance may waive the enrollment in the College plan online at <https://www.gallagherkoster.com/>. Students will be enrolled for insurance provided through the College and charged accordingly if such waiver information is not completed. The waiver must be completed annually by August 8 and is the only means students have of avoiding compulsory enrollment under the College-sponsored plan.

### 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.

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 \$200 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.

Additional Charges and Refunds for Withdrawal After the Due Date of Term Bills or During a Term: Students who do not register, or who withdraw or otherwise fail to complete an enrollment period, will be charged on a prorated basis according to the schedule below. Refunds are a percentage of the comprehensive fee less any rebates, based on the date of the student's last day of attendance (separation) as reported by the Dean of Students. Students who withdraw from all three courses for documented medical reasons after the fourth week will not receive a refund. However, they will be eligible to make up these classes without additional tuition charge by either taking fourth courses during the Academic year or by completing an additional term should one be required at the end of four years.

The refund percentage is as follows:

Withdrawal during first and second week:	75%
Withdrawal during third week:	50%
Withdrawal during fourth week:	25%
Withdrawal after end of fourth week:	No refund

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.

Each withdrawing student will be charged a \$200 fee that is not subject to refunding. 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

— \$200 will be applied to the orientation program

— \$100 will be retained as a housing deposit for the year; housing fines may be assessed

## 20 / Costs

against this deposit with any balance credited to the student account at the end of the year

— \$200 deposit is retained until graduation or withdrawal. If the student does not attend Union, this \$200 deposit is forfeited.

Application Fees (nonrefundable)

Four-Year Undergraduate — \$50

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.)

Group Programs Abroad (includes tuition, room, board, and group excursions, but excludes transportation. Deposits are required for these programs to reserve a place in the group. Exchanges are billed the comprehensive fee. All other programs are billed the comprehensive fee plus a \$600 International Program fee)

Late Fees — \$50 (assessed for failure to pay bills or check-in on schedule, make-up, or special examination, term examination).

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.)

## College Residences

Minerva Houses (2004) – Seven houses make up the student-run Minerva House System (see About Union College section for more on the Minerva System). Up to 45 students live in each of these houses: Beuth House, Golub House, Sorum House, Wold House, Blue House, Green House, and Breazzano House.

College Park (1999) — The College Park neighborhood adjacent to campus offers apartment-style housing for 160 students, including numerous theme houses. Our newest facility is College Park Hall, which opened in the fall of 2004, and houses 260 upperclass students.

Davidson Hall (1968) — Named for Carter Davidson, 13th president of the College (1946-1965). Houses men and women in suites and men in double rooms on the garden level. Also the home of Sigma Phi.

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

Fox Hall (1968) — Named for Dixon Ryan Fox, 12th president of the College (1934-1945). Houses men and women students in suites, men in double rooms on the garden level, as well as Delta Kappa Epsilon and Psi Upsilon.

Hickok House (1957) — Named for Laurens P. Hickok, Union's fifth president (1866-1868). Home of 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 Blue House and Wold House.

Potter House (1961) — Named for Dr. Eliphalet Nott Potter, grandson of Eliphalet Nott and the seventh president of the College (1871-1884). Tri Delta sorority is housed here.

Raymond House (1961) — Named for Union's ninth president, Andrew Van Vranken Raymond. Sigma Chi fraternity is in the south section, and the north section houses Sigma Delta Tau sorority.

Richmond House (1960) — Named for Dr. Charles A. Richmond, president of Union from 1909-1928. A residence that houses first-year 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 House and Green House are now 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 to become the home of 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 men and women as well as one of the College dining halls.

## 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](http://www.fafsa.ed.gov) and the CSS Profile at [www.collegeboard.com](http://www.collegeboard.com) by February 1. In addition, if the parents of the dependent student are separated and/or divorced, the noncustodial parent must also submit the CSS Non-Custodial Parent Statement. If the parent of the dependent student owns a business and/or farm, they must also complete the CSS Business/Farm Supplement. All forms are available on the College Board website.

Continuing students must complete the current year FAFSA and Profile and submit all verification documents to the aid office by March 15<sup>th</sup>. A listing of the required verification documents is provided on the financial aid website.

### 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 \$1,800 as well as some minimal amount of loan. The balance of the award consists of scholarship assistance. We do attempt 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 returns to verify the awards that have been offered. Awards may be adjusted when there are differences between FAFSA/Profile estimates and actual figures. If you receive outside scholarship awards, you must notify the financial aid office. If your federal need has not been fully met or you are only receiving merit awards, you may be able to keep the outside award in addition to our financial aid offer. If your federal need is fully met, we will reduce the loan or work portion of your package first. If you have questions about how the award may affect your aid package, please contact the financial aid office.

### 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, we will provide detailed information on our website regarding the renewal application process. The deadline for continuing students is March 15<sup>th</sup>. We will begin mailing renewal aid awards in May for all completed applications. Please note that all students are eligible to receive a maximum of 12 terms of financial assistance.

If you are only receiving a merit award your scholarship will automatically be renewed in subsequent years provided that you are enrolled as a full-time undergraduate at Union College. Students who are enrolled in the Leadership in Medicine Program and/or the 6-Year 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 your student account, you may elect to leave the surplus to be used for a future term or you may request a refund from the Finance office. Please note that refunds can only be issued on amounts that have actually 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 you are receiving federal and/or New York State awards, you must meet their satisfactory progress guidelines described in the sections that follow.

### Academic Eligibility for Federal Title IV Programs

To remain eligible for Title IV federal student aid, you must earn a specified number of credit hours and maintain a minimum grade point average each year. The requirements are noted in the chart below:

#### Federal Title IV Satisfactory Academic Progress

Terms	3	6	9	12	15	18
Credit Hours	6	12	18	24	30	36
GPA	1.65	1.80	1.80	1.80	1.80	1.80

If you fail to maintain the minimum credit hours and/or achieve the required grade point average, you will be placed on federal financial aid probation and will have one academic year in which to earn sufficient credits or achieve the required grade point average before losing federal aid eligibility.

Students who are denied federal aid due to lack of satisfactory academic progress may appeal through the office of financial aid.

#### New York State – Satisfactory Academic Progress

To maintain eligibility for New York State financial assistance, you must earn a certain number of credit hours each semester and maintain a minimum grade point average. The requirements are outlined in the chart below:

#### New York State: Academic Eligibility Requirements

Payment:	<u>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15</u>														
Credit hours:	<u>0 1 2 3 5 7 10 12 15 18 21 24 27 30 33</u>														
GPA:	<u>0 1.0 1.1 1.2 1.25 1.3 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0</u>														
	<u>2.0</u>														

You 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

## 24 / Financial Aid

As a student, you have 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. If you have any questions, you have the right to ask the financial aid office staff:

- 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 our cost of attendance and what is our policy with regard to making refunds to students who leave the College.
- What criteria do we use to determine which students are eligible to receive aid.
- How we 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 your financial need as determined by the College has been met.
- What each of the various types of aid included in your package mean.  
What portion of your aid award must be repaid and what portion represents gift aid. If any portion of your package includes a loan, you have the right to know the interest rate, the total amount that must be repaid, the payback procedures, the total time you have 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, your financial aid award, before you enroll.
- Complete your financial aid applications accurately and within the established deadlines. Errors may result in a delay the processing of your 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 you have submitted applications.
- Read and understand and accept responsibility for all of the forms you are asked to sign. Keep copies for your records.
- Notify a lender of any change in your 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 \$890 to \$4,731, are awarded to the neediest students (based on a federal calculation).

Supplementary Educational Grant Program (SEOG): These additional grants are made to Pell Grant recipients.

Academic Competitiveness Grant (ACG): This grant is available to Pell eligible students who are enrolled full time in their first or second academic year and have graduated from a rigorous high school program of study.

National Science and Mathematics Access to Retain Talent Grant (SMART): This grant is available to Pell eligible students who are enrolled full time in their third or fourth academic year, majoring in science, mathematics, technology, engineering, or critical foreign languages and maintain a minimum grade point average of 3.0.

## 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 an aid package. Preference for jobs is given to students based on financial need.

## Loans

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.

Subsidized Stafford Loan Program: A need-based student loan with a fixed interest rate (6% effective July 1, 2008). Loan maximum amounts are \$3,500 (freshmen), \$4,500 (sophomores), \$5,500 (juniors and seniors) with a maximum cumulative total of \$23,000. Both principal and interest are deferred while the student is enrolled at least half time. Repayment begins six months after completion of studies or leaving college and may extend up to ten years. A 2% fee (1% origination fee charged by the lender and 1% default fee charged by the guarantor) will be deducted from the total amount borrowed.

Unsubsidized Stafford Loan: Students who do not qualify for all or part of the subsidized Stafford Loan program may qualify for an unsubsidized Stafford loan. The interest rate is fixed at 6.8%. Accrual of interest begins at time of disbursement (or the student can choose to pay the interest while still in school by contacting the lender). For dependent undergraduate students, the same maximums as listed for the Subsidized Stafford Loan apply. Independent undergraduate students may borrow up to an additional \$6,000 (for freshmen and sophomores) and \$7,000 (for juniors and seniors). A 2% fee (1% origination fee charged by the lender and 1% default fee charged by the guarantor) will be deducted from the total amount borrowed.

Please note - new federal guidelines have made it possible for dependent undergraduate students to borrow up to an additional \$2,000 in an unsubsidized Stafford loan (contact the Financial Aid Office for more information).

Parent Loans 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). Beginning with the 2008-2009 school year, families will be required to complete the FAFSA in order to borrow a PLUS loan. The PLUS loan has a fixed interest rate of 8.5% and repayment begins 60 days after the funds are fully disbursed. Information regarding how to apply is available from the Financial Aid Office. A 4% fee (3% origination fee charged by the lender and 1% default fee charged by the guarantor) will be deducted from the total amount borrowed.

Please note – new federal guidelines have made it possible for parents to choose to defer payments on a PLUS loan until six months after the student ceases to be enrolled at least half-time. Accruing interest could either be paid by the parent borrower monthly or quarterly, or be capitalized quarterly. Interested parents should contact their lender directly for more information.

## Other Programs

Veterans Administration (VA) Benefits: Many programs of educational assistance benefits are available to those who have served in the active military, naval, or air service and their dependents. Program benefits vary with dates and length of service. Detailed information on all veterans' benefits

## 26 / Financial Aid

and assistance in applying for benefits can be obtained from offices of the Veterans Administration in each state.

### 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 including the following 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](http://www.hesc.com):

- Memorial Scholarship for Families of Deceased Firefighters, Volunteer Firefighters, Police Officers, Peace Officers and Emergency Medical Service Workers
- New York State Volunteer Recruitment Service Scholarship
- New York State World Trade Center Memorial Scholarship
- Regents Awards for Children of Deceased or Disabled Veterans
- Regents Health Care Scholarship
- Regents Professional Opportunity Scholarships
- Robert C. Byrd Honor Scholarships
- Scholarship for Academic Excellence
- State Aid to Native Americans
- Veterans Tuition Award
- 

Tuition Assistance Program (TAP): Awards are from \$500 to \$5,000 and are based on family net taxable income. Applicants must apply annually to the New York State Higher Education Services Corp., 99 Washington Ave., Albany, N.Y. 12255. There is a separate payment schedule for students who qualify as “independent.” TAP recipients are subject to state regulations enforcing and defining good academic standing, both cumulative and on a term by term basis. Students may become ineligible for TAP during the next term unless they receive grades in a specified number of courses each term (two for freshmen and sophomores; three for juniors and seniors). Students must be enrolled full time to qualify. 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 NY State resident attending a NY 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](http://www.doe.state.de.us)

- Rhode Island Higher Education Assistance Authority, 274 Weybosset St., Providence, Rhode Island 02903; (401) 277-2050; [www.riheaa.org](http://www.riheaa.org)

- Vermont Student Assistance Corp., Champlain Mill, P.O. Box 2000, Winooski, Vermont 05404; (802) 655-9602; [www.vsac.org](http://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](http://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 \$5000 to \$11,000 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.

## Academic Requirements and Honors

**Registration Confirmation:** Every student must personally confirm his or her registration each term on the dates indicated in the College calendar, and in accordance with any special instructions announced by the Registrar, to avoid payment of a late registration fee or other penalties. Students who fail to confirm their registration according to instructions will not be considered to have been in attendance at the College for the term in question. Students returning from a leave of absence may confirm their registration only with the prior approval of the Dean of Students.

**Enrollment in Courses:** Each term the Registrar holds prescheduling for continuing students who, with the help of their advisors, select three courses for the coming term. Prescheduling must be completed during 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. With written permission from the instructor, a student may enter a course as late as the second week of the term. Failure to finalize their course schedule will result in assessment of a late charge on the students' bill. 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 Studies.

No regular student may take fewer than three courses each term, unless exception is recommended by the Director of Student Support Services in consultation with the Dean of Studies. 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 only with the specific approval of the Registrar.

**Fourth Courses:** In each academic year, students are allowed to enroll in one fourth course at no charge, provided they have a grade point average of at least 3.3 and are making satisfactory progress in their program of study. These courses, meant to enhance the student's academic experience at Union, will appear on the transcript with the grade factored into the cumulative GPA. 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. If these credits are used towards graduation, a fourth course fee will be charged.

**Note:** This policy includes fourth courses taken on a Term Abroad. Students going on a Term Abroad that requires four courses may use this course as an additional credit beyond the 36 required for graduation. It can only be used towards graduation should the student fall behind in credits. If this credit is used for graduation, a fourth course fee will be charged.

Fourth courses can also be used to make up a deficiency in credits because of withdrawals or failure. This requires the approval of the Dean of Studies if the student's academic index is below 2.5, and entails a fourth-course fee of \$2,856. There is also a fourth course charge if students do not have the requisite GPA. Any exceptions to these rules must be granted by the Dean of Studies.

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

**Choice of Courses:** Keep in mind the requirements of the General Education program and the regulations in the major field. Those courses required in the departmental majors, including related courses offered by other departments, appear at the head of each departmental course listing. See requirements for interdepartmental and organizing theme majors in "The Undergraduate Program" section. The major should be viewed as a coherent series of courses providing a solid background in the field as well as an introduction to advanced study. Beyond the requirements specifically listed for the particular major, a student may choose other courses within the department, as long as the total number of major courses and related courses does not exceed two-thirds of the number required for the normal four-year program. The College recommends that students give serious consideration to electives in fields other than the area of concentration.

Some departments offer a modified major for students interested in the field but also wanting to take courses in related fields. The same spirit pervades the interdepartmental major. In many programs,

## Academic Requirements and Honors / 29

a student need not begin a major during the freshman 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 freshman year. Students in premedicine also need to consider taking the requisite courses in their freshman year. Students should consult academic advisors.

### Academic Honesty

The College assumes that students will 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. Normally the penalty for academic dishonesty is failure in the course. Additional information is found in the booklet *Plagiarism: A Cautionary Word to Students*, furnished to all entering students and available from the Dean's Office.

### Attendance

**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, excused absences. An instructor may lower a grade or assign a failing grade for excessive absence.

**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. It is the student's responsibility to be present during the examination period. In cases of a student's absence caused by verified personal misfortune, the Dean 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.

**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. After the end of the second week of classes and until the end of the eighth week, a grade of "W" will be assigned in such cases. Dropping a course after the end of the eighth week will result in a grade of "F" unless there is a showing of 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.

Should a student elect to drop or withdraw from a course or not register for a full load, and as a result take less than a full course load for the term in question, tuition will not be prorated.

**Incomplete Course Work:** Students must submit all course work not later than the closing hour of the last scheduled final examination period of each term, unless the instructor has set an earlier deadline. A grade of "Incomplete" may be requested only for extraordinary extenuating circumstances beyond the student's control, and the instructor's approval must be obtained. The instructor must complete the appropriate form and file it with the Registrar. When an "Incomplete" is granted, the course work must be completed not 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.

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 "Financial Aid" for details.

**Repeat Course Policy:** Students who repeat a course that they have previously failed will have both grades listed on their transcript. 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 transcript, 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 "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.

## 30 / Academic Requirements and Honors

**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.

**Summer Study:** After matriculation at Union College, a student may transfer in a maximum of three course credits for courses taken through other institutions (in non-Union approved programs of study). Prior approval must be obtained for these courses from the appropriate department chair and the Dean of Studies. Permission is normally granted only if the student is behind in credits. Such students may be approved for summer course work to enhance their Union education; however, these credits are 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. Normally students are not allowed to take courses at other institutions during the academic year. Students who withdraw and take courses elsewhere will not be allowed to transfer in the credits.

**Suspension:** Students are not allowed to take courses at other institutions while under suspension from the 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.

### 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 [www.webadvising.union.edu](http://www.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 minus (3.7), B plus (3.3), B (3.0), B minus (2.7), C plus (2.3), C (2.0), C minus (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.

**Pass/Fail Grading:** 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 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), and 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.

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 absolutely 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.

Independent study courses may not be taken Pass/Fail. The only exception might be independent studies taken in conjunction with an off-campus internship.

### Academic 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). At least three regular courses in each of the three terms, with no fewer than seven courses included in the index.
- (3). No grades of "D" or "F"

A student who spends part of an academic year at the College may be declared a Dean's List student by the Dean of Studies if extraordinary circumstances prevent full-time attendance or if the student is on a Union-sponsored term in industry or special Union-sponsored internship, has taken at least six courses for a grade, and the academic index for the courses taken is at least 3.50 with no grades of D or F. Normally, such a student would be expected to take eight courses at Union to qualify for Dean's List. Last term seniors who need only two courses to graduate may still be eligible for Dean's List provided both courses are graded, e.g. one of them cannot be taken pass/fail.

Graduation with Distinction: Union College recognizes academic distinction by awarding some degrees summa cum laude, magna cum laude, and cum laude, these Latin honors signifying 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 minus 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 submit to the Honors Committee, through the major departments, evidence of 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 minus has been earned, and they must be nominated by both of the major departments.

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. However, a student who fails to maintain a cumulative grade point index of 2.00, or whose prior term grade point index was below 2.00, will be warned of the need to improve by being placed on "Academic Warning," as explained below. An exceptionally weak record in a single term or a failure to improve after warning may result in suspension or dismissal from the College, also as explained below. It should be noted that for graduation, 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:

- (1). 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).

- (2). 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 academic warning.

- (3). 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, he or she may be suspended.

## 32 / Academic Requirements and Honors

The Subcouncil may recommend a one- or two-trimester suspension. The student then may petition the Dean of Students for readmission. The Subcouncil may deny readmission in some cases.

(4). Dismissal: In certain cases the Subcouncil may dismiss a student permanently.

Petitions for readmission or for waivers to college-wide graduation requirements must be submitted in writing to the Subcouncil through the Office of the Dean of Students. Requests to the Subcouncil for reconsideration of its decisions must be submitted in writing. Reconsideration will occur only when information not previously available to the Subcouncil is submitted and, in the judgment of the Subcouncil, that information 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.

### Students' Rights and Confidentiality of Student Records

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.

### 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.

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 Sigma Alpha: The Union chapter of Pi Sigma Alpha, the national honor society in political

## Academic Requirements and Honors / 33

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 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 to full membership.

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.

### 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 86 percent based on the first-time freshman cohort entering in September, 2001. This calculation does not include students who have transferred to the College from other institutions.

The Union College Campus Safety Department has been a contributor to the Uniform Crime Reporting System since 1991. Information can be obtained from the Dean of Students office.

## Courses of Instruction

Course listings begin on page 38. Departments and multidisciplinary programs are listed alphabetically, with individual courses listed by department or program. A comprehensive list of subjects offered at Union is included immediately before the course listings.

Requirements to fulfill a major or minor appear at the beginning of the course listings for that department or program. All students must also complete the courses in the General Education Curriculum (see below), including Writing Across the Curriculum (WAC) requirements (see page 37) and other requirements that pertain to the undergraduate degree. GenEd categories from the old curriculum, if applicable, are listed following the course description (see list of abbreviations on next page).

Courses are numbered according to the following scheme.

0-49 – Non-credit courses.

50-99 – 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.

Selected graduate courses at Union Graduate College 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 others will be limited to two graduate courses. For a list of eligible courses, please refer to the Graduate College Supplemental Listing, which is available during prescheduling. For course descriptions, please consult the course catalog of Union Graduate College.

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. Because the time and frequency of class and laboratory meetings vary considerably among the different courses, no schedule of hours appears in the listings.

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.

### The Core Components Curriculum

(for the Class of 2010 and beyond)

The program consists of anywhere between 10 and 13 courses. Students can double-count courses taken in Part B with Part C but are required to take at least 10 courses total to complete general education.

NOTE: Students may satisfy any of the requirements in Parts B and C with appropriate courses taken on Terms Abroad.

Part A: Core (two courses)

1. First-Year Preceptorial
2. Sophomore Seminar

Part B: Distribution requirements (eight courses)

1. One Social Science course including psychology, anthropology, history, sociology, economics, and political science.
2. Two Humanities courses including studio and performing arts courses; one course must be a literature course.
3. Two courses in Linguistic and Cultural Competency, including courses in any discipline covering:  
— Term Abroad courses that deal with a cultural tradition outside the United States

- cross-cultural comparison and theories about cultural complexity
  - one or more cultural traditions outside of the United States
  - one or more “minority” cultural tradition within the United States
  - a sequence of 2 courses in a foreign language at level 102 (12) or higher.
4. Three courses in quantitative and mathematical reasoning (QMR), natural and applied science, engineering, and the impact of science and technology on society, including.
- one course in natural sciences, with lab
  - one course in quantitative and mathematical reasoning (QMR) - includes courses in math or those offered in a number of departments, listed under QMR GenEd
  - one course selected from the following categories:
    - i) same as in first bullet, but need not have a lab
    - ii) a course from engineering (includes CS), to foster understanding of technology
    - iii) a team-taught interdepartmental course (including at least one faculty from Division III or IV), with significant science or engineering content, about the impact of science and/or technology on the human world: includes Converging Technologies courses listed as “CT GenEd.”

Part C: Clusters : Making connections across disciplines (three courses)

Prompts awareness of interdisciplinary connections by requiring students to take 3 courses in an approved cluster, from at least 2 different departments. Possibilities would include 3 courses in any of the existing ID programs and/or clusters of courses proposed by faculty groups and approved by the General Education Board such as “Ancient studies,” “Globalization,” or “Media Studies.” The committee envisions that the list of approved clusters will change over time, with new clusters being proposed and older ones, possibly disappearing over time. The Clusters are:

- Africana Studies
- Art and Politics in Latin America and the Caribbean
- Art and Technology
- Asia in Motion
- China: From Yao to Mao to Yao
- The Classical Tradition of the West and its Roots
- The Cold War
- Creative Arts
- Critical Film and Photography Studies
- Critical Race and Ethnic Studies
- Design
- Energy
- Entrepreneurial Thinking
- Environmental Policy
- Environmental Science
- Global Cultures
- International Affairs and Global Studies
- Japan
- Latino/a Studies
- Legal and Social Justice
- Life Course and Society
- Ordering the West From Ancients to Moderns
- Politics and Power in Latin America and the Caribbean
- Public Policy
- Queer Studies
- Religious Studies
- Science, Medicine & Technology in Culture
- Theater Studies
- Women’s and Gender Studies

## The General Education Curriculum

(applies to Class of 2009)

The core of Union’s General Education curriculum (GenEd) is the First-Year Preceptorial, a seminar for small groups of students offered by faculty drawn from a variety of departments. The

## 36 / Courses of Instruction

Preceptorial focuses on making students more effective at reading, analyzing, and writing. They are required to read, discuss, and extensively write about substantial works in a range of fields and from culturally diverse sources.

All regular degree candidates must complete Gen Ed Sections I, II, III, and IV. (Students in the Leadership in Medicine/Health Systems program, because of the breadth of their own special curriculum, take FPR 100 but are otherwise not affected by GenEd requirements.) Engineering students are especially encouraged to consult early with their advisors concerning GenEd Section IV requirements because of their heavy major requirements, and because their choices are somewhat different from those available to arts and sciences majors.

The courses should normally be completed by the end of junior year. Students wishing to study a foreign language are urged to get an early start. In many cases, courses fulfilling the GenEd curriculum also count toward majors and minors.

### I. History, Literature, Civilization

— FPR 100. First-Year Preceptorial (Fall, Winter). An introduction to general education, with the goals of improving student writing; developing critical reading skills; stimulating class discussion; becoming knowledgeable about cultural differences; and being exposed to varieties of good writing.

— SRS 200. Sophomore Research Seminar

— Two courses in Ancient history, Classics 121 and 125 or one course in European History 103 OR 104, or one course in American History 101 OR 102. These courses are normally completed during the freshman year.

— For students following the European or American history track, two courses that associate with the elected history sequence — either two courses in literature (GenEd: L or LS), or one course in literature and one course in civilization (GenEd: C or CS). For students following the Ancient history track, one literature course is required. These courses are to be taken in timely association with the history courses to which they relate.

### II. Social or Behavioral Science

— One course from among Anthropology 110; Economics 101; Political Science 111 or 112 or 114; Psychology 100; Sociology 100 or 202.

### III. Mathematics and Natural Science

— One credit-bearing course in mathematics (excluding Mathematics 100; or one course designated as QMR; and

— Two courses in basic or applied science, one of which must include laboratories (GenEd: SCLB). Students who take a laboratory course in biology, chemistry, geology, or physics as part of their major in those departments are excused from this second science course requirement.

### IV. Other Languages; Other Cultures; Other Disciplines

One of the following tracks in foreign language and culture, with appropriate double-counting for majors and for GenEd:

— Foreign Language Track: Any sequence of three courses in a classical or modern foreign language. Students may begin a new language or be placed at the appropriate level in a language of which they have prior knowledge. Students placed at the 102-level or higher earn the waiver of one of the three courses.

— Cultural Diversity Studies Track: Any related group of three courses in Africana Studies, East Asian Studies, or Latin American Studies. At least two must be in the same area.

— Foreign Study Track: Any Union Term Abroad with associated prerequisites, or equivalent foreign study.

— Miniterms Abroad: Union offers certain Miniterms Abroad during the summer and the month of December. These carry one course credit, which can be used towards partially fulfilling Section IV credit when combined with other course work at the College. Students will be charged \$3,000 for the cost of the mini-term. This is in addition to their regular tuition. The course is considered extra credit, and tuition is not deducted from the tuition of their last term at Union College. Students who are behind by a credit may use this credit to get caught up. Students who have enough credits may choose to take two courses, rather than three, in their last term as a senior; however, they must pay full tuition (as must any student registering for two courses). Note that last-term seniors will not be allowed to register for only one course.

Engineering students may use any of the above to fulfill Section IV requirements and may also qualify for a “virtual term abroad,” working on a senior design project with students in a foreign

university; an international term in industry; or an international engineering exchange program. Because the availability of these options varies from year to year, and some are highly competitive and may have prerequisites, engineering students should consult early with their advisors on how best to satisfy Section IV requirements.

The Key to GenEd Abbreviations:

Am — American

An — Ancient

Eu — European

L — Literature

C — Civilization

S — Survey

CDAA — Cultural Diversity Africana Studies

CDEA — Cultural Diversity East Asian Studies

CDLA — Cultural Diversity Latin American Studies

SCLB -- Science with a lab

SCIE – Science without a lab

## Writing Across the Curriculum

Every student will also be required to complete Writing Across the Curriculum requirements, including (1) the First-Year Preceptorial; (2) the Sophomore Research Seminar; (3) five courses from at least two different divisions that have been certified as WAC courses; and (4) a Senior Writing Experience such as a senior thesis or a senior seminar paper. The program of Writing Across the Curriculum (abbreviated as WAC in the course listings that follow) became effective for the class entering in 1990 and brought together traditional elements of a Union education and new courses and methods in a systematic effort to promote improvement in student writing skills. It was revised in 2000-01.

The First-Year Preceptorial, the first requirement, has for several years been required of all first-year students and is described in the section above titled “The General Education Curriculum.” The WAC courses that fulfill the second requirement fall within the normal disciplinary offerings and have writing built in as an important and clearly evaluated part of the coursework.

This Academic Register lists courses currently certified by the College Writing Board as meeting WAC requirements. Additional courses are certified each year by the Writing Board, and course syllabuses change regularly. Because of this, it is to be expected that the roster of WAC courses will change 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.

Key to WAC Abbreviations:

WAC – course certified by the Writing Board

WS — Fulfills senior writing requirement

## The Writing Center

Located in Schaffer Library, the Writing Center is open at announced hours during afternoons and evenings for students, faculty, and staff. The director or student tutors are available to aid writers in getting started, writing drafts, and final editing, in academic or nonacademic tasks. The Writing Center encourages visits from writers of all abilities and degrees of experience.

## Program for Health Professions

The Health Professions Program at Union College was 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 health-care delivery.

## 38 / Courses of Instruction / Course Listings

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 do require students to complete and do well in the following courses:

- two English courses (First-Year Preceptorial and at least one English elective);
- calculus course (through Math 102 or Math 112 or Math 113);
- three biology courses (Biology 110 and 112 or Biology 113; Biology 125);
- four chemistry courses (Chemistry 101 and 102 or Chemistry 110; Chemistry 231 and 232);
- two physics courses (Physics 110, 111).

Director: Professor Weisse

Health Professions Advisor: Rhona Beaton

### Special Support Services

The College provides a small number of developmental courses, normally noncredit, in English, mathematics, and other subjects. These courses are sponsored by the Academic Opportunity Program office but are open, by permission of the instructor, to other students as well. These courses are not for credit except by special arrangement for those students enrolled in the full Academic Opportunity Program. Natural Science and Mathematics departments normally offer special tutoring sessions for introductory courses to all students.

The College also provides support services for students with learning disabilities. Students are encouraged to consult with the Director of Student Support Services, in the Dean of Students office.

The College also has a peer mentoring program PALs (Peer Assistants for Learning). For more details, contact the Director of Student Support Services.

## Course Listings

The course listings below are in order by department or program. Courses in separate subdisciplines within departments (e.g., Chinese, Art History, and Engineering Science) are listed within the relevant department. To find the location of specific courses for subjects that do not correspond to specific departments, please check the comprehensive list of departments and subdisciplines below. For purposes of governance and the General Education requirements, the departments of instruction are also grouped into divisions as follows:

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

Classics

English

Modern Languages and Literatures

Music

Philosophy

Theater and Dance

Visual Arts

Social Sciences (Division II)\*

Anthropology

Economics

History

Political Science  
Sociology  
Sciences (Division III)\*  
Biological Sciences  
Chemistry  
Geology  
Mathematics  
Physics and Astronomy  
Psychology\*  
Engineering and Computer Science (Division IV)  
Computer Science  
Electrical and Computer Engineering  
Mechanical Engineering

\*Except as otherwise noted in the course listings, courses in the Psychology Department are classified as social science courses for purposes of the General Education program. The Psychology Department is included within the sciences for purposes of faculty governance.

## Comprehensive Listing of Departments, Multidisciplinary Studies, and Subdisciplines

Africana Studies  
American Studies  
Anthropology  
Arabic  
Art History (See Visual Arts)  
Astronomy (See Physics & Astronomy)  
Biochemistry  
Bioengineering  
Biological Sciences  
Chemistry  
Chinese (See Modern Languages and Literatures)  
Classics  
Computer Science  
Computer Engineering (See Electrical and Computer Engineering)  
Dance (See Theater)  
Digital Media  
East Asian Studies  
Economics  
Educational Studies  
Electrical and Computer Engineering  
Energy Studies  
Engineering  
English  
Environmental Science and Policy  
Environmental Engineering  
Film Studies  
French (See Modern Languages and Literatures)  
Geology  
German (See Modern Languages and Literatures)  
Greek (See Classics)  
Hebrew (See Modern Languages and Literatures)  
History  
International Programs  
Japanese (See Modern Languages and Literatures)  
Latin (See Classics)  
Latin American and Caribbean Studies

## 40 / Course Listings

Law and Public Policy  
Leadership in Medicine/Health Systems Program  
Managerial Economics (See Economics)  
Mathematics  
Mechanical Engineering  
Modern Languages and Literatures  
Music  
Nanotechnology  
Neuroscience  
Organizing Theme  
Philosophy  
Physics and Astronomy  
Political Science  
Psychology  
Quantitative Economics (See Economics)  
Religious Studies  
Russia and Eastern Europe  
Russian (See Modern Languages and Literatures)  
Science, Medicine, and Technology in Culture  
Sociology  
Spanish (See Modern Languages and Literatures)  
Studio Fine Arts (See Visual Arts)  
Terms Abroad  
Theater and Dance  
Visual Arts: Art History and Studio Fine Arts  
Women's and Gender Studies  
World Musics and Cultures

### Extrdepartmental Programs

First-Year Preceptorial  
Sophomore Research Seminar  
Converging Technologies  
Clusters (for Core Component Curriculum)

### Union Graduate College

Through Union College's non-degree granting partnership with Union Graduate College, Union students are able to take graduate coursework in the following departments and programs at the Graduate College.

The School of Management: Students may take selected coursework in Accounting, Statistics, Business Administration, Management, and Health Systems Management.

The School of Educational Studies

The School of Engineering: Coursework is available in Computer Science, Electrical Engineering, and Mechanical Engineering.

## Africana Studies

Africana Studies offers an interdepartmental major and a minor involving the study of the history, culture, intellectual heritage, and social development of people of African descent, focusing on the continent of Africa as well as places in the diaspora such as the Caribbean, Latin America, Europe, and the United States. The program features a variety of approaches to intellectual, creative, and practical interests, and draws upon the arts, humanities, and social and behavioral sciences.

Requirements for the Interdepartmental Major: Eight courses. Seven courses chosen from the course list below, at least four of which must be core courses, designated with an asterisk. A senior thesis (IDM 498-499) which includes Africana Studies combined with the other departmental major. Students are advised to select courses with a view toward preparing for the area of their thesis.

Requirements for the Minor: Six courses chosen from the course list below, at least three of which must be core courses, designated with an asterisk. Three courses must be from the same department or discipline.

Director: Professor Olsen (Music)

Advisors: Professor Aslakson (History), Fay (Anthropology), Hill-Butler (Sociology), Lynes (English), Meade (History), Morales-Cox (Art History), Morris (History), Ndiaye (Modern Languages), Peterson (History), Wainaina (English)

### Anthropology

ANT 181 Anthropology of Sub-Saharan Africa

ANT 186 Political Economy of South Africa

ANT 191 Global Africa

ANT 192 African Ethnographies

### Art History

AAH 460 Seminar: Visual Culture, Race, and Gender

### Classics

CLS 110 Ancient Egypt: History and Religion

### English

\*EGL 216 African-American Literature in Historical Context: Beginnings to 1900: Vision and Re-Vision

\*EGL 219 African-American Literature in Historical Context: 1900-Present

\*EGL 240 Black Women Writers

\*EGL 242 As a dance is it obscure: Black Music in American Literary Culture

\*EGL 246 Modern African Literature

EGL 261 American Fiction Since 1960

EGL 268 Contemporary African Fiction

\*EGL 274 Introduction to Black Poetry

EGL 302 Junior Seminar: Post-Colonial Literature and Theory

\*EGL 304 Junior Seminar: Caribbean Diasporas

EGL 310 Junior Seminar: Harlem Renaissance

### History

\*HST 107 Africa to 1800

\*HST 108 Modern Africa 1800-Present

\*HST 109 African Slave Trade

\*HST 131 African-American History I

\*HST 132 African-American History II

## 42 / Africana Studies

HST 171 Europe and the Americas in the Era of Columbus  
HST 172 Reform and Revolution in Latin America and the Caribbean  
\*HST 231 The Civil Rights Movement  
HST 232 Race and Law in American History  
HST 233 Gender and Afro-American History  
HST 234 History of New Orleans  
HST 270 Latin American Popular Culture  
HST 272 History of Brazil  
HST 273 The History of the Caribbean and Central America  
HST 278T South Africa Mini-Term  
HST 302 Comparing Muslim Cultures  
HST 321 Afro-American Political Thought  
\*HST 322 Slavery and Freedom  
HST 362 "Black Britain:" Race and Ethnicity in British History  
HST 370 Colloquium: Latin American History  
HST 401 Seminar: Islam in Africa  
HST 401A Seminar: French Empire

### Modern Languages and Literatures

\*FRN 304 Studies in the French Caribbean  
FRN 305T Mini-term in Martinique  
FRN 307 Negritude Movement: Point of Departure in Black African and Afro-Caribbean  
Literatures in French  
\*FRN 430 Special Topic in Francophone Culture and Literature: West African Oral Literature  
\*FRN 431 Special Topic in Francophone Culture and Literature: Voices of Francophone Literature  
from French-Speaking Countries and Territories other than France  
FRN 432 Imagining Algeria  
MLT 213 West African Oral Literature  
MLT 283 Beyond the Sunny Paradise: Literature and Politics in the Caribbean  
MLT 284 Popular Religion and Politics in Latin America  
SPN 432 Islands Adrift: Race, Politics, and Diasporas in the Hispanic Caribbean

### 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

### Political Science

PSC 240 Comparative Racial and Ethnic Politics  
PSC 263 The Politics of Poverty and Welfare  
PSC 267 Race and the American Political System: Tyranny of the Majority?

### Sociology

\*SOC 230 African-Americans in Contemporary Society  
\*SOC 233 Race, Class, and Gender in American Society  
SOC 245 Sociology of Developing Countries  
SOC 265 Sociology of Human Rights  
SOC 320 Africa: Social and Demographic Trends  
\*SOC 323T A Survey of Brazilian Society  
\*SOC 346 African American Women: Unheard Voices and Contemporary Lifestyles

### Theater and Dance

ADA 052 Dance in America

## American Studies

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. Students are encouraged to explore the diverse character of the American experience, shaped by gender, race, class, geography and ethnicity, and to situate that experience in a context of global economic, cultural and political relations. Students are asked to develop a coherent approach to the study of American culture, politics and society, past and present. To accomplish these tasks, American Studies majors collaborate closely with an 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.

American Studies majors develop a 13-course program with their advisor. The program must include:

1. Three courses on any American topics in the English and History departments, one of which must be in American history, one of which must be in American literature. History 101 and 102 cannot be counted toward the major.

2. A thematic concentration of four additional courses that form (with the junior seminar and the senior thesis) the heart of the major. A concentration can involve the intensive study of an era (e.g., antebellum America, the United States since the Cold War, the Americas during the Conquest) or a topical focus (e.g., the emergence of mass culture, borderlands in American history and life, film studies, women in American life, ethnicity and race in American life, the legacy of American republicanism). For example, a concentration on the United States since the Cold War might include History 125, History 126, Political Science 251, Political Science 331, English 242, English 261, and/or English 272. A concentration on Women in American life might include History 212, History 213, History 222, Sociology 201 and/or English 240. The program encourages the distribution of courses across several disciplines.

3. A seminar on a topic related to the thematic concentration. Relevant seminars are given regularly in history, English, political science, sociology, anthropology, and art history.

4. A two-term senior project related to the thematic concentration, AMS 498-499. To fulfill requirements for Writing Across the Curriculum, the senior project must have a substantial written component. Ordinarily students spend two terms writing a senior thesis on a topic chosen with their thesis advisor (who need not be the same person as the student's regular advisor). Students have the option of producing senior projects partially in non-text media (in audio, video, or multi-media). Senior projects must still fulfill the College's WS requirement. Please consult with the program director about senior project proposals.

5. A methods or theory course related to the thematic concentration. For example, English 303, Economics 101, Women's Studies 100, Anthropology 220, Anthropology 115, Political Science 220/Sociology 201, Political Science 222/Sociology 302. The choice of this course should be made in consultation with the student's advisor.

6. Additionally, at least one course must cover questions of race and ethnicity in American life, and at least one course must address the experiences of women in American life.

Program Director: Professor Lorraine Morales Cox (Visual Arts)

Program Advisors: Professors Klein (Economics), Lynes, Smith, Tuon, Wineapple (English), Aslakson, Feffer, Foroughi, Lawson, Wells (History), Garcia, Martinez (Modern Languages), Matsue, Olsen (Music), Brown, Hays, Weiner, (Political Science), Hill Butler, Cotter, Goldner (Sociology), Ogawa (Visual Arts)

## 44/ Anthropology

# Anthropology

Professor K. Brison, Chair; Professor L. Cool; Professor G. Gmelch (on leave 2008-09); Professor S. Gmelch (on leave 2008-09); Associate Professor S. Leavitt (on leave, Dean of Students); Assistant Professor J. Matsue (in Music); Visiting Assistant Professors A. Gandsman; Visiting Assistant Professor X; Visiting Assistant Professor; Research Professor C. Bishop; Lewis Henry Morgan Institute, D. Foley.

### Requirements

Major: Twelve courses including four "Foundation" courses (Ant 110, 114, 290, and 363), a Term Abroad\* (Anthropology Field Program in Fiji or Tasmania preferred), and a two-term senior thesis in cultural anthropology.

\*If necessary, accommodations will be made.

Interdepartmental Major: Eight courses, including Ant 110, 290, 363, a senior thesis, and three electives.

Minor: Six courses including Ant 110, 290 or 363 and four electives.

Honors: 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 minus" on the senior thesis.

### Department-Sponsored Term Abroad

Field Program in Anthropology (Fiji-Fall; K. Brison). This anthropology field school-held alternative years in Tasmania, Australia or Suva, Fiji- gives students an intensive, firsthand experience studying another culture. Students live with local families while carrying out full-time field research. Fiji participants are enrolled in Anthropology 185T (People and Cultures of the Pacific), 223T (Culture and Entrepreneurship in Fiji), and 255T (Culture and Work).

### Foundation Courses

110. Introduction to Cultural Anthropology (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. Emphasis on non-Western cultures. GenEd:SOCS, LCC

114. Language and Culture (Winter, Brison). Examines the complex relationship between culture and language. Case materials drawn from societies in North America, Oceania, Southeast Asia, and the Middle East are used to explore various theories about how language is shaped by, and in turn shapes, culture and social relations. Topics include the acquisition of language by children in various cultures, everyday speech styles, verbal art, and the ways of talking about such things as emotion and illness to show how linguistic categories and patterned ways of using language influence the way we perceive the world around us. GenEd: LCC

290. Thinking about Culture (Winter; Cool). A broad overview of major anthropological approaches to studying individuals and societies. Students examine the strengths and weaknesses of contemporary and historical paradigms through critical reading and through conducting field exercises. GenEd: Eu-C; LCC

363. Research Methods and Design (Spring; Staff). An introduction to qualitative research in the social sciences. The course examines the ways social scientists, especially anthropologists, collect data (e.g., interviews, questionnaires, field studies) and the various methods they use to analyze data. Students learn how to formulate research questions and a research project, apply the best methods to a particular research design, and write a proposal.

### Electives

(only one cross-listed course can count for the major or minor)

111. Ethnographic Film (Fall; Gandsman). Examines the field of anthropology as it presents itself through film. Raises questions about anthropological knowledge and ethics by looking at how anthropologists and documentary filmmakers have depicted other cultures. Includes an introduction to the history of ethnographic film. GenEd: LCC

112. Crossing Cultures (Not offered 2008-09). Deals with the theory and practice of living and studying in cultures other than your own. Designed to help students understand the cross-cultural experience, explore learning and coping strategies when abroad, and give students a better understanding of their own culture so that they can understand others. Designed for students going on or returning from a term abroad and for international students. GenEd: SOCS, LCC

113. Biological Anthropology. (Not offered 2008-09) Biological anthropologists study the evolution of human behavior, and the biological bases — past and present — of the things that make us human. Topics may include the history of evolutionary thought, the genetic basis of evolution, primate evolution and behavior, hominid evolution, child development, human variation, sex and society, and ecology.

115. Introduction to Archaeology (Not offered 2008-09). Introduction to the history, methods, techniques, and theories used to recover and interpret archaeological data (i.e., material remains). Students get hands-on experience in archaeological survey work at local sites. SOCS, LCC

125. Childhood in Anthropological Perspective (Spring: Brison) (Same as WGS 192) The comparative study of childhood: examines child-rearing practices in various cultures including the U.S. Topics include theories of gender difference, playas socialization, education across cultures, and socialization practices. GenEd: LCC

130. Food and the Self (Fall: Staff). 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. GenEd: LCC

139. Family and Kinship. (same as WGS 173) (not offered 2008-09) 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. GenEd: LCC

141T. Cultural Ecology. (not offered 2008-09) Explores the diversity of human relationships to the environment, ranging from traditional indigenous communities to the industrialized world. Emphasizes direct experiences with people who are intimately connected with the land (e.g., ranchers, loggers, park rangers, researchers, nature writers, and conservation activists) . GenEd: LCC

146. Education and Culture. (not offered 2008-09) Examines theories of learning and education systems across cultures. How are schools shaped by cultural values? What is the role of education in reproducing or challenging social systems? GenEd: LCC

148. Introduction to World Music (Same as AMU 120) (Winter: Matsue). Introduces students to the music of the world and to methodological approaches to the study of music. Surveys the music of various regions of the world while also considering issues such as the connection between society and music, the formation of syncretic music, improvisation vs. composition, and the connection between language and music. Music is presented as an integral part of culture.

150. Anthropology of Religion. (Winter: staff) Comparative study of religious behavior and ideology. Examines ritual, magic, witchcraft, pilgrimage, and other religious phenomena, primarily in non-Western societies. GenEd: LCC

160. Photographing Culture (Not offered 2008-2009) (Same as WGS 291). This course examines the various uses of photography to depict, understand, and influence human behavior, focusing on the visual depiction of non-Western peoples (e.g., in National Geographic, contemporary advertising, early government and ethnographic reports, in boarding school and orphanage literature). It also discusses interpretation and the manipulation of photographic “evidence.” Other topics include tourist photography, the photographic conventions used by different cultures, and the use of photography as a research method. Emphasis on student projects. GenEd: LCC

170. Myth, Ritual and Magic. (not offered 2008-09) This course examines some of the theoretical issues surrounding myth, ritual and magic as well as specific examples of their cultural expression.

## 46/ Anthropology

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. GenEd: LCC

174. Human Evolution and Prehistory. (Same as HST 254; Biology 089). This course will provide both a historical perspective on, and our current biological understanding of, human evolution and early human societies. GenEd: Sci-Math;

180. North American Indians (Not offered 2008-09). A survey of North American Indians including their prehistory, the historical changes they have experienced, and a discussion of their current lifestyles, government policies, and problems.

181. Anthropology of Sub-Saharan Africa. This course provides a broad ethnographic survey of the peoples and cultures of the African continent. While the course seeks to show the diversity of the continent through an introduction to the fifty-four countries and hundreds of ethnic groups that constitute contemporary Africa. This course stresses the transnational and global linkages between Africa and the rest of the world and seeks to show how Africa is central to an understanding of the world. In this sense, the course looks beyond the news of Africa that focuses on tragedies such as wars, famines, and AIDS crisis, to engage everyday life in Africa. GenEd: LCC

182. Anthropology of Mediterranean Europe. (not offered 2008-09) Sources of similarity and diversity in the rural and urban cultures of Mediterranean Europe from Spain to Greece. Emphasis on modes of social relationships such as patronage and on cultural formulations such as honor and shame. Economic development and change in rural communities, urban life and the urbanization of migrants, and the rise of ethnic and regional movements are analyzed. GenEd: LCC

183. Peoples and Cultures of Latin America. (Winter: Gandsman) 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. GenEd: CDLA, LCC

184. Contemporary Japanese Society (not offered 2008-09) (Same as WGS 135). An anthropological introduction to contemporary Japanese society and culture. Provides an historical overview, then explores in greater depth of such topics as family structure, education, religious traditions, the work place, women, and contemporary social problems. GenEd: CDEA, LCC

185T. Peoples and Cultures of the Pacific (Fiji) (Fall; Brisson). 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. GenEd: LCC

186. The Political Economy of Southern Africa. This course examines the contemporary societies of southern Africa, focusing on changes and continuities since South Africa's political transition (1994), and related regional developments such as Namibia's independence (1990), the end of civil war in Mozambique (1992), and the current crisis in Zimbabwe. Possible topics to be covered include the desegregation of South African cities; changing patterns of migration and conflicts over immigration; land reform and redistribution; debates over neoliberal economic policies and their consequences; the movement of South African businesses and white settlers into the rest of southern Africa; conservation and tourism; the impacts of HIV/AIDS; debates over the idea of “multiculturalism” in the post-apartheid context; the rise of youth media; and changes in southern African anthropology and its relation to the discipline worldwide. GenEd: LCC

188. Pacific Cultures Through Film. (not offered 2008-09) Examines film portrayals of Pacific cultures, novels by Pacific Islanders, and anthropological accounts of Pacific cultures in order to dispel myths about the Pacific and to study the effects of American mass media on Pacific identity and culture. GenEd: Am-C; CDEA;

189. East Asia in Motion (not offered 2008-09). East Asia has a long history of constantly shifting borders, diasporic populations, and unstable identities. Going beyond the idea of the bounded national cultures such as China, Japan and Korea, this course takes East Asian as region in order to examine how cultural forms and people have changed as a result of globalization forces. The course will cover anthropological categories such as diaspora, race, gender, identity, tourism, memory, and sports, but will reconsider them within the East Asian context(s). GenEd: LCC

191. Global Africa. This course will examine the idea of Africa in the world through an examination of the movement of cultural practices, objects and beliefs into and out of post-colonial sub-Saharan

Africa. The course will consider the cases of Christianity, art traders, popular culture, food, commodities, and discourses on identity as a means to gain insight into Africa's role in the contemporary world. The course will pay particular attention to the effects and consequences of globalization and diasporas. GenEd: LCC

192. African Ethnographies. This course focuses on the peoples and contemporary cultures of Africa south of the Sahara. It begins by considering the effects and legacies of colonialism on Africa. It then explores the diversity of the continent, through a series of case studies which examine the interconnection of politics, religion, kinship, economics, ecology, ethnicity and history. The course retains anthropology's traditional interest in small-small communities, but looks also at wider contexts, including how representations of Africa shape outsiders' understanding of the continent. GenEd: LCC

220. Women's Lives Across Cultures (not offered 2008-09)) (Same as WGS 231). 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. GenEd: LCC

225. Gender and Society (Fall: Staff). 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. GenEd: LCC

228. Cross-Cultural Perspectives on Race. Does race matter in today's world? Has race always existed as a human category of difference? Is race just a black and white thing? How do other cultures outside the U.S. configure race? To address these and other questions we will focus on the historical and cultural peculiarities of race. This course asks students to move conceptually from the era of European colonialism and the invention of the modern conception of "race" to the U.S. Civil War period to the ascension of negritude, and, finally, race in contemporary times. We will investigate the diversity and complexity of "racialization" in various places, such as Detroit, Rio de Janeiro, Martinique, China, Paris, and Capetown. GenEd: CDLA, LCC

229. Ruminations on Violence. Is violence best understood as a set of "random acts" marginal to society? Or do societies need violence to make culture systematic and to make hierarchy function? We will address three major issues: the extent to which "violence" is culturally relative or a human universal; different types of violence; and the ways social groups turn violence into an aesthetic object and an artistic project. To accomplish our task, we will adopt both an ethnographic and theoretical approach. GenEd: LCC

230. Medical Anthropology (Fall Gandsman) (Same as WGS 293). An examination of beliefs about illness, healing, and the body and how these are shaped by culture and society. Topics include non-Western healing practices, political forces shaping medical practice in the U.S., and birthing practices in different cultures. GenEd: LCC

232. Bombs to Buddhism: Fatalism, Technology, and Modern Japanese Culture (Winter: Matsue). 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.

232T. Culture and Entrepreneurship (Fall: Fried; offered on Fiji Term Abroad). Entrepreneurship is fundamentally a creative endeavor. It is about far more than starting a business. The major goal of this course is to expose you to the challenges of entrepreneurship in a foreign

## 48/ Anthropology

culture and to inspire you to overcome obstacles rather than accept them. Through actively engaging in the endeavors of a Fijian entrepreneur, you will gain a sophisticated understanding of the very different conditions under which Third World entrepreneurs operate. It is not possible to understand a Fijian business without understanding the culture. GenEd: LCC

235. Fundamentalism. (not offered 2008-09) This course examines the spread of fundamentalist and evangelical religions around the world, and at theories about the appeal and impact of fundamentalism. We will start with a series of general, comparative works analyzing the rise of fundamentalist strains of Christianity, Islam, and other religions around the world. We will then move to specific case studies analyzing the impact and appeal of various fundamentalist religions in the Pacific, in the Caribbean, in South Africa, in the US, in the Middle East and in the Indonesia. Issues covered will include: the relationship between fundamentalism and modernity; the place of women in fundamentalist religious movements and so on. GenEd: LCC

236. Youth and Popular Cultures. Over the past decade, anthropologists have become increasingly aware of the importance of popular culture as a powerful field where people not only express themselves but an arena that also shapes some of the basic tenets of society. In this course we will examine the Internet and other “virtual” community formations, television, advertising, shopping malls, mobile homes, sports fandom, spirituality, hip-hop, “grrl” movements, and drug “cultures.” This course provides an opportunity to turn an anthropological lens onto the everyday life of teenagers and the flavor-of-the-month styles of popular culture and consumerism. GenEd: LCC

240. Culture and Technology. 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. GenEd: LCC

242. Economic Anthropology (Fall; Staff). 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? GenEd: LCC

243. Anthropology and International Development. 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. GenEd: LCC

244. Urban Anthropology. (not offered 2008-09) Cross-cultural analysis of urbanization and urban life: the origins and evolution of cities, transnational media and migration, global cities and globalization, rural and urban contrasts in lifestyles, and the images and reality of urban violence and oppression. Involves three field projects in the local area. GenEd: LCC

245. Sport, Society, and Culture (not offered 2008-09)). 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.

246. Anthropology of Human Rights: (Winter; Gandsman) 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. GenEd: LCC

251. Anthropology of Aging (Fall; Cool). Using anthropology's cross-cultural approach, this course examines both universal patterns and particular aspects of aging in a variety of cultures, including the U.S. Attention will be given to creating a future environment that may better satisfy the cultural and social needs of older people in the U.S. GenEd: LCC

255T Culture and Work (Fall, Brison; offered on Fiji Term Abroad.) 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. GenEd: LCC

260. Tourists and Tourism (Not offered 2008-09). This course briefly examines the history of tourism and typologies of tourism, before applying an anthropological perspective to the study of people's behavior as tourists and the impact tourism has (socially, economically, environmentally) in different parts of the world. It also discusses different forms of tourism (e.g., cruise ships, all-inclusive resorts, eco-tourism, heritage tourism, adventure tourism, sex tourism), the extent to which local people benefit, and considers the issue of responsible travel. GenEd: LCC

272. Psychological Anthropology. Explores the emotional force of culture. Topics include socialization, religion, self, gender, and sex. These and other issues are addressed in case studies from East Asia, the Amazon, and the Pacific. GenEd: LCC

275. Biology of Homo Sapiens (Same as BIO 275) (not offered 2008-09). A survey of the contributions from many disciplines (paleontology, physical anthropology, ecology, genetics, molecular biology, and demography) to our understanding of the biology and evolution of our own species. Topics include both descriptive material and quantitative analysis; because of the latter, one college level math course is a prerequisite. Fulfills GenEd: SCI.

295H-296H. Anthropology Honors Independent Study 1 & 2 (Tutorial for Union Scholars Sophomores; permission of instructor required)

373. Self and Life History in Anthropological Research (Not offered 2008-09). How culture affects the way people reflect on their personal lives and think about who they are. Readings cover life history research, ideas of self, narratives on illness and the body, stories of self-transformation. Students do extended interviews with an informant.

490-492 Independent Study (Fall, Winter, Spring). Tutorial for individual students.

490T. Independent Study Abroad (Fall, Winter, Spring). Tutorial for individual students.

498. Senior Thesis (first term)

499. Senior Thesis (second term)

## Astronomy (see Physics and Astronomy)

## Biochemistry

Associate Professors Fox (Director), Lauzon; Assistant Professor Kehlbeck; Lecturer Cohen

Requirements for the Major: Eleven courses in biology and chemistry: Biology 101, 102, 225 and 380; Chemistry 101, 102, 231, 232, 240, 351, 382; and three additional courses, two to be chosen from Biology 355, 363, 378, 384 and Physics 200, and the third to be chosen from among the other biology courses in the subcellular or organismal areas or Bio 350. In addition, mathematics through Math 115 and two terms of physics are required. Note that acceptance to graduate school may require additional courses and/or undergraduate research experience.

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.

Honors in Biochemistry: 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.

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

1. By completing a senior thesis in conjunction with senior research (Chemistry 491, 492, 493 or Biology 497, 498, 499).

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

3. 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, Chem 382 or one of the molecularly-based biology electives, in addition to the regular course work. This requires prior approval by both the student's advisor and the course instructor.

### Courses for Majors

Descriptions of courses from the Departments of Biology and Chemistry can be found under the department listings. Biochemistry 335 is a survey course for non-biochemistry majors. Biochemistry 380 and 382 comprise a two-term biochemistry sequence for biochemistry majors. Either Biochemistry 380 or 382 can be taken first. Since Biochemistry 335 covers material similar to that in Biochemistry 380/382, students should plan to enroll in either Biochemistry 335 or the Biochemistry 380/382 sequence.

BCH 335. Survey of Biochemistry (Same as Biology 335 and Chemistry 335) (Spring; Fox). 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. Prerequisites: Biology 225 and Chemistry 231. Not open to students who have completed either BCH 380 or BCH 382.

BCH 380. Biochemistry: Membranes, Nucleic Acids, and Carbohydrates (Same as Biology 380 and Chemistry 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. Three lab hours each week. Prerequisites: Biology 225 and Chemistry 232 or permission of the instructor. Not open to students who have completed BCH 335.

BCH 382. Biochemistry: Structure and Catalysis (Same as Biology 382 and Chemistry 382) (Winter; Fox). Structure and function of proteins/enzymes including purification, mechanism, kinetics, regulation, metabolism, and a detailed analysis of several classic protein systems. Four lab hours each week. Prerequisite: Chemistry 232. Not open to students who have completed BCH 335.

## Bioengineering Minor

This program of study is only available to students as a minor and requires a minimum of six courses taken outside the major department. Non-science, science, and engineering students with an interest in interdisciplinary fields emerging at the intersection of the biological and engineering sciences may choose to minor in bioengineering. In addition to developing content knowledge and process skills in biology, engineering, or a related science outside their major field, students will participate in a multidisciplinary core course in bioengineering. The minor will normally culminate with students conducting independent research in bioengineering during their senior year. Students with an interest in biomedical engineering, environmental engineering, biotechnology, ecological or evolutionary biomechanics, neuroscience, and environmental physiology may find this minor attractive.

Requirements for the minor: Course requirements are organized around a common core. All students will take MTH 112 or 113 (or equivalent) and PHY 110 or 120. In addition, the core biology and engineering courses BIO 101, ESC 100 and MER/BIO 240 are required for all students. This latter course may be chosen to fulfill the student's major requirements.

Engineering Student Upper-level Requirements: Three 200 level or above biology courses and/or PHY 200 should be chosen in consultation with the program director. Juniors and seniors entering the program may opt to take an additional 200 level or above biology course instead of MER/BIO 240. In addition, the two-term senior research project will normally focus on a bioengineering problem.

Biology Student Upper-level Requirements: Three 200 level or above engineering (MER, ECE, CSC) courses and/or PHY 200 will be taken in consultation with the program director. Juniors and seniors entering the program may opt to take an additional 200 level or above engineering course instead of ESC 100. Students will normally complete a two-term senior research project on a bioengineering topic.

Non-Engineering or Non-Biology Requirements: Students not majoring in engineering or biology may also choose to minor in bioengineering. These students will fulfill the core course requirements and take three 200 level or above courses in biology, engineering and/or PHY 200. These courses should be chosen in consultation with the program director.

Program directors: Professors Rapoff (Mechanical Engineering) and Rice (Biology).

## Biological Sciences

Associate Professor Danowski, Chair; Professors B. Boyer, J. Boyer, Fleishman, Olberg; Associate Professors Chu-LaGraff, Horton, Lauzon, LoGiudice, Rice, Jill Salvo; Assistant Professors Corbin, Kirkton, Theodosiou; Senior Lecturers Pytel, Willing; Lecturer Cohen; Emeritus Professors Birecka, Butterstein, George, Smith, Styles, Tobiessen; Adjunct Research Professor Joseph Salvo

Requirements for the Major: Ten courses in biology, including Biology 101, 102 and 225. Students who have received Advanced Placement credit for biology will receive credit for Bio 101, which will count as one course toward the major or minor. Bio 113 will no longer be offered. The remaining courses must include at least one in each of the following areas:

- Sub-cellular (Biology 352, 355, 363, 378, 380, 384);
- Organismal (Biology 240, 315, 316, 321, 330, 332, 336, 354, 362, 365, 370, 375);
- Population or community (Biology 256T, 257, 320, 322, 323, 324, 325, 328, 345, 350).

Of the 10 courses, only one may be an independent study, research or honors course (Biology 490-496 or 497-499). Students must take at least 5 courses numbered 240 or above. Normally required are at least five courses collectively in mathematics, physics, chemistry, and geology to be chosen in consultation with the advisor. Students usually should take Chemistry 101 and 102 and Mathematics 110 and 112 (or 113) in their freshman year. Note that acceptance to graduate and professional schools often requires at least two mathematics, four chemistry (including organic chemistry), and two physics courses.

Advanced Placement Policy. Students who received a score of 4 or 5 on the Advanced Placement exam may receive credit for BIO 101. The BIO 101 credit received from the A.P. exam counts as one of the Biology courses towards the major or minor.

Requirements for 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 I.D. major listed as Bio/Other are required to take eight biology courses. Those wishing to have their I.D. major listed as Other/Bio 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 the Minor: Six courses in biology, including Biology 101 and 102. 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 Biology 101 and 102. 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 GenEd course toward the minor if it is their first course in the minor.

For the requirements for a major in biochemistry or neuroscience, see the relevant listings.

Requirements for Secondary School Certification: Educational Studies strongly recommends that no undergraduate student at Union attempt to seek secondary certification as an undergraduate. However, those students who wish to become public secondary school teachers are urged to visit The School of Education at Union Graduate College in Lamont House to learn the requirements for achieving certification during a fifth year. Union students who enter the Union secondary certification program are often eligible for special scholarship consideration during their fifth year.

All students who believe they will seek public secondary certification in Biology should be advised that they must complete the following courses in Biology: Biology 101, 102, 225; at least 4 200 or 300 level courses including 350, and at least one course each from the areas of field biology (Biology 256T, 320, 323, 324, 325, 328); functional biology (Biology 316, 330, 355, 362, 370); one morphological biology (Biology 332, 336, 354).

All science majors are encouraged to seek certification in more than one science and/or in General

Sciences. Students wishing to add certification in General Science must include at least two courses each from the areas of chemistry (Chemistry 101 and 102), physics (Physics 110, 111, or 210), and earth science (any geology course). Also required are at least six courses from mathematics, chemistry, and/or physics to be chosen in consultation with an advisor. Organic Chemistry (Chemistry 231 and 232 will normally be required. Highly recommended courses include History 242; Philosophy 273, or 274; and Political Science 281.

Biology interdepartmental majors seeking secondary school certification in any science must have a full major in their primary area of certification. In their second area of certification, a student hoping to teach in a public secondary school should have a minimum of eight courses which will count toward a major in that science.

All students considering a fifth year at Union Graduate College to achieve public secondary certification in Biology must complete additional requirements beyond science courses during their undergraduate career. Before the end of winter term of their senior year they must take PSY 246, EDS 500A, 500B and 500C (Field Experiences; see Educational Studies for the appropriate requirements to complete the Field Experiences), and one year of a foreign language.

Courses Suitable for Non-Majors: Biology 050, 051, 055, 065, 089 and 094 are designed for the general college community and may not be counted toward the biology major nor toward interdepartmental majors that include biology. Biology 080, which requires permission from the instructor, is also suitable for selected non-majors. Some 200 level courses are also suitable for non-majors (e.g. 275).

Departmental Honors: Students eligible for departmental honors must fulfill the College-wide criteria and satisfactorily complete a thesis, traditionally 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.

#### General Education Courses

Of the following courses only Biology 275 may be counted toward the biology major.

050. Topics in Contemporary Biology (Fall; Willing). Recent developments in biology that are pertinent to human health and to concerns of the nature of life and of human social values. Not open to students who have had Biology 275; fulfills GenEd science with laboratory requirement.

051. Seeing the Light: Concepts of Vision (Same as Physics 051) (Not offered 2008-09). An introduction to biology and physics of vision. The workings of the eye and the brain and the properties of light as well as recent advances in the development of robotic vision. Closed to physics majors. No mathematics or science background is required. Fulfills GenEd science requirement (no lab).

055. Evolution of Animal Behavior (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. Fulfills GenEd science with laboratory requirement. Not open to science majors.

065. Food in the 21st Century (Winter; Willing). An introduction to basic nutrition and food production. The focus will be on caloric and other nutritional requirements, energy derived from food, and energy required in food production. Potential problems in providing sufficient quantity and quality of food for the world's rising population will be discussed. Long term sustainability of food production will also be discussed. Fulfills GenEd science (no lab). Not open to those who have taken CHM 60.

089. Human Evolution and Prehistory (Same as HST 254 and ANT 174) (not offered 2008-09). A historical perspective on, and our current biological understanding of, human evolution and early human societies. Fulfills GenEd science requirement (no lab).

094. Understanding Cancer (Spring; 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

## 54 / Biological Sciences

to advances in cancer treatment. Not open to students who have already completed Biology 101 (or Biology 110 or Biology 113). Fulfills GenEd science requirement (no lab).

275. The Biology of *Homo sapiens* (Same as ANT-275) (Fall; J. Boyer) A survey of the contributions from many disciplines (paleontology, physical anthropology, ecology, genetics, and molecular biology) to our understanding of the biology and evolution of our own species. Not open to students who have taken Biology 050 or 089. Biology 275 has no pre-requisites and is open to non-science majors for GenEd science credit. Preference will be given to second-year students.

### Practicum

080. Practicum in Hospital Health Care (Fall, Winter, Spring; Beaton, Hospital Staff). A field course combining supervised experience in various hospital departments with study of problems and means of health care delivery. Term paper and on-campus seminar meetings are required. Not for major credit and not for GenEd science credit.

### Courses for Majors

101. Physiology of Cells and Organisms (Fall, Winter; 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 function and the physiology of movement. One lab per week.

102. Heredity, Evolution, and Ecology (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. One lab per week. Prerequisite: 101 or permission of the instructor.

210. Introduction to Cognitive Neuroscience (Same as PSY 210).

225. Molecular Biology of the Cell (Fall, Spring; Staff). Major topics are the nature of the gene, the mechanism and control of gene expression, the relationships between important macromolecular constituents within the cell, the cell cycle and cell replication, the nature of the chromosomes and the mitotic process, and fundamental patterns of growth and differentiation at the cellular level. One lab per week. Prerequisites: Biology 101 and 102 or permission of instructor.

240. Introduction to Bioengineering (Same as MER 240) (Winter; Rice and Mafi). Students explore the application of engineering principles and analyses to the study of biological systems and seek to understand the potential benefits and constraints of engineered materials and devices in medical and environmental applications. Covers principles of solid mechanics, fluid mechanics, and neural information processing and control. Topics include the mechanics of support and locomotion, circulatory transport, mass transfer in organisms, sensory information processing and biorobotics. One lab per week. Prerequisites: Math 110 and one major's course in biology, chemistry, or physics; Physics 110 recommended.

245. Biomechanics. ( Same as MER 245).

256T. Coastal Biology (Spring; B. Boyer). A study of the diversity and adaptations of marine organisms in their environment, with emphasis on subtropical, temperate and subarctic communities. Study sites include Bermuda, Cape Cod, and Newfoundland. Permission of the faculty is required. Associated courses are Marine Policy and the Maritime Environment (Sociology 358T) and Images of the Sea (TAB 355T).

257. Tropical Biology (Not offered 2008-09). An introduction to the animals and plants and basic ecology of the new world tropics. The laboratory consists of a two-week field experience (during the summer or winter break) in the Republic of Panama which focuses on field work in tropical rainforest and coral reef habitats. This is followed by a seminar style course during the academic term. The field portion of the course is mandatory. Prerequisite: Permission of the instructor.

275. The Biology of *Homo sapiens* (Same as ANT 275) (Fall; J. Boyer) A survey of the contributions from many disciplines (paleontology, physical anthropology, ecology, genetics, and molecular biology) to our understanding of the biology and evolution of our own species. Not open to students who have taken Biology 050 or 289. Biology 275 has no pre-requisites and is open to non-science majors for

GenEd science credit. Preference will be given to second-year students.

283. Bioinformatics: Information Technology in the Life Sciences (same as CSC 283). (Winter; Horton and Fernandes). The disciplines of biology and information technology are intersecting in 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 basic principles 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 protein structure prediction. Additional topics will be presented by invited speakers. Prerequisites: Bio 225 or CSC 140.

315. Biology of Plants (Spring; Rice). A survey course of the land plants, with emphasis on diversity, physiology, ecology, field identification, economic importance, and natural history of these organisms. One lab per week. Prerequisite: Biology 101 and 102 or permission of the instructor.

316. Plant Physiology (Not offered 2008-09). The physiological processes of plants, including photosynthesis, water balance, mineral nutrition, and growth and how these processes relate to agricultural and environmental problems. One lab per week. Prerequisite: Biology 101 and 102 or permission of instructor.

320. Ecology (Fall; LoGiudice). Organisms and their environment, population and community ecology and the structure and integration of ecosystems, with a focus on animal community ecology. One lab per week. Prerequisites: Biology 101 and 102 or permission of the instructor.

321. Herpetology: Biology of Amphibians and Reptiles (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 and among other vertebrate groups. Special emphasis will be given to local fauna. Students must be available for one Saturday field trip. Prerequisites: Biology 101 and 102 or permission of the instructor.

322. Conservation Biology (Not offered 2008-09). 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. Includes laboratory. Prerequisites: Biology 101 and 102 or permission of instructor.

323. Forests of the Northeast (Not offered 2008-09). A study of the dynamics of the Northeast forest ecosystem emphasizing tree ecology. One lab per week. Prerequisites: Biology 101 and 102 or permission of the instructor.

324. Plant Ecology (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. One lab per week. Prerequisites: Biology 102 or 113 or permission of the instructor.

325. Animal Behavior (Same as PSY 311) (Fall; Fleishman). An introduction to the study of animal behavior. The mechanisms and evolutionary processes underlying animal behavior will be examined. Prerequisites: Bio 101 and 102 or permission of the instructor.

328. Aquatic Biology (Not offered 2008-09). A study of the biological communities of freshwater streams, rivers, and lakes and how they are affected by the physical and chemical properties of the water. Prerequisites: Biology 101 and 102 or permission of the instructor.

330. Comparative Animal Physiology (Fall; Fleishman). Physiological function in a wide variety of animal groups with a strong emphasis on the interaction of organisms with their environment. One lab every other week. Prerequisites: Biology 101 and 102.

332. Comparative Vertebrate Anatomy (Winter; Kirkton). Comparative analysis of vertebrate structure with emphasis on evolution, development, and function. One lab per week. Prerequisites: Biology 101, 102 (or 113).

335. Survey of Biochemistry. (Same as CHM and BCH 335) (Spring; Fox). 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. Prerequisites: Biology 225 and Chemistry 231. Not open to students who have completed either BIO 380 or BIO 382.

## 56 / Biological Sciences

336. Invertebrate Zoology (Not offered 2008-09). Phylogenetic relationships and adaptations of the invertebrate phyla with laboratory study emphasizing morphology and function of living members of each group. Combined lecture/lab sessions, meeting twice weekly. Prerequisites: Biology 101 and 102.

345. The Illustrated Organism (Same as AVA 345) (Spring; Tobiessen and Hatke). Descriptive graphic and written analysis of plants and animals; direct observation in field, studio, and laboratory integrating biology and visual arts. Culminates with annotated portfolio illustrating organisms studied. Taught jointly by biology and visual arts faculty using combined facilities. Apply through participating department. Credit for biology and arts majors..

350. Evolutionary Biology (Winter; J. Boyer). Major concepts and mechanisms of biological evolution, including speciation, extinction, coevolution, adaptive radiation, origin of life, molecular evolution and critical aspects of vertebrate evolution. Prerequisite: Biology 101 and 102 or permission of the instructor.

352. Microbiology (Fall; Lauzon). An overview of microbiology with emphasis on bacteria and viruses. Lectures focus on the structural and functional characteristics of prokaryotes and the diversity, growth, and control of bacteria with special attention to those organisms that cause disease in humans. Particularly recommended for students planning careers in medicine and other health-related professions. One lab per week. Prerequisite: Biology 225.

354. Developmental Biology (Spring; Theodosiou). An introduction to the principles of development, emphasizing classical and contemporary research on the embryos of both invertebrates and vertebrates. Laboratory involves descriptive and experimental analysis of living embryos of several different organisms. One lab per week. Prerequisite: Biology 225.

355. Immunology (Winter; 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 in agglutination, enzyme-linked immunosorbent assay (ELISA), mouse immunization and antibody titer determination, immune cytolysis, immunofluorescence and western blotting. One lab per week. Prerequisite: Biology 225 or permission of the instructor.

362. Introduction to Neurobiology (Same as Psychology 312) (Spring; Olberg). Function of neurons, nervous systems, and sense organs, with emphasis on vertebrates. (No lab). Prerequisite: Biology 225 or permission of the instructor.

363. Introduction to Cellular Neurosciences (Fall; Chu-LaGraff). Lecture will focus on molecular, cellular, and biochemical principles governing neuronal development, function, and plasticity. Emphasis will be placed on development of the nervous system, neurochemistry, and signaling and second messenger systems. One lab per week. Prerequisite: Biology 225 or permission of the instructor.

365. Neural Circuits and Behavior (Same as PSY 315) (Not offered 2008-09). 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: Biology 101 and 102 and Biology 210, 330, or 362 or permission of the instructor.

370. General Endocrinology (Winter; Cohen). Basic principles of endocrine and neuroendocrine regulation in animals, concentrating on vertebrate metabolism, development, and reproduction. Prerequisite: Biology 225.

375. Animal Locomotion (Spring, Kirkton). 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 movement. This class also utilizes mechanical and engineering principles to explain locomotory mechanisms of animals. One lab per week. Prerequisite: Biology 101.

378. Cancer Cell Biology (Winter; Danowski). This course investigates the molecular basis of cancer, by comparing normal cells to cancer cells with respect to growth control mechanisms, signal transduction, 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. One lab per week. Prerequisite: Biology 225 or permission of the instructor.

380. Biochemistry: Membranes Nucleic Acids and Carbohydrates (Same as CHM 380 and BCH 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.

Three lab hours each week. Prerequisite: BIO 225 and CHM 232, or permission of the instructor. Not open to students who have completed BIO 335.

382. Biochem: Structure & Catalysis (Same as CHM 382 and BCH 382).

384. Molecular Genetics (Spring; Horton). The molecular genetic approach 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 molecular geneticist. Emphasis will be on recent advances in our understanding of topics of current interest such as development, cellular response to environmental stimuli, tumor formation, and apoptosis, amongst others. One lab per week. Laboratory will emphasize the use of modern molecular biological techniques, and will involve group projects of the students' choice. Prerequisites: Biology 225 and Chemistry 102 (or 113).

410. Brain and Behavior (Same as PSY 410). Advanced coverage of the mechanisms of action of psychotropic drugs and a discussion of the effects of certain transmitter systems on behavior. Prerequisite: Psychology 210.

487, 488, 489. Senior Seminar (Fall, Winter; Staff). 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, and they must submit a paper to fulfill the senior writing requirement. Enrollment is optional for interdepartmental biology-other majors.

487. Topics in Ecological and Evolutionary Biology (Not offered 2008-09)

488. Topics in Organismal and Physiological Biology (Winter; B. Boyer)

489. Topics in Cellular and Molecular Biology (Fall; Theodosiou)

490-496. Research I-VII (Fall, Winter, Spring; Staff). Independent research in consultation with a member of the biology staff. Research students are required to attend departmental seminars. Prerequisites: Permission of the chair and the instructor

497, 498, 499. Honors Research I, II, and III (Fall, Winter, Spring; Staff). A sequence which 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: Permission of the instructor. WAC: WS

## Chemistry

Professor Carroll, Chair; Professors Adrian (On leave fall and spring), Anderson, Hayes; Associate Professors Fox, Hagerman, Kehlbeck; Assistant Professors Tyler, MacManus-Spencer; Visiting Assistant Professor Misner; Senior Lecturer Lou; Lecturer Kohler

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.

Requirements for the Major: Ten term courses in the department (Chemistry 101 and 102 or 110, 231, 232, 240, 260, 340, 351, 352, and one other chemistry course [or Biology 380]) plus mathematics through Math 115 and two terms of physics. Knowledge of a foreign language is strongly encouraged but not required.

Requirements for Certification by the A.C.S.: All of the nine numbered chemistry courses listed above for the major plus Chemistry 360 or 365, 491, 492, and 493, and two advanced courses chosen as follows: one from CHM/BIO 380 or CHM/BIO 382 and one from Chemistry 330 or 354. Additional courses in chemistry, physics, computer science, and/or engineering are recommended, as is knowledge of a foreign language.

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: Chemistry 101, and 102 or 110, 231, 232, 240, 340, 351, and one of the following four courses: Chemistry 260, 330, 352, or 382. 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 Chemistry 101 and 102 or 110, 231, 232, 240, and 260 or 340, in the former case and any four chemistry courses in the latter. Students in the 8-year medical program whose science emphasis is in chemistry should take the following six courses: Chemistry 101 and 102 or 110, 231, 232, 240, and 382 (if CHM 110 is taken a sixth Chemistry elective of 200 level or higher, excluding CHM 335, must also be taken).

Requirements for the Minor in Chemistry: Chemistry 101 and 102 or 110, and 231 and any three other chemistry courses. Students with majors in Division I and II departments or psychology can count one chemistry GenEd course toward the minor if it is their first course in the minor.

Requirements for a Major in Biochemistry: Seven courses in Chemistry 101 and 102 or 110, 231, 232, 240, 351, and 382. A total of seven courses in Biology, 101, 102, 225 and 380 are requirements and three additional courses, two to be chosen from Biology 355, 363, 378, 384, and Physics 200 and the third to be chosen from among the other biology courses in the subcellular or organismal areas or Bio 350. (For the specific choices of courses, see the detailed description of the biochemistry major elsewhere in the catalog). Additional cognate courses are required in physics and mathematics (see specific guidelines).

Requirements for Secondary School Certification: PSY 246, EDS 500A, EDS 500B, EDS 500C and at least one year of a foreign language. Chemistry requirements are identical to those of the chemistry major. Courses highly recommended include History 150, 242, 251 or 253; Philosophy 273 and 375 Political Science 281; and Sociology 282. All science majors are encouraged to seek certification in more than one science. To be certified in any science requires a complete major in that science. Students wishing to add certification in general science must include at least two courses each from the areas of biology (Biology 101 and 102), physics (Physics 120, 121, or 210), and earth science (any geology course or AST 200).

Chemistry interdepartmental majors seeking secondary school certification must choose all departments from among the Departments of Biology, Chemistry, Geology, and Physics. Interdepartmental majors completing an 8-6 or 8-4-4 interdepartmental program in which the eight courses are in chemistry would take the following courses: Chemistry 101 and 102 or 110, 231, 232, 240, and 351.

Students with chemistry as the minor element in their interdepartmental major, of either six or four chemistry courses, would include at least Chemistry 101 and 102 or 110, 231, and 232. A student

wishing to add certification in General Science must include at least two courses each from the areas of biology (Biology 101 and 102), physics (Physics 120, 121, or 210), and earth science (any geology course or AST 200).

**Environmental Chemistry:** Environmental problems are usually complex, requiring expertise from several disciplines to address such problems adequately. Those who are best able to participate in these efforts will have a strong background in a relevant discipline and an awareness of how other related disciplines address these problems. As a result, the Chemistry Department endorses the following approach for those planning a career in environmental chemistry: take at least the 10-course chemistry major described above and supplement it with the following courses in biology, geology, and engineering: Biology 320 (Ecology), Geology 100 (Physical Geology) or Geology 102 (Environmental Geology), Geology 200 (Mineralogy), Geology 302 (Geochemistry).

**General Education Courses:** Chemistry 050 and 060 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 GenEd course toward the minor in chemistry if it is their first course in the minor.

**Requirements for Honors in Chemistry and Biochemistry:** Candidates for honors in chemistry or biochemistry 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 or biochemistry of substance and distinction in the form of a thesis which 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.

50. **Topics in Chemical Analysis – Forensic Chemistry (GenEd; Not offered 2008-09).** 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. Not open to students who have completed Chemistry 101 or 110, or have AP credit in chemistry.

60. **Meals to Molecules (GenEd; Not offered 2008-09).** 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. Not open to students who have completed Chemistry 101 or 110, or have AP credit in chemistry.

101. **Introductory Chemistry I (Fall, Winter; Staff)** Chemistry 101 is an introductory course that focuses on atomic and molecular structure, chemical bonding, stoichiometry, the nature of chemical reactions, and the properties of gases, liquids, solids and solutions. The goal of the course is to integrate these topics in chemistry with their applications to the environment, materials, and medicine. Three lab hours each week. Not open to students who have scored 4 or 5 on the AP Chemistry Exam or who have completed Chemistry 110. First-year students who have had a strong high school chemistry background normally take a placement examination to determine whether they will enroll in Chemistry 101 or 110.

102. **Introductory Chemistry II (Winter, Spring; Staff)** Chemistry 102 is a continuation of Chemistry 101, focusing on thermodynamics, chemical kinetics, chemical equilibrium, acids and bases, electrochemistry, and an introduction to organic chemistry. As in Chemistry 101, the chemistry concepts are set within the context of relevant applications, including polymers and biomolecules, fuels, and alternative energy. Three lab hours each week. Prerequisite: Chemistry 101. Not open to students who have taken Chemistry 110.

110. **Introductory Chemistry: An Accelerated Introduction (Fall; Anderson, Lou).** A laboratory-intensive course that will deal with the main topics of Chemistry 101 and Chemistry 102 and is meant to replace those courses for students who have strong backgrounds in Introductory Chemistry. Students wishing to take chemistry who have scored 4 or 5 on the AP chemistry exam will be automatically placed into Chemistry 110. All students who have not taken an AP Chemistry course or have scored d<sup>3</sup> on the AP Chemistry Exam are required to take a placement examination to determine whether they will enroll in Chemistry 101 or 110. Students who have scored 4 or 5 on the AP chemistry exam and who successfully complete Chemistry 110 will also receive AP credit for Chemistry 101.

224. **Frontiers of Nanotechnology and Nanomaterials (Same as ESC 224.) (Winter; Hagerman, Catravas, and Cohen).** An overview of nanotechnology and nanomaterials including interdisciplinary

## 60 / Chemistry

perspectives from engineering, materials science, chemistry, physics, and biology with applications to photonics, data and energy storage, catalysis, new polymers, biomaterials and drug delivery. Prerequisites: Physics 111 or 121 (or IMP 113 and Math 115, and Chemistry 101 or 110, or permission from instructor.

231. Organic Chemistry I (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. Four lab hours each week. Prerequisite: Chemistry 102 or 110.

232. Organic Chemistry II (Winter, Spring; Staff). A continuation of Chemistry 231 including an emphasis on synthesis, and the chemistry of conjugated and aromatic compounds, carbonyl compounds, and an introduction to important classes of biomolecules. Four lab hours each week. Prerequisite: Completion of Chemistry 231.

240. Quantitative Chemistry (Spring; MacManus-Spencer, Lou). Introduction to chemical equilibrium, classical and instrumental methods of chemical analysis, including separations, and statistical treatment of data. Laboratory emphasis is on quantitation of analytes in sample mixtures. Six lab hours each week. Prerequisite: Chemistry 231.

260. Inorganic Chemistry. (Spring; Hagerman) 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. Four lab hours each week. Prerequisites: Chemistry 231 or permission of the instructor.

330. Medicinal Chemistry (Not offered 2008-09). 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: Chemistry 232.

335. Survey of Biochemistry (Same as Biology 335 and BCH 335) (Spring; Fox). 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. Prerequisites: Biology 225 and Chemistry 231. Not open to students who have completed either Chemistry, Biology or BCH 380 or Chemistry, Biology or BCH 382. or students in the 8-year medical program whose science emphasis is in chemistry.

340. Chemical Instrumentation (Fall; MacManus-Spencer, Carroll). Theory and practice of modern methods of analysis with emphasis on spectroscopic, chromatographic, electrochemical, and surface science techniques, as well as electronic measurements. Four lab hours each week. Prerequisite: Chemistry 231, 240, and one course in physics or permission of the instructor.

351. Kinetics and Thermodynamics (Winter; Anderson, Kohler). Properties of gases; chemical kinetics; fundamentals of thermodynamics including heats of reactions and phase and chemical equilibria. Four lab hours each week. Prerequisites: Chemistry 240, Physics 110 or 120 and Math 115

352. Quantum Chemistry (Spring; Kohler). Fundamentals of quantum mechanics and its application to chemical bonding and spectroscopy. Four lab hours each week. Prerequisites: Chemistry 351 and Physics 111 or 121.

354. Chemical Applications of Group Theory (Not offered 2007-2008). 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. Prerequisites: Chemistry 232 and 352, Math 115, and Physics 121. Chemistry 352 may be taken concurrently.

360. Advanced Topics in Inorganic Chemistry (Not offered 2007-2008). Structure/property relationships in solids, organometallics, homogeneous and heterogeneous catalysis, materials chemistry and inorganic nanomaterials. Prerequisites: Chemistry 260 and 351 or permission of the instructor.

365. Advanced Inorganic Chemistry: Bioinorganic Chemistry (Winter; Tyler). Introduces and emphasizes the importance of metals in biological systems such as Metalloproteins and enzymes. Important metal containing synthetic compounds, including drugs and biomimetic complexes, will also be presented. Prerequisites: Chemistry 260 and 351 or permission of the instructor.

380. Biochemistry: Membranes, Nucleic Acids, and Carbohydrates (Same as Biology 380 and BCH 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. Three lab hours each week. Prerequisites: Biology 225 and Chemistry 232 or permission of the instructor. Not open to students who have completed Chemistry 335, Biology 335 or BCH 335.

382. Biochemistry: Structure and Catalysis (Winter; Fox). (Same as Biology 382 and BCH 382) Structure and function of proteins/enzymes including purification, mechanism, kinetics, regulation, metabolism and a detailed analysis of several classic protein systems. Four lab hours each week. Prerequisite: Chemistry 232. Not open to students who have completed Chemistry 335, Biology 335 or BCH 335.

491, 492, 493. Chemical Research (Fall, Winter, Spring; Staff). Chemical research under the direction of a member of the faculty. Thesis required. Twelve lab hours each week. Prerequisites: Chemistry 232, 240 (Chemistry 340 and 351 are recommended), third-term junior standing, and/or permission of the department chair.

## Classics

Professors Mueller, Chair; Toher; Assistant Professors Raucci, Wareh; Visiting Assistant Professors Gottesman, Kennedy; Adjunct Instructor J. Sargent.

### Requirements

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

(1). Eight courses in Latin; four courses in Classics, including Classics 126, 129; and 134; courses in Greek may be substituted for two of the courses in Latin and one of the courses in Classics;

(2). Nine courses in Greek and three courses in classics, including Classics 121 and 134; two courses in Latin may be substituted for two of the Greek courses;

(3). At least four courses in one of the ancient languages and eight courses in classics, including Classics 121; 126, 129; 134; and 143.

All patterns include either a senior thesis (two terms) and an oral examination based on the thesis; or a senior project on a major author in the language studied (one term) and a comprehensive field examination. Students are strongly advised to take Philosophy 150 for options 2 and 3. Those students who intend to do graduate work in Classics should consult the department chair for additional requirements.

Requirements for Interdepartmental Majors: 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 the Minor in Greek or Latin: Four courses in either Greek or Latin and two additional courses, one of which must be Classics 121 if the language courses are in Greek, or Classics 126 or 129 if the language courses are in Latin. The remaining courses may be either a language or a classics-in-translation course.

Requirements for the Minor in Classical Civilization: Six courses in classics; language courses may be counted.

Placement: Because secondary programs vary, the department is happy to assist students find the proper course level.

Departmental Honors: To be eligible for departmental honors, the student must fulfill the following requirements: (1) a minimum index of 3.35 in departmental courses; (2) completion of one language course at the 230 (130)-level or higher with a grade of "B plus" or better. 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.

110. Ancient Egypt: History and Religion. (Not offered 2008-9) This course offers an overview of the history of ancient Egypt from the rise of the state under the first pharaohs (3200BC) 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. GenEd: LCC

121. The History of Greece to the Death of Alexander the Great. (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. GenEd: LCC, AnHT

125. History of Rome. (Not offered 2008-9) The history of Rome, its rise from earliest times through the Republic and its decline under the Empire to disaster in A.D. 410. GenEd: LCC, AnHT

126. The Rise of the Roman Republic. (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? GenEd: LCC, AnHT

129. History of the Roman Empire. (Not offered 2008-9) 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? GenEd: LCC, AnHT

134. Classical Art and Architecture. (Cross listed with AAH-200) (Not offered 2008-9) A survey of Greek and Roman art and architecture, including attention to origins, development, influences and the contextual meaning of material culture and its importance to the state and the individual. GenEd: LCC, An-C

141T. Classical Greek Archaeology. (Fall) 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. GenEd: LCC, An-C

142. Special Topics in Classics: Ancient Art and Politics. (Winter; Kennedy) GenEd: An-C

143. Classical Mythology. (Spring; Kennedy) Greek and Roman myths, with emphasis on the ancient sources. All readings will be in English. GenEd: LCC, An-C

146. Sex and Gender in Classical Antiquity. (Cross listed with Women's Studies 149) (Fall; Raucci) 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. GenEd: LCC, An-C

160. The Individual in Ancient Society. (Not offered 2008-9) 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. GenEd: LCC, An-L

161. The Heroic Journey: Survey of Ancient Epic. (Fall, Gottesman) 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. GenEd: LCC, An-L

162. Greek and Roman Tragedy in Translation. (Not offered 2008-9) Readings in classical Greek tragedy and the tragedies of Seneca and selections from other Roman works. GenEd: LCC, An-L

163. Greek and Roman Comedy in Translation. (Spring; Wareh) Readings from the Greek comedies of Aristophanes and Menander, the Roman comedies of Plautus and Terence. GenEd: LCC, An-L

168. Ancient Novel. (Not offered 2008-9) 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. GenEd: LCC, An-L

186. Roman Law and Society. (Not offered 2008-9) 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. GenEd: LCC

227. Entrepreneurship in the Ancient World. (Spring; Gottesman) "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. GenEd: LCC, An-C

231. The Ancient World in Film and Literature. (Not offered 2008-9) 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. GenEd: LCC, An-C

232. Religion in the Pagan World. (Not offered 2008-9) 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. GenEd: LCC, An-C

235. In Search of the Past: Greek and Roman Historiography. (Not offered 2008-9) An introduction to the origins, purpose, and methodology of the writing of history in the classical world. GenEd: LCC, An-L

237. Greek and Roman Biography. (Winter; J. Sargent) 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. GenEd: LCC, An-L

242. The Philosophy of Aristotle. (Cross-listed with PHL 242) (Not offered 2008-9) 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 artefacts). 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.

244. Poetry and the Cosmos. (Not offered 2008-9) 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. GenEd: LCC, AN-L

248. The Ancient "Other": Greeks, Romans, and Barbarians. (Fall, Kennedy) 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. GenEd: LCC, AN-C

250. Death in the West. (Not offered 2008-9) 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. GenEd: LCC

278. Ancient World Mythology. (Not offered 2008-9) 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. GenEd: LCC

295-296H. Classics Honors Independent Study.

361. Seminar in Classical Studies. (Not offered 2008-9)

490-492. Classics Independent Study. (Fall, Winter, Spring). Advanced individual study for qualified students. Periodic reports on a period of Greek or Roman history or a problem in Greco-Roman civilization. Prerequisite: Permission of the chair.

497. Classics Senior Project.

498-499. Classics Senior Thesis. (Fall-Winter or Winter-Spring). Independent reading and thesis in a subject in the field of Greek or Roman history or Greco-Roman civilization. Prerequisite: Permission of the chair.

## Greek

100. Beginning Ancient Greek I. (Fall; Mueller). Study of elementary Greek grammar with selected readings from classical authors.

101. Beginning Ancient Greek II. (Winter; Mueller). Continuation of Greek 100. Prerequisite: Greek 100 or one year of secondary school Greek.

102. Greek Reading. (Spring; Gottesman). Selected readings from the works of a variety of Greek authors. Prerequisite: Greek 101 or equivalent.

230. Homer: The Iliad. (Not offered 2008-9) Readings in the Iliad, with relevant secondary readings on Greek epic, its place in the development of Greek literature, and its influence. Prerequisite: Greek 102 or equivalent. GenEd: LCC, An-L

231. Homer: The Odyssey. (Not offered 2008-9) 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: Greek 102 or equivalent. GenEd: LCC, An-L

235. Plato. (Not offered 2008-9) 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: Greek 102 or equivalent. GenEd: LCC, An-L

243. New Testament Greek. (Not offered 2008-9) 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: Greek 102 or equivalent. GenEd: LCC, An-L

320. Attic Prose. (Fall; Toher) Readings from the major prose authors of Athens. May be repeated with change in author. Prerequisite: Greek 102 or equivalent. GenEd: LCC, An-L

331. Herodotus and Thucydides. (Not offered 2008-9) A study of several books of Herodotus and Thucydides with relevant secondary readings. Prerequisite: Greek 102 or equivalent. GenEd: LCC, An-L

333. Greek Tragedy. (Not offered 2008-9) 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: Greek 102 or equivalent. GenEd: LCC, An-L

337. Greek Oratory. (Not offered 2008-9) Readings of various Athenian orators, with secondary reading on Greek legal practice and rhetorical style. Prerequisite: Greek 102 or equivalent. GenEd: LCC, An-L

338. Greek Lyric and Elegiac Poetry. (Spring; Mueller) 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: Greek 102 or equivalent. GenEd: LCC, An-L

339. Greek Comedy. (Winter, Toher) Readings in the plays of Aristophanes. The criticism and theory, history, and social context of the comedies will be studied. Prerequisite: Greek 102 or equivalent. GenEd: LCC, An-L

490-492. Greek Independent Study. (Fall, Winter, Spring) Advanced individual study of a special author or subject, or of Greek prose composition. Prerequisite: Six courses in Greek or the equivalent.

498-499. Greek Senior Thesis. (Fall-Winter or Winter-Spring) Independent reading and thesis in the field of Greek language and/or literature. Prerequisite: Permission of the chair.

## Latin

100. Beginning Latin I. (Fall; Raucci) An elementary course introducing all major forms and syntax, with some easy reading from classical authors.

101. Beginning Latin II. (Winter; Kennedy) Continuation of Latin 100. Prerequisite: Latin 100 or one year of secondary school Latin.

102. Latin Reading. (Spring; Wareh) Reading in a wide variety of classical Latin poetry and prose. Prerequisite: Latin 101 or its equivalent.

230. Catullus and Horace. (Spring; Wareh) Readings in Catullus and Horace, emphasizing vocabulary and syntax review. Traditions and social context of lyric poetry are also studied. Prerequisite: Latin 102 or two years of secondary school Latin. GenEd: LCC, An-L

237. Latin Epic. (Not offered 2008-9) 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: Latin 102 or two years of secondary school Latin. GenEd: LCC, An-L

240 Vergil's *Aeneid*. (Not offered 2008-9) 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: Latin 102 or two years of secondary school Latin. GenEd: LCC, An-L

338. Lyric and Elegiac Poetry. (Not offered 2008-9) Extensive readings from the poems of Catullus, Horace, Propertius, Tibullus, and Ovid. May be repeated with change in author. Prerequisite: Latin 102 or two years of secondary school Latin. GenEd: LCC, An-L

339. Roman Satire. (Not offered 2008-9) 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: Latin 102 or two years of secondary school Latin. GenEd: LCC, An-L

341. Roman Historiography. (Not offered 2008-9) Readings in Sallust, Livy, Tacitus, and others.

## 66 / Classics

to accompany study of the origins and development of Roman historiographical literature. May be repeated with change in author. Prerequisite: Latin 102 or two years of secondary school Latin. GenEd: LCC, An-L

343. Roman Drama. (Not offered 2008-9) Readings in Plautus and Terence along with selections from Seneca. May be repeated with change in author or texts. Prerequisite: Latin 102 or two years of secondary school Latin. GenEd: LCC, An-L

345. Cicero. (Winter; Toher) A selection from Cicero's massive literary output, with emphasis on his speeches and letters. May be repeated with changes in texts. Prerequisite: Latin 102 or two years of secondary school Latin. GenEd: LCC, An-L

358. Mediaeval Latin Literature and Culture. (Not offered 2008-9) 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: Latin 102 or two years of secondary school Latin. GenEd: LCC, Eu-LS

447. Latin Prose Composition. (Fall; Mueller) 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: At least one Latin course above 102, four years of secondary school Latin, or permission of the instructor. GenEd: LCC, An-L

490-492. Latin Independent Study. (Fall, Winter, Spring) Advanced individual study of a special author or subject, or of Latin prose composition. Prerequisite: Six courses in Latin or the equivalent.

498-499. Latin Senior Thesis. (Fall-Winter or Winter-Spring) Independent reading and thesis in the field of Latin language and/or literature. Prerequisite: Permission of the chair.

## Computer Science

Professor Barr, Chair; Professors Hannay, Hemmendinger; Associate Professors Fernandes, Spinelli; Assistant Professors Cass, Striegnitz; Instructor Spallholz; Senior Lecturer Almstead; Emeritus Professor Williams

The department offers a B. S. and a minor in computer science, and collaborates with the Electrical and Computer Engineering Department to offer a B. S. in computer engineering, and with the Visual Arts department to offer a program in digital art (including a minor in digital media).

Requirements for the Major in Computer Science: Eleven and a half computer science courses including a 100-level introductory course, CSc 150(140), 250, 260, 270(210), five electives and half-courses 497-499. Of the five electives, four must be at the 300-level, with one from the Theory group and one from the Systems group. Also required: Math 197; Math 110-112 or 113; one Math elective numbered above 113, chosen in consultation with the advisor; one major-level lab science course in a natural science department and one non-CS course meeting the Core Curriculum science and technology requirement (courses cross-listed with CS are not acceptable). A typical first year major program includes a 100-level introductory course and CSc 150(140), Math 197, and first year Core Curriculum courses.

The Theory group: CSc-350 Theory of Computing; CSc-370 Programming Languages.

The Systems group: CSc-333 Introduction to Parallel Computing, CSc-335 Operating Systems

Requirements for the Major in Computer Engineering: See under Electrical and Computer Engineering.

Requirements for the Minor in Computer Science: Six computer science courses including a 100-level introductory course, CSc 150(140) and four additional CSc courses chosen with the approval of an advisor from computer science; Math 197. Only one course numbered below 100 may be included, and only one 100-level introductory course may be included.

Requirements for the Interdepartmental Major: Interdepartmental majors that include computer science must contain Math 197 and eight computer science courses including a 100-level introductory course, CSc 150(140), 250, 260, 497 and at least 1/2 credit of senior project work in computer science. The ID major must be designed to integrate the fields composing the major. Only one course numbered below 100 may be included, and only one 100-level introductory course may be included.

Requirements for Honors in Computer Science: Candidates for honors in computer science must have an overall grade point average of 3.3, a grade point average of 3.3 in the major with at least 4 grades of A- or better, including the grade for the senior project, and must present the senior project at the Steinmetz Symposium.

50. Computers and Computing (Fall, Almstead). Introduction to spreadsheet and database applications, computer hardware and programming. Not open to computer science or engineering majors, or to students with credit for a computer science course numbered 100 or higher.

55. Working with the Web (Fall, Almstead). 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.

80. History of Computing (Winter, Hemmendinger) 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. Am-C.

### Major-Level Introductory Courses:

Each CS major or minor program includes one course from the following list. Each course focuses

## 68 / Computer Science

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.

103. Computational Science: Introduction to Computer Science (Fall, Barr). Introduction to the field of computer science with the theme of science 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. QMR

104(74). Robots Rule!: Introduction to Computer Science (Spring, Almstead). Introduction to the field of computer science with the theme of robotics. 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.

105. Game Development: Introduction to Computer Science (Spring, Striegnitz). Introduction to the field of computer science with the theme of computer games. 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.

106. Can Computers Think?: Introduction to Computer Science (Fall, Striegnitz). Introduction to the field of computer science with the theme of artificial intelligence. 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. QMR

107(65). Creative Computing: Introduction to Computer Science (Winter, Barr). Introduction to the field of computer science with the theme of media computation. 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. QMR

109 (70). Computer Programming for Engineers (Fall, Winter, Hannay; Spring, Almstead). Introduction to the field of computer science with the theme of engineering applications. Topics include math and logical operations, data types, matrices, conditions and decisions, looping, subroutines, numerical methods, plotting, and an introduction to object-oriented design.

### Intermediate and Advanced Courses:

118. Introduction to Computer and Logic Design (Fall, Cotter). See ECE 118.

150(140). Data Structures (Fall, Fernandes; Winter, Cass). Basic concepts of data organization and abstraction, software design, stacks, queues, trees, and their implementation with linked structures. Programming in Java. Prerequisites: one course from CSc 103 – CSc 109. Pre- or co-requisite: Math 197 or permission of the instructor. Includes a laboratory.

206. Natural Language Processing (not offered 2008-2009). 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: one course from CSc 103 – CSc 109.

240. Web Programming (not offered 2008-2009). This course addresses the standards in programming applications for the Web. Covers the client-side technologies XHTML, CSS, JavaScript and Dynamic HTML as well as server-side technologies PHP, MySQL, and CGI programming in Perl or Python. Intended for Computer Science majors. Non-majors should consider CSc 055 - Working with the Web. Prerequisite: one course from CSc 103 – CSc 109.

245. The Computer Science of Computer Games (Fall, Striegnitz). 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: one course from CSc 103 – CSc 109.

250. Algorithm Design and Analysis (Spring, Cass). Fundamental algorithms used in a variety of applications. Includes algorithms on list processing, string processing, geometric algorithms, and graph algorithms. Prerequisites: CSc 150(140); Math 197 or permission of the instructor.

260. Large-Scale Software Development (Winter, Cass). 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. Prerequisites: CSc 150(140), Math 197 or permission of the instructor.

270(210). Computer Organization (Winter; Hemmendinger). The architecture and operation of the digital computer. CPU design, input/output, computer arithmetic, assembly language. Prerequisite: CSc 150(140). Includes a laboratory.

280. User Interfaces (not offered, 2008-2009). 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 the LESS empirical laboratory for recording and analyzing subjects. Prereq: Csc 150(140).

283. Bioinformatics: Information Technology in the Life Sciences. (Cross-listed as BIO 283) (Winter; Horton and 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. Prerequisites: BIO 225 or CSc 150(140) or permission of the instructor.

318. Digital Design (not offered 2008-2009). (See ECE 318).

320. Artificial Intelligence (not offered 2008-2009). 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: CSc 250.

329. Neural Networks (not offered 2008-2009). (See ECE 329).

333. Introduction to Parallel Computing (not offered 2008-2009). Synchronization and communication in concurrent programs. Parallel computing in Java and with message-passing libraries for cluster-computing. Introduction to algorithms for parallel scientific computing. Prerequisites: CSc 250 .

335. Operating Systems (Spring, Fernandes). Selected topics in operating system development including process and thread management, concurrency, memory and file system management, resource allocation, job scheduling, and security. Prerequisites: CSc 270(210) and junior standing.

336. Computer Network Protocols (Fall, Cotter). Design, analysis, and operation of communication protocols for computer networks; TCP/IP, addressing, switching, routing, congestion control, application protocols. Prerequisite: one course from CSc 103 – CSc 109.

337. Data Communications and Networks (not offered 2008-2009). (See ECE 337).

340. Introduction to Databases (Fall; Hannay). 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: CSc 150(140) and Math 197.

350. Theory of Computing (not offered 2008-2009). 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. Prerequisites: CSc 150(140) and Math 197.

352. Embedded Microcontroller Systems (not offered 2008-2009). See ECE 352.

354. VLSI System Design (not offered 2008-2009). See ECE 354.

360. Software Engineering (Spring, Cass). Strategies for the specification, design, production, testing, and support of computer programs; software development models; programming team structures; documentation; and maintenance. Prerequisite: CSc 260.

370. Programming Languages (Fall, Hemmendinger). An introduction to issues in programming language design and implementation. Major programming language paradigms: functional, logic, and

## 70 / Computer Science

object-oriented, and their use. Prerequisites: CSc 150(140) and Math 197.

385. Computer Graphics (not offered 2008-2009). 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. Prerequisites: CSc 150(140).

483. Selected Topics in Computer Science (Staff). Prerequisite: Permission of the instructor.

490, 491, 492. Independent Study (Fall, Winter, Spring: Staff). Prerequisite: Permission of department chair.

497. Computer Science Capstone Seminar (Spring; half-course, 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. Prerequisite: CS 260. Normally taken in spring of the junior year.

498, 499. Computer Science Capstone Project (Fall, Winter, Spring: half-courses, Staff). Design, implementation, and evaluation of the capstone project. Normally taken during the senior year.

## Digital Media Minor

Requirements for the Digital Media 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 a minimum of six approved courses from computer science and visual arts as follows:

- Computer Science
- An introductory CS course (CSC-107 strongly recommended)
- CSC-240 Web Programming
- Additional CS course numbered above 110, chosen in consultation with the minor advisor
- Visual Arts
- AVA-160 Introduction to Digital Art
- Additional Digital Art course (AVA 262, 270, 280, 363, 370)
- One more Digital Art OR other Visual Arts studio course, chosen in consultation with the minor advisor.

Directors: Professor Barr (Computer Science); Professor Ogawa (Visual Arts)

## East Asian Studies

This program provides a broad, interdisciplinary liberal arts education focusing on the language, culture, and the arts of East Asia (with emphasis on China and Japan). The courses they take in this program equip students to pursue interest and careers that require exposure to global issues, particularly pertaining to East 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.

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 EAS 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 the 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.) 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 East 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.

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 East Asia by dealing with both China and Japan over a substantial period of time. Of the three remaining EAS courses, one must deal entirely with the 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.) Students are strongly encouraged to apply for the terms abroad to China and Japan.

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 East Asian country (listed below with an asterisk \*), and two additional EAS courses.

Honors in the Program: 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.

Director: Professor Ferry (Modern Languages)

Executive Committee: Professors Madancy (History), S. Gmelch (Anthropology), Lewis and Motahar (Economics), Ferry and Ueno (Modern Languages), Matsue (Performing Arts), Patrik (Philosophy), Wang (Art History), and Zhang (Political Science).

498-499. Senior Project (Fall, Winter). Interdisciplinary investigation of a topic in East Asian Studies.

490-492. Independent Study (Fall, Winter, Spring)

### Humanities Courses in East Asian Studies

Art History

104 Arts of China

105 Arts of Japan

287 Tibetan Art

English

244 Asian American Literature

Modern Languages and Literature

## 72 / East Asian Studies

- 200 Modern Chinese Literature
- 201 Chinese Cinemas (also EAS 201)
- 202 Gender and Sexuality in Modern China (Also WGS 202 and EAS 202)
- 203 Asian American Film and Performance (Also WGS 268 and EAS 203)
- \*204 Literary Traditions in East Asia (Also EAS 204)
- \*205 Perspectives in Modern East Asian Literature (Also EAS 205)
- 207 China's Cultural Revolution (Also EAS 207)
- 209 The New Wall of China (also EAS 209)
- 250 Japanese Sociolinguistics (Also WGS 256)

### Music

- 012 The Union College Taiko Ensemble Practicum (3 terms required to earn 1 credit)
- 136 Popular Music in Modern Japan
- \*221 Encounters with East Asian Music Cultures
- 233 Japanese Wadaiko Workshop

### Philosophy

- 245 Buddhist Ethics
- 338 Zen and Tibetan Buddhism

## Social Sciences Courses in East Asian Studies

### Anthropology

- 184 Contemporary Japanese Society
- 232 Bombs to Buddhism: Fatalism, Technology, and Modern Japanese Culture

### Economics

- 234 Japanese-American Finance and Trade Relations
- 354 International Economics
- 376 Seminar in Global Economic Issues

### History

- \*181 East Asian Traditions
- \*182 Modern East Asia
- 281 Modern Japan
- 283 The Mao Years
- 284 Women in China and Japan: Power and Limitations
- 285 The Samurai: Lives, Loves, and Legacies
- 380 Special Topics in East Asian History
- 382 World War II in Asia
- 383 The Last Dynasty: The Glory and Fall of the Qing Empire, 1644-1911
- 481 Seminar in East Asian History

### Political Science

- 244 Japan: Conflict and Consensus
- \*253 International Politics in East Asia
- 258 Chinese Foreign Policy
- 345 Contemporary Chinese Politics

## Economics

Professor Stephen Schmidt, Chair; Professors Fried, Kenney, Klein, Lewis, McCarty, Shelton Schmidt, Yaisawarnng; Associate Professors Dvorak, Motahar, Sener, Song; Assistant Professor Davis; Lecturer Foster; Visiting Assistant Professor Shiamptanis

Requirements for the Major: Twelve courses in the department: Economics 101, 241, 242, 243, 498-499, and six others. Majors are required to take a minimum of three 300 or 400-level courses in the department (in addition to Economics 498 and 499). Completion of Math 101, 110, or 113 (or equivalent advanced placement credit) is required prior to enrolling in Economics 241 or 242.

Interdisciplinary majors in economics and another field are required to take at least eight courses in economics, including Economics 101, 241, 242, 243, at least one 300 or 400-level course (in addition to Economics 498 and 499) in the department, and either Economics 498-499 or a senior thesis drawing on both economics and the other department.

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

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

Students interested in economics might also consider the Managerial Economics major and the Quantitative Economics track described below. 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.

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

Requirements for a Minor in Economics: Six economics courses including Economics 101, 241, 242, and 243 (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 390 may not be used to satisfy these requirements.

### Managerial Economics Major

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 Managerial Economics Major: Economics 101, 241, 242, 243, 334, 390, 445, and 498-499; Computer Science 50; Accounting 100; Mathematics 101, 110, or 113; and two other courses in economics. Majors should consider taking additional courses in computer science, especially CSC 105 and CSC 150. Majors are also encouraged to participate in a term abroad.

Director: Professor Kenney

### 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.

## 74 / Economics

Requirements for the Quantitative Economics Track: Economics 101, 241, 242, 243, and 498-499; three courses from among Economics 338, 341, 352, 353; two additional economics courses; and three mathematics courses above the level of Math 110. Mathematics courses should be selected in consultation with your economics advisor. The senior thesis, Economics 498-499, should make use of the quantitative nature of the track.

Advisors: Professors Stephen Schmidt, Shelton Schmidt, and Klein

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

101. Introduction to Economics (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.

222. History of Economic Thought (Not offered 2008-09). A survey of the history of economic thought from 1600 to 1950, focusing on primary works and discussion of their historical context. Major authors covered include Smith, Marx, Marshall, and Keynes. Prerequisite: Economics 101. GenEd: Eu-C

224. Competing Philosophies in United States Economic Policy (Not offered 2008-09). A survey of the economic and political philosophies that influenced U.S. economic policy from the American revolution to the Great Depression. Specific policy areas surveyed include internal improvements, money and banking, tariffs, trade, antitrust and regulation. Prerequisites: History 101 and Economics 101. GenEd: Am-C

225. Economics of Sin (Fall; Davis). Considers the relationship between economic and moral systems by examining markets for goods and services that are private “goods” that are social “bads,” such as transplantable organs, cigarettes, alcohol, sex, pornography, and illegal drugs. Considers the foundations of ethical beliefs and the moral grounds for different forms of market intervention; reviews the economics of prohibition and regulation; and analyzes the impact of different forms of social policy on market and social outcomes.

226. Financial Markets (Winter; Lewis). Study of the historical evolution, economic functions, and efficiency of financial institutions and markets in the United States. Prerequisite: Economics 101.

228. Environmental and Natural Resource Economics (Spring; 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: Economics 101 or permission of instructor.

230. Mind of the Entrepreneur (Not offered 2008-09). 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: Economics 101.

233. Public Policy and American Industry (Not offered 2008-09). 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: Economics 101.

234. Japanese-American Finance and Trade Relations (Not offered 2008-09). 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: Economics 101. GenEd: CDEA, LCC

236. Comparative Economics (Spring; Dvorak). 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: Economics 101. GenEd: Eu-C

237. Gender Issues in Economics (Spring; Foster) (Also Women’s Studies 260). A critical analysis of the economic well-being and changing roles of women in the U.S., 1890-present; labor markets;

human capital; radical-feminist perspectives; earnings differentials and occupational segregation by gender; economics of family; public policy. Prerequisite: Economics 101.

241. Microeconomic Analysis (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. Prerequisites: Economics 101; Math 101, 110, or 113.

242. Macroeconomic Theory and Policy (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. Unemployment, inflation and stabilization policy. Prerequisites: Economics 101; Math 101, 110, or 113.

243. Introduction to Econometrics (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: Economics 101.

295H-296H. Economics Honors Independent Study 1 and 2 (Fall, Winter, Spring; Staff).

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

331. E-Commerce Economics (Not offered 2008-09) 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: Economics 241.

333. Industrial Organization (Not offered 2008-09). Selected topics in the theory and empirical analysis of U.S. industry performance; industry strategy; research and development; the theory and practice of competition policy and regulation. Prerequisites: Economics 241 and 243.

334. Introduction to Financial Analysis (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: At least one of Economics 241, 242, 243.

335. The Economics of Health (Not offered 2008-09). 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: Economics 241 and 243, or permission of the instructor.

338. Quantitative Methods in Economics (Not offered 2008-09). Application of mathematical models in economics. The use of calculus, matrix algebra, and optimization techniques in economic model building. Topics covered include theories of the consumer and of the firm, economic growth, input-output analysis, optimal timing, linear programming, and macroeconomic models. Prerequisite: Economics 241.

339. Public Finance (Fall; O'Keefe). 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: Economics 241.

340. Competing Philosophies in Political Economy (Not offered 2008-09). Selected topics in social choice. Individual and group value systems. Applications of general equilibrium theory to problems of social welfare analysis. Benefit/cost theory. Prerequisite: Economics 241.

341. Current Topics in Microeconomics (Not offered 2008-09). A variety of microeconomic models and their applications to economic problems, including game theory, general equilibrium models, time and uncertainty, information economics, structure and behavior of firms, and public choice. Prerequisite: Economics 241.

344. Economics of Education (Spring; Stephen Schmidt). This course introduces students to the relationship between education and the economy. Topics include human capital investment, the production of education, the returns to education, education and the labor market, financing education

## 76 / Economics

(using public or private resources), and school choice and education outcomes (student achievement, premature completion). Prerequisites: Economics 241 and 243.

345. Nonprofits, Cooperatives, and Other Non-Traditional Firms (Not offered 2008-09). A theoretical and empirical examination of production which does not fit the standard neoclassical model of profit maximization. Examples include credit unions, the kibbutz, law firms, sports production, hospitals, the Japanese firm, educational institutions, slavery, government agencies, and much more. Prerequisite: Economics 241.

352. Contemporary Problems in Macroeconomics (Spring; Motahar). A detailed analysis of some fundamental macroeconomic issues: inflation and unemployment, characteristics of the "New Economy," and productivity growth. A critical examination of the formulation and conduct of U.S. fiscal and monetary policy. Prerequisites: Economics 241, 242, and 243.

353. Seminar in Econometrics (Spring; Shiamptanis). 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. Prerequisites: Economics 243, and 241 or 242.

354. International Economics (Winter; 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. Prerequisites: Economics 241, 242, and 243. GenEd: CDEA, LCC

355. Monetary Economics (Not offered 2008-09). What money has been and is, including study of the U.S. institutions which supply and control it; the bond market and term structure of interest rates; asset demand for domestic and foreign currencies; money in monetarist, Keynesian, and rational expectations approaches to macroeconomics. Prerequisites: Economics 241, 242, and 243; 241 may be taken concurrently.

374. Sports Economics (Not offered 2008-09). Combines 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. Prerequisites: Economics 241 and 243.

375. Efficient Management of Technology (Not offered 2008-09). 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: Economics 241 and 243.

376. Seminar in Global Economic Issues (Spring; 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. Prerequisites: Economics 241, 242 and 243.

377. Modeling and Simulation of Economic Policies (Not offered 2008-09). The use of theoretical models and computer simulations to evaluate public policies under partial and general equilibrium specifications. Prerequisites: Economics 241 or 242, and Economics 243.

378. Labor Economics (Winter; Sener). Determinants of wages and terms of employment, wage and employment theories and the impact of unions, wage structures, unemployment, poverty, wage legislation. Prerequisite: Economics 241.

379. Economic Growth and Income Distribution (Not offered 2008-09). An overview of the theory, measurement, and history of economic growth, which presents Classical, Keynesian, and neoclassical approaches in parallel. Topics include the theory of optimal saving, endogenous technical change, growth accounting, natural resource limits on growth, money and growth, and the impact of government debt and social security systems on long-term economic growth. Prerequisites: Economics 241 and 242.

380. Seminar in Economic Growth and Development (Not offered 2008-09). 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, structural adjustment programs, democracy, social conflict, and corruption. Prerequisites: Economics 241, 242 and 243 or permission of the instructor.

382. Seminar in Finance (Not offered 2008-09). Study of important topics in finance, such as capital structure, risk, uncertainty, and portfolio theory; agency costs; market efficiency; options theory. Prerequisites: Economics 241 and 334.

383. Seminar in International Finance (Fall; Dvorak). 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. Prerequisites: Economics 241 and 242.

386. Seminar in Public Policy (Not offered 2008-09). An upper level seminar on the use of economic methodology to evaluate public policy. Particular topics covered vary with instructor and student interest. Topics covered in the past include education finance reform, health care, welfare, illegal drugs, and labor market discrimination. Prerequisites: Economics 241 and 243.

387. Seminar in Labor (Not offered 2008-09). Labor topics including, but not limited to, the public sector, wage determination, and the relationship between micro theory and the operation of American labor markets as they exist today. Critical issues in labor that affect the free market system. Prerequisites: Economics 241 and 243.

390. Economics Internships (Winter; Yaisawarng). 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. Prerequisites: Economics 241, 242, and 243.

391. The Income Tax: Policy and Practice (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. Prerequisites: Economics 241 and 243, and a minimum GPA of 2.9.

445. Managerial Economics (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. Prerequisites: Economics 241 and 243 and senior standing.

490-493. Independent Study (Fall, Winter, Spring; Staff).

498-499. Senior Thesis, Parts I and II (Fall, Winter, Spring; Staff). Independent research thesis. Prerequisites: Economics 241, 242, 243, at least one course in the area of the thesis and senior standing; Economics 498 is prerequisite to Economics 499.

## Electrical and Computer Engineering

Associate Professor Spinelli, Chair; Professors Chang, Hassib (on leave winter), Rudko (on leave spring) and Traver; Assistant Professors Catravas, Cotter, Hanson; Lecturer Hedrick.

The Department of Electrical and Computer Engineering offers a B.S. degree as well as a minor in Electrical Engineering and collaborates with the Computer Science Department to offer a B.S. degree and a minor in Computer Engineering. The department also contributes to the minor in Bioengineering, which is listed in this catalog under Bioengineering. Joint degree programs are offered with Union Graduate College. Updated information on course offerings and requirements, as well as the mission statements and educational objectives of the Electrical Engineering and Computer Engineering programs may be found on the department website: <http://ece.union.edu>

### Computer Engineering

Program Director: Professor Spinelli

Requirements for the Major: a total of 40 courses including the following:

· Math and Science: (Math 110\*, 112\*, 115, Physics 120, 121) or (IMP 111, 112, 113); Math 130, (Math 197 or 199); one math elective from (Math 117\*\*, 127, 138, 221, 235, or 340); one science elective numbered 100 or higher (Chemistry 101, Physics 122, or Physics 123 are recommended);

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

\*\* Math 117 may be taken only by students who did not take IMP 113.

· Engineering Science: ESc 100;  
· Computer Engineering Core: ECE 118, 225, 240, 241, 248, 351; one from (CSc 103-109), CSc 150, 250, 260, 270, (333 or 335); ECE/CSc 318, (336 or 337), 352;  
· Computer Engineering Electives: 3 additional CSc or 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.

· Capstone Design: ECE 497 (1/2), 498 (1/2), 499.  
· Core Components Curriculum: 7 to 10 courses depending upon the options chosen  
· Free Electives: up to 3 free electives, depending upon how the Core Components Curriculum is satisfied

Requirements for the Minor: The following six courses — ECE 118, 225; one from (CSc 103-109), CSc 150; one from (ECE/CSc 318, 352) and one other from (ECE/CSc 318, 336, 337, 352, CSc 250, 270).

Sample schedule starting with Math 110 (Students with different math backgrounds will have slightly different math sequences).

First Year

Fall: Elective\*, Esc100, MTH 110

Winter: Elective\*, MTH 112, PHY 120, CSc 103-109\*\*

Spring: Elective\*, MTH 115, PHY 121,

Second Year

Fall: ECE 225, ECE 118, Math 197 or 199\*\*

Winter: Elective\*, CSc 150, ECE 240, MTH 130

Spring: Elective\*, CSc 250, ECE 241

Third Year

Fall: Term abroad option\*\*\* or Electives\*

Winter: CSc 260, CSc 270, ECE/CSc 318

Spring: ECE/CSc 352, Science elective, CSc 335, ECE 497 (1/2)

Fourth Year

Fall: Elective\*, ECE 351, ECE/CSc 336 or 337, ECE 498 (1/2)

## Electrical and Computer Engineering / 79

Winter: ECE or CSc elective, ECE or CSc elective, ECE 499

Spring: Elective\*, ECE or CSc elective, ECE248, Math elective

\*Electives should be chosen to satisfy the Core Components Curriculum. Students should determine as early as possible how they will satisfy these requirements and should work with their academic advisor to develop an appropriate plan of study.

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

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

### Electrical Engineering

Requirements for the Major: a total of 40 courses including the following:

· Math and Science: (Math 110\*, 112\*, 115, 117, Physics 120, 121) or (IMP 111, 112, 113), Math 130; one science elective numbered 100 or higher (Chemistry 101, Physics 122, or Physics 123 are recommended); one Math or Science elective numbered 100 or higher.

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

· Engineering and Computer Science: ESc 100; one from (CSc 103-109); one Mechanical Engineering course (MER 101, 201, or 231 are recommended)

· Electrical Engineering Core: ECE 118, 225, 240, 241, 248, 343, 350, 351, 363, 366

· 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.

· Capstone Design: ECE 497 (1/2), 498 (1/2), 499

· Core Components Curriculum: 7 to 10 courses depending upon the options chosen

· Free Electives: up to 7 free electives, depending upon how the Core Components Curriculum is satisfied. Courses should be chosen in consultation with the student's advisor to enhance one or more of the program objectives.

Requirements for the Minor: ECE 118, 225, 240, 248; Electives: one from (ECE 241, 318, 341, 363, 366), and one from (ECE 333, 348, 350, 352, 360).

Sample schedule starting with Math 110 (Students with different math backgrounds will have slightly different math sequences).

First Year

Fall: Elective\*, ESc 100, MTH 110

Winter: Elective\*, MTH 112, PHY 120, CSc 103-109\*\*

Spring: Elective\*, MTH 115, PHY 121

Second Year

Fall: Elective\*, ECE 118, ECE 225

Winter: ECE 240, Math 130, MER 101/201/231

Spring: Elective, ECE 241, ECE 248, Math 117

Third Year

Fall: Term abroad option\*\*\* or Electives\*

Winter: Elective\*, ECE 343, ECE 366, Science elective.

Spring: Elective\*, ECE 350, ECE 497(1/2), Math/Science elective

Fourth Year

Fall: ECE 351, ECE 363, ECE elective 1, ECE 498(1/2)

Winter: ECE elective 2, ECE 499, Elective\*, Elective\*

Spring: ECE elective 3, Elective\*, Elective\*

\* Electives should be chosen to satisfy the Core Components Curriculum. Students should determine as early as possible how they will satisfy these requirements and should work with their academic advisor to develop an appropriate plan of study.

\*\* One course from CSc 103-109 should be taken during the first year.

## 80 / Electrical and Computer Engineering

\*\*\* The fall term of the third year is the recommended term for going on a full term abroad. Students who do not go on a fall term abroad may take ECE351 and ECE363 or electives.

118. Introduction to Computer and Logic Design (fall). Cross listed with CSc 118. Fundamental material in the area of digital circuit analysis and synthesis, computer organization, and microprocessor programming. The components of digital computers are studied at the gate level, the machine organization level, and the assembly language programming level. Weekly team-based laboratory exercises and a course portfolio are required.

222. Introduction to Circuits and Electronics (winter, spring). Electrical quantities, circuit principles, analysis and response of basic circuits, semiconductor physics, diodes, transistors, and operational amplifiers. Includes a weekly lab. Not open to Electrical or Computer Engineering majors, or to students who have taken ECE225. Prerequisites: PHY 121 or IMP 113.

225. Electric Circuits (fall). 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. Includes a weekly lab. Prerequisite: MTH 102 or MTH 112 or MTH 113 or IMP 112.

240. Circuits and Systems (winter). 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. Includes a weekly lab. Prerequisite: ECE 225; Corequisite or Prerequisite MTH 130.

241. Discrete Systems (spring). 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. Includes a weekly lab. Prerequisite: ECE 240.

248. Introduction to Semiconductor Devices and Circuits (spring). Semiconductors: theory of operation of diodes and transistors; circuit models; basic electronic circuits and amplifiers: transfer characteristics and inverters. Includes a weekly lab. Prerequisite: ECE 225.

295H, 296H. Electrical and Computer Engineering Honors Independent Study 1 & 2 (fall, winter, spring). Sophomore project in Electrical and Computer Engineering for students participating in a scholars program. Prerequisite: permission of the instructor.

310. Electronic Devices (not offered 2008-09). 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: ECE 248.

312. Application of Integrated Circuits (not offered 2008-09). Electronic processing of signals; properties of linear and hybrid integrated circuits; design of linear, nonlinear and hybrid electronic systems, active filter networks. Design projects required. Prerequisite: ECE 363, 366, or permission of the instructor.

318. Digital Design (not offered 2008-09). Cross listed with CSc 318. 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: ECE 118.

329. Neural Networks (winter). Cross listed with CSc 329. 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: Linear Algebra and Differential Equations, CSc 150 for CS students.

330. Fuzzy Logic (not offered 2008-09). Cross listed with CSc 330. Topics include fuzzy sets and relations, membership functions, defuzzification, classical logic and fuzzy logic, fuzzy rule-based systems, nonlinear simulation, decision making, pattern recognition and control systems. Prerequisite: Calculus and Linear Algebra, CSc 150 for CS students.

333. Wireless Communication Circuits (not offered 2008-09). Communication circuits, including coupling networks, electrical noise, high-frequency amplifiers, mixers, phase locked loops, high efficiency and broadband amplifiers, modulators and demodulators, pulse modulation techniques. Includes a weekly lab. Design projects required. Prerequisite: ECE 350, 363 or permission of the instructor.

## Electrical and Computer Engineering / 81

336. Computer Network Protocols (fall) Cross listed with CSc 336. Design, analysis, and operation of communication protocols for computer networks; TCP/IP, addressing, switching, routing, congestion control, application protocols. Prerequisite: one of CSc 103-109, or equivalent programming ability.

337. Data Communications and Networks (not offered 2008-09). Cross listed with CSc 337. An introduction to the physical and data link layers of data communication networks, including error detection, and local area networks. Prerequisites: ECE 118 or one of CSc 103-109.

341. Energy Conversion (not offered 2008-09). Theory of electromechanical energy conversion; characteristics of transformers and DC induction; and synchronous machines. Prerequisite: ECE 225.

342. Power Electronics (not offered 2008-09). 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 divide limitations. DC-DC converters: design, application, topologies. Energy storage element selection and design: capacitors and inductors. Prerequisites: ECE 248, 350.

343. Introduction to Electromagnetic Engineering (winter). Traveling waves: transmission lines; electrostatics; magnetostatics; applications to engineering problems; solutions by analytical and numerical techniques. Prerequisites: ECE 240, (Math 117 and PHY 121) or IMP 113.

347. Image Processing (not offered 2008-09). 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: ECE 241

348. Digital Circuits (not offered 2008-09). 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: ECE 118, 248, or permission of the instructor.

350. Communication Systems (spring). Frequency domain analysis, signal space representations, and their application to wireless communications; quality measures; performance in the presence of noise. Includes a weekly laboratory. Prerequisite: ECE 241

351. Probability and Digital Communications (fall). 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: ECE 118, ECE 240.

352. Embedded Microcontroller Systems (not offered 2008-09). Cross listed with CSc 352. Hardware and architecture with emphasis on 8051 microcontroller; programming in assembly and higher-level languages, microcontroller applications, and interfacing. Includes an integrated lab. Design projects required. Prerequisites: Knowledge of computer programming and ECE 118.

354. VLSI System Design (not offered 2008-09). Cross listed with CSc 354. Design of very large scale integrated systems including structured design, stick diagrams, and delay time estimation. Design from logic to physical levels; CAD tools for layout and simulation. Design projects required. Prerequisites: ECE 118 and 248.

358. Waves in Communication (spring). This course will cover the basic concepts needed to develop electromagnetic devices in wireless communication. These include transmission line theory and circuits, wave propagation and transmission, elements of guided waves and resonators, and basic antenna concepts. Prerequisite: ECE 343 or equivalent.

360. Power System Analysis I (not offered 2008-09). Power and energy in AC circuits; single phase, three-phase, and polyphase circuits in balanced and unbalanced regimes; measurement of three-phase power; determination of three-phase sequence; single-line diagrams; per-unit method of representation and computations; transformers and synchronous machines in power systems; parameters of transmission lines. Prerequisite: ECE 225.

361. Power System Analysis II (not offered 2008-09). 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. Prerequisites: ECE 225 or ECE 360.

363. Analysis and Design of Electronic Circuits (fall). Multiple-stage amplifiers; Differential amplifiers; Frequency response of amplifiers; Feedback amplifier; Stability of electronic circuits; Analysis and design of operational amplifiers. Includes a weekly lab. Prerequisite: ECE 248.

366. Control Systems (winter). Modeling of control systems by block diagrams and flow graphs. Analysis of control systems response, error and stability by Routh's criterion, Root-Locus method, and frequency domain methods (Nyquist, Bode, and Nichols). Laboratory and design project. Prerequisite:

## 82 / Electrical and Computer Engineering

ECE 240.

368. Introduction to Antenna Theory (not offered 2008-09). 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: ECE 343 or equivalent.

370. Engineering Acoustics (fall). 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: ECE 241; Corequisite or Prerequisite ECE 343.

463. Fundamentals of Wireless Electronics (fall). RF components, transmission line theory, Smith chart, 2-port models, matching networks, RF transistor circuit design. Prerequisite: ECE 248.

481, 482, 483. Special Topics in Electrical and Computer Engineering (fall, winter, spring). 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.

490-496. Independent Study (fall, winter, spring)

497, 498, 499. Electrical and Computer Engineering Capstone Design Project (spring 1/2, fall 1/2, winter). Two course equivalent. Students begin this sequence of courses in the spring of their third year. The spring term includes a seminar component. In the fall and winter terms, students complete the design, implementation, and evaluation of a system under the supervision of one or more faculty members. 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.

## Energy Studies Minor

This program of study is only available to students as a minor and requires a minimum of 6 courses. The minor is designed to be accessible to all students on campus (non-science, science and engineering). Students completing this minor will gain both a technical and policy background which will allow them to understand the technical, economic, sociological and policy issues surrounding energy and energy usage. Students take two core technical courses, two core policy courses and then choose two additional courses from a list of electives. 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 the major.

### Required Technical Core Courses (2):

1. Chm101/101E Matter Structure and Change an Environmental Approach (offered every term, multiple sections) Prerequisites: None

2a. Mer231 Thermodynamics (offered Fall, Winter)

Prerequisites: PHY120, MTH 112 or 113 or IMP112. Co-Requisite: CHM101.

OR

2b. Phys123 Heat, Light, and Astronomy (offered Fall)

Prerequisites: PHY120, PHY121, MTH 102, 112 or 113 or IMP113.

### Required Policy Core Courses (2 courses from the following list):

1. ANT241 Environmental Anthropology

Prerequisites: None

2. Eco228 Environmental and Natural Resource Economics (offered every year).

Prerequisites: Economics 101 or permission of instructor.

3. Psc271 Environmental Politics and Law

Prerequisites: Sophomore standing or Psc 111, 112

4. Psc272 The Environment, Energy, and U.S. Politics

Prerequisites: Sophomore standing or Psc 111, 112

5. Soc270 Social Movements, the Environment, and Society

Prerequisites: None

6. Alternative policy-related course (requires approval of minor advisor)

Elective Courses (pick any 2 in consultation with minor advisor, alternative courses may be

## 84 / Energy Studies Minor

approved by minor advisor):

### Engineering Courses:

Ens209 Renewable Energy Systems (to be offered 2008/09)  
Ece341 Energy Conversion (offered occasionally)  
Mer232 Thermodynamics II (offered every year, Winter, Spring)  
Mer371 Introduction To Internal Combustion Engines  
Mer471 Solar Energy Analysis and Design

### Science Courses:

Geo101 The Earth and Life Through time  
Geo104 Global Perspectives on Energy  
Geo108 Earth Resources

### Social Science Courses:

Ant241 Environmental Anthropology  
Psc271 Environmental Politics and Law  
Psc272 The Environment, Energy, and U.S. Politics  
Psc274 Politics of Global Warming  
Rel215 Introduction to Eco-Theology: Religion And Nature  
Soc270 Social Movements, the Environment, and Society  
Tab333T New Zealand Mini-Term Abroad (offered every year)

Program Director: Professor Ann Anderson (Mechanical Engineering) [andersoa@union.edu](mailto:andersoa@union.edu)

## Engineering

Bachelor of Science degrees are offered in computer engineering, electrical engineering, and mechanical engineering. The engineering programs are accredited by ABET, Inc.

The mission of Union College's engineering programs is to educate students for professional careers while giving them a foundation in the liberal arts that prepares them to be engaged, innovative, and ethical leaders in an increasingly diverse, global, and technologically complex society.

Innovations and technological advances often occur at the interfaces of engineering, science and other disciplines. At Union we believe that students should gain exposure to these exciting areas in the curriculum. Our "Converging Technologies" initiative includes research opportunities, courses, majors, and minors in emerging disciplines such as: Nanotechnology, Bioengineering, Robotics, Neuroscience, Environmental Engineering, Digital Art, and Energy.

The engineering programs have the following characteristics:

- Students begin the study of engineering in the "Exploring Engineering" course where they learn the engineering design process and the interdisciplinary nature of engineering.
- All engineering programs have the same General Education curriculum requirements as Union's liberal arts programs.
- Modern "Converging Technologies" concepts are available to students in research projects, courses, and minor programs.
- Students work from the freshman to senior year in dynamic team structures that mimic the real world of engineering.
- Engineering students are encouraged to pursue a minor in the liberal arts and to travel abroad.
- Oral and written communication skills are developed throughout the curricula.
- Laboratories and engineering design projects are integrated throughout the curricula to develop physical intuition.
- Research with faculty is available to prepare students for graduate school or an engineering career.
- Students are encouraged to work on projects and internships with local and global companies to obtain practical work experience.

The first year in engineering begins with ESC-100 (Exploring Engineering), a course that introduces students to the engineering discipline through interdisciplinary design projects, presentations by engineering professionals, and a hands-on team design challenge. Students are encouraged to choose an engineering major early in the freshman year since program curricula begin to diverge in the winter term. Engineering students complete the College's General Education curriculum and are strongly encouraged to satisfy their cultural and linguistic competency requirement by going abroad. Details of these requirements can be found in the section of the Academic Register that describes the General Education curriculum.

First year engineering students take three terms of calculus (Math 113, 115, and 117) and two terms of physics (Physics 120, 121). Students who have had an introduction to differential and integral calculus in high school may be placed into an Integrated Math-Physics course sequence (IMP 111, 112, 113) that combines mathematics and physics into a set of courses that are equivalent to Math 113, 115, 117, and Physics 120, 121.

### Engineering Minors and Tracks

The following minors and tracks within majors include engineering courses. Descriptions of these minors are found under the appropriate programs within the Academic Registrar.

- Bioengineering Minor – see Bioengineering
- Energy Studies Minor – see Energy Studies
- Environmental Engineering Minor – see Environmental Engineering
- Environmental Engineering Track within Environmental Science and Policy – see Environmental Science and Policy
- Nanotechnology Minor – see Nanotechnology

### Engineering Science/Engineering

## 86 / Engineering

Courses listed in this section are general engineering courses common to more than one program or engineering courses designed for a minor or track.

ESC 008. Engineering Term-in-Industry. A non-credit, pass/fail registration for engineering students undertaking a term-in-industry or a cooperative work assignment.

ESC 009. International Engineering Term-in-Industry. A non-credit, pass/fail registration for engineering students undertaking an international term in industry or cooperative work assignment in partial fulfillment of the General Education curriculum.

ESC 100. Exploring Engineering (Fall). An introduction to engineering including fundamental topics such as problem solving, energy principles, mechanical systems, electrical circuits, controls, computers and logic. 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.

ESC 224. Frontiers of Nanotechnology and Nanomaterials (Winter; Hagerman, Catravas, Cohen) An overview of nanotechnology and nanomaterials including interdisciplinary perspectives from engineering, materials science, chemistry, physics, and biology with applications to photonics, data and energy storage, catalysis, new polymers, biomaterials and drug delivery. Prerequisites: PHY 111 or 121 (or IMP 113) and MTH 115, and CHM 101 or 110, or permission from instructor. (Cross listed as CHM 224.)

ESC 370. Engineering Economics (not offered 2008-09). This course develops and applies analytical and computer tools for the evaluation of economic feasibility and desirability or practical engineering projects. Topics include the time value of money; present, annual, and rate of return analysis; benefit/cost analysis; breakeven analysis; depreciation; and the effects of inflation.

ENS 200. Energy (Winter: Shaw) - See Environmental Science

ENS 208. Waste Management and Recycling (Fall: Ghaly) – See Environmental Science

ENS 209. Renewable Energy Systems (Spring: Wilk) – See Environmental Science

ENS 250. Water Resources and the Environment (Winter: Jewell) – See Environmental Science

ENS 252. Environmental Geotechniques (Spring: Ghaly) – See Environmental Science

ENS 253. Environmentally Friendly Buildings (Fall, Spring: Mafi)– See Environmental Science

ENS 307. Hydrology – (not offered 2008-09) - See Environmental Science

ENS 310. Environmental Engineering (not offered 2008-09) – See Environmental Science

GEO 204. GIS for Humanity (Winter: Ghaly) – See Geology

MER 240. Introduction to Bioengineering (Winter: Rice/Mafi)– See Mechanical Engineering

### International Programs for Engineering Students

Engineering has become a global profession. As a graduate you will likely find yourself working on an international team in a global company, working for an organization with international clients, or being dispatched to international locations to negotiate or oversee work. Thus it is critically important that you understand the nuances of other cultures, and how to communicate effectively. One of the best ways to accomplish this is through an international experience as a student. Therefore, engineering students, except under extraordinary conditions (as approved by the student's academic advisor and department chair), are expected to meet the Linguistic and Cultural Competency requirements of the General Education Curriculum by participating in some type of international experience. For engineering students, possible experiences include: 1) terms abroad, 2) international internships, 3) mini-terms abroad, 4) international design projects, and 5) summer international experiences. For more information on these programs, please visit our website at <http://engineering.union.edu/eta/> or email Professor Jewell, Director of International Programs for Engineering Students, at [jewellt@union.edu](mailto:jewellt@union.edu).

## English

Professor Smith, Chair; Professors Heinegg, Marten (Term Abroad Fall, on leave Spring), McCord (Term Abroad Fall), Stevenson (on leave Winter, Spring), Wineapple (on leave Fall, Winter); Associate Professors Doyle, Jenkins, Kuhn, Lewin; Assistant Professors Jain, Lynes, Tuon; Visiting Assistant Professors Bracken, Murphy, Pease; Lecturer in English Selley

### The English major

12-course requirement

Two Introductory Courses required of all students:

- EGL 100 - Introduction to Literary Studies: Poetry
- EGL 101 - Introduction to Literary Studies: Fiction

The emphasis of these two courses is on close reading of primary texts and the acquisition of a vocabulary to speak and write clearly and intelligently about them. The specific texts and approaches to them are decided by each teacher. Each section will include works by writers from at least three cultural traditions. Possible traditions include African-American, American, Asian, African, Latin American, English, Postcolonial, Western European.

Both Introductory Courses are to be completed by winter term of the junior year.

Detailed descriptions of the various sections of EGL 100 and EGL 101 are available in the English department office, Humanities 212, the week before pre-enrollment each term.

Seven Intermediate Courses required of all students:

Intermediate Courses may be taken after at least one of the Introductory Courses has been completed. The second Introductory Course must be taken no later than the winter term of the junior year.

In this group, students must complete the following courses:

- One course on Shakespeare. (EGL 223- 224)
- Two Historical Studies courses, one before 1700 (EGL 203 – 209), one before 1900 (EGL 210- 216)
- Four others (with faculty guidance) that reflect each student's interests, intentions, and plans after Union College

There are four Intermediate Course categories:

- Historical Studies Courses that focus on literature viewed particularly (though not exclusively) in historical perspectives. There is often a focus on a particular literary period, with representation of a variety of appropriate genres. (EGL 203-219)

- Culture Studies Courses that focus on literature viewed particularly (though not exclusively) in cultural perspectives. Culture Studies courses may focus on the literature of a particular culture, or literature in relation to several cultures together, or may view literature in relation to particular cultural issues or problems. (EGL 225 – 251)

- Genre Studies Courses that focus on literature viewed in relation to a particular form of writing. Examples: prose fiction, poetry, drama, satire, tragedy. (EGL 256 – 287)

- Author Studies Courses that focus on the writing of a particular author or group of authors. (EGL 292 – 294)

Three Advanced Courses required of all students:

Courses in this category are comprised of Junior Seminars and Senior Seminars. The seminars in both categories are writing intensive, typically research oriented, 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 before enrolling in a Senior Seminar.

Junior Seminars: EGL 300 – 321

Senior Seminars: EGL 400 – 406

Honors

## 88 / English

Fourteen courses are required for honors, the additional two being a two-term honors thesis seminar. In this seminar, students are expected to learn research methods, discuss their subjects and approaches to them, share ideas and writing, as they work toward completing their individual theses under the direction of the seminar instructor. Honors students are also required to take the Literary Theory Seminar in Winter of their Junior year.

Interested students should discuss possible thesis subjects with various faculty members who can guide them to an appropriate thesis topic. Prospective Honors students are required to submit a two- to three-page thesis proposal by May of their junior year, for review by the department's Honors selection committee.

### Minor/I.D.

English I.D. Majors and English Minors have a 7 course requirement: one Introductory Course, and six others, including at least one pre-1700 Historical Studies Course and Shakespeare.

### I.D. Honors

Students seeking I.D. Honors in English, have a 9 course requirement, the additional two beyond the requirements for the English I.D. Major being the two-term thesis seminar.

### General Education

Gen Ed students may take Intermediate Courses after taking one Introductory Course. For most Intermediate Courses, either of the Introductory Courses will suffice to meet the requirement. However, a student wanting to enroll in a genre specific Intermediate Course (a course dealing only with poetry or a course dealing only with fiction) is expected to have first taken the appropriate Introductory Course (that is, either Introduction to Poetry or Introduction to Fiction). However, during the transition from the old Gen Ed program to the new, students who have taken any previous English department course will be considered to have met the requirement for an Introductory Course.

### Enrollment Limits

Enrollment limits for the three categories of courses are as follows: 20 for Introductory Courses, 25 for Intermediate Courses, 15 for Advanced Junior and Senior Seminars.

For further information about English department courses and activities, consult handouts available in the English department office, or see the department's webpage.

### Introductory Courses

100. Introduction to the Study of Literature: Poetry (Fall, Murphy, Stevenson, Smith; Winter, Jenkins, Heinegg McCord; Spring, Jenkins, McCord, Pease). 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. Gen Ed: EuL-AmL

101. Introduction to the Study of Literature: Fiction (Fall, Heinegg, Jain, Kuhn, Pease, Selley, Tuon, Staff; Winter, Bracken, Lynes, Murphy, Pease, Staff; Spring, Bracken, Doyle, Heinegg, Kuhn, Lewin, Lynes, Murphy, Selley, Tuon). 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. Gen Ed: EuL-AmL

### Intermediate Courses

#### Writing Workshop Courses

200. Workshop in Poetry (Fall, Smith). A first course in the writing of poetry, emphasizing workshop critiques of student work. Class time will be divided between instruction in literary technique, workshop sessions, and consideration of the work of several contemporary poets. Students will be asked to complete and revise several writing assignments, to keep a journal, and to prepare a final portfolio.

201. Workshop in Fiction (Winter, Selley). A first course in the writing of fiction, emphasizing

workshop critiques of student work.

202. Workshop in Non-fiction Prose (Not offered in 2008-09). A course in the writing of non-fiction, emphasizing workshop critiques of student work.

#### Historical Courses

##### Courses Before 1700

203. British Literature in Historical Context: Medieval Literature I: Literature of Early England (Not offered 2008-09). This course examines the literature of early England as it reflects, shapes, and critiques its social context, from the Anglo-Saxon era up to just before the time of Chaucer. Gen Ed: Eu-LS

204. British Literature in Historical Context: Medieval Literature II: Literature of Fourteenth-Century England (Winter, Doyle). 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, 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. Gen Ed: Eu-LS

205. British Literature in Historical Context: The Renaissance (Not offered 2008-09). 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 14<sup>th</sup> century to the 17<sup>th</sup>, and consequent close attention to the achievements of one or more major literary figures of the English Renaissance. Gen Ed: Eu-LS

206. British Literature in Historical Context: The 1590s (Fall, Stevenson). The roll call of writers in this decade who achieved fame which has lasted to the present day probably outshines that of any decade in literary history: the poetry and prose of Sidney, Spenser, Raleigh, and Donne; the poetry and plays of Shakespeare, Marlowe, Jonson, and Marston; the new prose of Nashe, Hooker, and Bacon (along with the final edition of Montaigne's essays); Chapman's translation of Homer, (Holland's of Livy, Harington's of Ariosto); all accompanied by Monteverdi's Madrigals. The course will study the works selected from these writers in relation to each other and in relation to their place in history. Gen Ed: Eu-L

207. British Literature in Historical Context: 17th Century (Not offered 2008-09). 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. Gen Ed: Eu-LS

208. British Literature in Historical Context: The Restoration (Winter, Jenkins). 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. Gen Ed: Eu-LS

209. American Literature in Historical Context: Beginnings to 1800 (Spring, Murphy). This course focuses on beginnings of American literature and culture, with an emphasis on writings prior to 1700. Selections will vary according to instructor, 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. Gen Ed: Am-LS

#### Courses Before 1900

210. British Literature in Historical Context: 18th Century (Not offered 2008-09). A selection of works by writers and artists of the period that has been termed "The Age of Reason," "The Age of Exuberance," "The Age of Potholes, Chamber-pots, and Prostitutes." Readings include fiction, poetry,

## 90 / English

prose, and drama by Pope, Addison, Swift, Gay, Johnson, Sterne and Blake. Artists include Hogarth, Canaletto, Gillray, Rowlandson, and Reynolds. Gen Ed: Eu-LS

211. British Literature in Historical Context: Romanticism (Spring, McCord). The poetry and prose of William Blake, William Wordsworth, Samuel Taylor Coleridge, John Keats with focus on their lives and times, art and thought, in the late 18th and early 19th centuries. Gen Ed: Eu-LS

212. British Literature in Historical Context: 19th Century: Victorian Literature (Fall, Murphy) The Victorian period has been called the age of energy, invention, and speed because of the industrial revolution it spear-headed; the age of doubt because of evolutionary science's challenge to traditional religious belief; the age of reform because political and social life modernized themselves somehow without breaking down into anarchy; and the age of Empire because the metropolis's military, commercial, and administrative power stretched around the globe. It was also an age when gender roles were seriously challenged, new sexual identities were explored, and rebels from all quarters spoke up against repression. To quote Charles Dickens, it "was so much like the present period that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only." Indeed, the Victorians wrote very emphatically (and beautifully) about how they saw themselves and their own place in world history. We can learn a lot about the challenges of our own time by revisiting questions the Victorians raised, and we will do this by studying examples of their most compelling literature. Gen Ed: Eu-LS

213. British and Irish Literature in Historical Context: Literature of the 1890s (Not offered 2008-09). The last decade of Victoria's reign is a miniature cultural period unto itself, a *fin de siècle* in which writers employed literary innovation to interrogate an outdated social, sexual, and imperial order. The Empire was at its height, but cracks were starting to show at the seams. In this period therefore, alongside celebrations of the Queen's Imperial Jubilee we find "art for art's sake" aestheticism, new forms of the gothic, a reinvention of English drama, the New Woman in literature, Naturalism, the beginnings of an Irish cultural revival, Sherlock Holmes, anti-imperialist writing, and homoerotic poetry. The best literature of this period initiated a series of questions that modernist, postmodern, and postcolonial writers have continued to ask after two world wars, the collapse of the British Empire, and its replacement by an American one. We will read works by Oscar Wilde, Bram Stoker, Arthur Conan Doyle, George Bernard Shaw, Thomas Hardy, Somerville and Ross, and "Michael Field." Gen Ed: Eu-L

214. European Literature in Historical Context: European Enlightenment and Romanticism (Not offered 2008-09). 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. Gen Ed: Eu-LS

215. American Literature in Historical Context: The 19th Century (Not offered 2008-09). This course focuses on 19th century literature and its relation to historical events and issues. Selected authors will vary according to instructor, but may include Cooper, Irving, Emerson, Fuller, Thoreau, Douglass, Melville, Whitman, Dickinson, Twain and Wharton. Historical issues may include early national culture, the sentimental novel, Western expansion, Indians, industrialism and individualism, the Civil War and Reconstruction, journalism, and the rise of commercial culture. Gen Ed: Am-LS

216. African-American Literature in Historical Context: Beginnings to 1900: Vision and Re-Vision (Fall, Lynes). The course will trace African-American movement towards literary and aesthetic mastery beginning with what Henry Louis Gates, Jr., calls "oral writing." Readings begin with music and the first known written poems and progress from slave narratives and autobiography to essays and fiction. Authors include Phillis Wheatley, Harriet Jacobs, Frederick Douglass, Charles Chesnut, and W.E.B. DuBois, among others. Gen Ed: Am-LS, CDAA

### Courses After 1900

217. American Literature in Historical Context: 1900-1960 (Spring, Selley). This course will focus on how urbanism, psychology, science, secularism, "The Great War" and World War II, consumerism and feminism influenced poets and fiction writers of the pre-Modern and Modern periods. Writers might include: Henry James, Henry Adams, Ernest Hemingway, T.S. Eliot, Robert Frost, Wallace Stevens, W.C. Williams, F. Scott Fitzgerald, 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 in the syllabus. Assignments will include several papers and a final exam. Gen Ed: Am-LS

218. American Literature in Historical Context: 1960-Present (Not offered 2008-09). The class

surveys developments in American fiction, poetry, and drama beginning with the Vietnam era and ending in the first decade of the 21st century. Literary movements in black American, women's, and multi-cultural writing will sit along side so-called "mainstream" post-modernism in juxtaposition and elucidation of major social and historical realities. The authors such as Thomas Pynchon, Don DeLillo, Frank Stanford, Adrienne Rich, Amiri Baraka, Joan Didion, Richard Hugo, Audre Lorde, Richard Powers, Alfredo Vea, Susan Straight, Tony Kushner, Yusef Komunyakaa and Judy Jordan will appear on the syllabus. Gen Ed: Am-LS

219. African-American Literature in Historical Context: 1900- Present (Spring, Lynes). Introductory survey of African-American Literature from 1930 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 Zora Neale Hurston, Richard Wright, Sterling Brown, Langston Hughes, Gwendolyn Brooks, James Baldwin, Robert Hayden, Margaret Walker, Leroi Jones/Amiri Baraka, Sonia Sanchez, Ethridge Knight, Ed Bullins, June Jordan, Audre Lorde, Toni Morrison, Louis Edwards, and Yusef Komunyakaa. Gen Ed: Am-LS, CDAA

### Shakespeare Courses

223. Shakespeare to 1600 (Fall, Jenkins; Winter, Doyle). The early plays and poems considered as forms of aesthetic experimentation and development within the framework of Elizabethan culture. Gen Ed: Eu-L

224. Shakespeare after 1600 (Spring, Heinegg). Close readings of the later plays, including the four great tragedies, as both poems and dramas. Gen Ed: Eu-L

### Cultural Studies Courses

225. Humanities: The Origins (Spring, Heinegg). Readings of selected masterworks from Hebrew, Greek, and Latin literature. Gen Ed: An-LS,

226. The World of the Bible (Winter, Heinegg). The civilization of ancient Israel from Abraham and Moses to Jesus and Paul as well as the contributions of the Bible to the Western imagination. Though secular in its approach, the course aims at presenting basic information about the structure and development of both Judaism and Christianity. Gen Ed: An-CS

227. Views of London (Not offered 2008-09). The history of London — its ups and downs, its construction and destruction — from Roman times to the present through study of its art, literature, and history. Gen Ed: Eu-LS

228. The American Renaissance (Not offered 2008-09). This course will examine the major writers who flourished in the pre-Civil War era. Writers will vary by instructor, but may include: Emerson, Thoreau, Fuller, Whitman, Poe, Douglass, Dickinson, Hawthorne and Melville. Topics will include Transcendentalism, the rise of an American literary voice, New England politics and culture, American Romanticism and the place of letters in mid-century America. Gen Ed: Am-L

229. American Realism and Naturalism (Not offered 2008-09). Major literary movements — local color, realism, and naturalism — and the competing literary theories of the decades between the Civil War and World War I. Topics include the rise of the city, the growth of technology, and the moral consequences of material expansion. Authors include Howells, Chopin, Norris, Garland, Crane, and Dreiser. Gen Ed: Am-L

233. New York Modern (Not offered 2008-09). An exploration of 20th-century New York and the New York scene, primarily in fiction and poetry, but also in the visual arts, dance, classical music, jazz and rock, theater, film, TV. We will consider among others, Henry Roth, Hart Crane, William Carlos Williams, Allen Ginsberg, James Baldwin, Arthur Miller; visual artists from Charles Sheeler to Jackson Pollock, Alice Neel and Diane Arbus to Andy Warhol; musicians/composers including Thelonious Monk and Lou Reed, The Weavers and Bob Dylan, Leonard Bernstein and John Cage; dancers/choreographers including George Balanchine, Lincoln Kirstein, Martha Graham and Merce Cunningham; film makers and actors from Marlon Brando and Jackie Gleason to Woody Allen. Gen Ed: Am-L

234. The Beats and Contemporary Culture (Not offered 2008-09). 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. Gen Ed: Am-L

236. Women Writers to 1700 (Not offered 2008-09). (Cross-listed with WGS 214). We will explore

the female side of the medieval and early modern literary traditions in England and Europe, examining women's writing as a reaction to male constructions of gender, literary authority, and subjectivity. Gen Ed: Eu-LS

237. Women Writers, 18th to 20th Century (Not offered 2008-09). Tracing the tradition of literary writing by "thinking back through our mothers." Authors may include Behn, Burney, Austen, Radcliffe, Shelley, Brontë, Rossetti, Eliot, and Woolf. We may consider European contemporaries (LaRoche, Sand) and transatlantic connections (Fuller, Alcott). Gen Ed: Eu-LS

238. Jewish Women Writers (Fall, Lewin). (Cross-listed with WGS 239). 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. Gen Ed: Eu/Am-LS

239. American Indian Women Writers (Not offered 2008-09) (Cross-listed with WGS 235). This course will explore narratives of American Indian women. We will begin by examining the representations of women, female characters, and gender roles found in traditional American Indian tales from a variety of tribes. We will then explore the ways in which American Indian women from the eighteenth to the twenty-first century uphold, resist, and rewrite these traditional female gender roles, myths, and experiences to create new enabling myths for contemporary American Indian life. Possible writers include Nancy Ward, Joy Harjo, Leslie Silko, Louise Erdrich, LeAnne Howe, Luci Tapphonso, and others. Gen Ed: Am-L

240. Black Women Writers (Not offered 2008-09). (Cross-listed with WGS 240) This course provides an introduction to the major themes and concerns of twentieth-century African American women writers. Using novels, poetry, essays, and music 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 Zora Neale Hurston, Gwendolyn Brooks, Toni Morrison, Audre Lorde, Gloria Naylor, Octavia Butler, and others. Gen Ed: Am-L, CDAA

241. Classics of Feminism (Not offered 2008-09). (Cross-listed with WGS 241) A reading of the foundational texts of modern feminism by Mary Wollstonecraft, John Stuart Mill, Virginia Woolf, Simone de Beauvoir, and others. The course will also explore the historical roots of women's emancipation, its philosophy and rhetoric, and its echoes in 21st-century life. Gen Ed: Eu-L

243. Introduction to American Indian Literature and Film (Not offered 2008-09). This course will provide an introduction to the narratives of the indigenous peoples of North America. We will be reading traditional oral literatures that predate colonization, such as myths, prayers, and songs, as well as examining the ways these oral traditions are repeated and revised in the contemporary genres of poetry, fiction, autobiography, and film. Through selected examples from oral and written traditions, our focus will be on gaining an understanding of the diverse histories, cultural perspectives, and issues facing tribes across North America. We will pay particular attention to issues of stereotypes, racism, poverty, land rights, cultural "authenticity," and spirituality. We will examine works by Zitkala-Sa, Leslie Silko, Scott Momaday, Louise Erdrich, Simon Ortiz, Sherman Alexie, and others. Gen Ed: Am-L

244. Asian American Literature and Film (Fall, Tuon). The reading list includes 20th-century authors, such as Maxine Hong Kingston, David Henry Hwang, Carlos Bulosan, Chitra Divakruni, and Karen Tei Yamashita. Themes include inter-generational conflict, responses to assimilation pressure, gender and class differences, pan-Asian vs. distinct ethnicities, the significance of "color" to the Asian American experience, and political representation within America. Gen Ed: Am-L, CDEA

245. Contemporary South Asian Writing (Not offered 2008-09). This course will introduce students to South Asian writers from the subcontinent and throughout the diaspora who are highly visible in international literary milieus. These include Salman Rushdie, Arundhati Roy, Bharati Mukherjee, Amitav Ghosh, Michael Ondaatje, Pulitzer-prize winner Jhumpa Lahiri, and Nobel-prize winner V. S. Naipaul. We will also read from influential theorists such as Gayatri Spivak and Homi Bhabha. Students will be asked to consider: postcolonialism, literary canons and genres, the implications of English-language writing for South Asians, types of narrative innovation, and aesthetic commonalities or differences. We will read the literature against the backdrop of the postcolonial histories that are both informed

by and informative of this writing, paying attention to issues of geography, ethnicity, religion, gender, sexuality, and caste/class. Gen Ed: CDEA

246. Modern African Literature (Not offered 2008-09). This is an introductory course to African writing in English. We will focus on contemporary urban Africa; on the fluid relationships of characters to the State; on identity and culture as expressed in modern African writing. Gen Ed: CDA

247. Irish Literature and Film (Fall, Bracken). As an introduction to Irish Studies this course will teach you to how to identify and critique a set of Irish preoccupations – about language, art, and politics – through a survey of the complex and hybrid tradition of Irish writing and film. We will begin with the earliest English conquest and end in the present day. These preoccupations derive from Ireland's historical relationship to the British Empire, and these texts represent a series of cultural contests over the representation of Irishness under colonial and postcolonial conditions. We will discuss how Irish writers and filmmakers negotiate questions of gender, sexuality, class, and language in relation to this history. Gen Ed: Eu-L

248. Yiddish Literature in Translation (Not offered 2008-09). Secular Yiddish literature did not emerge until the late 19th century, and it may have been given its death blow by the Holocaust, but, while it lasted, it produced a rich flowering of prose and poetry. This course will examine major authors such as Mendele Moykher-Sforim, Sholem Aleichem, I.L. Peretz, and the Singer brothers, Israel Joshua and Isaac Bashevis, along with interesting minor figures such as Kadya Molodowsky and Rokhl Korn. Gen Ed: Eu-L

249. Literature of the Holocaust (Not offered 2008-09). In theory the events of the Holocaust are too terrible for art; in practice the Holocaust has given rise to a vast and valuable body of art, especially works of literature. A survey of the variety of responses, some of them astonishingly bold. Perhaps inevitably the course stresses the survivor's perspective; memory as a redemptive power, the uses of the imagination to condemn and triumph over the horrors of Nazism. The presence of such bright lights only intensifies our awareness of the surrounding darkness. Gen Ed: Eu-L

250. Literature and Science (Not offered 2008-09). 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. Gen Ed: Eu-L, Am-L

251. Nature and Environmental Writing (Not offered 2008-09). A course examining the major figures in nature and environmental writing from the 18th through the 20th centuries, including Audubon, Bartram, Emerson, Thoreau, Powell, Muir, Leopold, Carson, and E.O. Wilson, as well as contemporary writers. Gen Ed: Am-L

252. Changing Ireland (Spring, Bracken). 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 Kirsten Sheridan's *Disco Pigs*, Pat McCabe's *Breakfast on Pluto* and the poetry of Cathal O Searcaigh. Gen Ed: Eu-L

253. Queer Fiction (Fall, Stokes) This course will explore the various ways in which gay and lesbian literary representation participates both within and around more canonical literary movements. Focusing primarily on twentieth-century writings, we will concentrate on a literary tradition in which the invisible was made visible—in which historically marginalized sexualities took literary shape. Possible topics may include the following: What strategies have lesbian and gay authors used to express taboo subject matter, and how have these strategies interacted with and challenged more traditional narrative techniques? How does the writing of queer sexuality recycle and revise notions of gender? What kind of threat does bisexuality pose to the telling of coherent stories? How does transgenderism affect our thinking about gender and homosexuality? In what ways do class, race, and gender trouble easy assumptions about sexual community? How have social and cultural moments (McCarthyism, Stonewall, the AIDS crisis) as well as medical and scientific discourses (sexology, psychoanalysis) affected literary representations, and vice versa? We will work throughout the course to develop the kinds of reading skills that these texts demand, since an ability to read both the text and its silences will be essential.

254. Literary Hauntings (Winter, Tuon) 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.

### Genre Studies Courses

256. Rise of the Novel (Not offered 2008-09). (Cross-listed with WGS 364) 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. Gen Ed: Eu-L

257. 19<sup>th</sup>- Century Novel (Spring, Lewin). (Cross-listed with WGS 344) 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. Gen Ed: Eu-L

258. Modern British Fiction (Not offered 2008-09). The class will read novels and short stories by modern masters Joseph Conrad (Lord Jim, The Secret Agent), Ford Madox Ford (The Good Soldier), E.M. Forster (Howard's End), Virginia Woolf (Mrs. Dalloway), D.H. Lawrence (Women in Love), and James Joyce (portions of Ulysses). We will explore the developments in narrative form and technique and the influences that brought them about. We will consider such issues as the impact of science and technology on fiction writing, the influence of the psychological theories of Freud and Jung, the impact of World War I on society, the loss of faith, the weakening of the British Empire, the changing roles of men and women. Considerable attention will be paid to relationship of fiction writing to art, in particular to the works of Cezanne, Monet, Van Gogh, Picasso, Munch, Nolde, Duchamp, Boccioni, other post-impressionists, cubists, expressionists, realists and surrealists. Gen Ed: Eu-L

259. British Fiction Since WWII (Not offered 2008-09). Novels and short stories since World War II by such writers as Amis, Atwood, Barker, Gordimer, Lodge, Ondaatje, Sillitoe, Graham Swift, Weldon. Discussion of political-sociological ideologies in fiction; redefinitions of realism; emigration and immigration; race relations; satire and class critiques; post-modernist narrative forms; film and fiction; history and fiction; humor and the grotesque. Gen Ed: Eu-L

260. Modern American Novel (Not offered 2008-09). This course examines major developments in the American novel from the turn of the twentieth century to 1960, including such subjects as traditional and experimental fictive forms; the relationships of science, technology, and religion to the literary imagination; the experience and aftermath of war; the impact of psychology and psychological thinking; the rise of urbanism; the rise of feminism; and the impact of racism. Included may be novels and short story collections by Henry James, Anderson, Wharton, Cather, Faulkner, Fitzgerald, Hemingway, Flannery O'Connor, Wright, Salinger, and/or others. Gen Ed: Am-L

261. American Fiction Since 1960 (Winter, Marten). (Cross-listed with WGS 371) A consideration of a variety of issues in the development of the American novel after World War II, with emphasis on the fiction of the last three decades. Novelists read will include Saul Bellow, Vladimir Nabokov, Don DeLillo, Tim O'Brien, Louise Erdrich, Toni Morrison, Chang-rae Lee, Mona Simpson, Michael Chabon, and Robert Gold. Topics will include the novel and the American sense of place, representations of the immigrant experience, American pop culture and American fiction, the novel in the "nuclear age," definitions of the self, fiction and war, the novel and the sense of the past, the novel as experiment, and film and fiction. Gen Ed: Am-L

262. American Regionalism (Not offered 2008-09). This course examines authors and works of fiction that pay particular attention to region and place as sources of identity. We will examine writers from various distinct American regions — New England, the South, the Midwest, the Plains, the Southwest, California. Writers will include Thoreau, Twain, Hamlin Garland, Willa Cather, Mary Austin, Sherwood Anderson, Flannery O'Connor, Rudolpho Anaya, and Joan Didion and others. Gen Ed: Am-L

263. European Novel in Translation (Not offered 2008-09). Readings of selected masterpieces from 19<sup>th</sup>- and early 20<sup>th</sup>-century Continental fiction — works by Stendhal, Flaubert, Dostoyevsky,

Tolstoy, Kafka, Mann, Proust. Explores the authors' social, political, and philosophical environments. Gen Ed: Eu-L

264. Novels of Education (Not offered 2008-09). 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. Gen Ed: Eu-L

265. Governess Tales (Not offered 2008-09). (Cross-listed with WGS 347) 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. Gen Ed: Eu-L

266. Detective Fiction (Not offered 2008-09). This course investigates detective fiction's emergence and popularity in late nineteenth-century English literature and places the birth of the genre in its social and cultural contexts. We read prominent Victorian writers such as Dickens and Collins as well as canonical detective fiction writers such as Conan Doyle and Poe. How does the rise of the detective novel intersect with historical conditions of Empire, gender relations, and social policy? Does the spread of detective fiction signal late Victorian England's need to patrol destabilizing forces, both domestic and foreign? Gen Ed: Eu-L

267. Philosophical Fiction (Fall, Kuhn). 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. Gen Ed: Eu-LS

268. Contemporary African Fiction (Not offered 2008-09). This course looks at a selection of English language fiction from Africa, and about Africa. We will focus on how a wide variety of African writers use the English language to create viable African worlds. What do you break apart, keep, subvert, rearrange, and mimic to make the language your own? Gen Ed: CDA

269. Poetry in the Renaissance (Not offered 2008-09). A study of selected classical poets followed by close attention to their intellectual and aesthetic impact, placed in historical context, on English poets in the sixteenth and seventeenth centuries. Gen Ed: Eu-L

270. Modern Poetry (Spring, Wineapple). Selected poetry from the modern period considered in relation to the major "isms" — modernism, imagism, vorticism, futurism — and the poet's contradictory posture as prophet, exile, and romantic. Poets include W.B. Yeats, T.S. Eliot, Ezra Pound, Wallace Stevens, William Carlos Williams, Elizabeth Bishop, Marianne Moore, others. Gen Ed: Eu-L, AmL

271. British Poetry Since WWII (Not offered 2008-09). Selected poetry written since World War II by poets in England, Scotland, or Ireland, including Philip Larkin, Charles Tomlinson, Thom Gunn, Jon Stallworthy, Ted Hughes, Anne Stevenson, Seamus Heaney, Eavan Boland, John Montague. Topics of discussion may include poetry and politics, poetry and the visual arts, the poet's relation to the past, the poet's sense of place, poetic formalism and poetic experiment, the poet, and the natural world. Gen Ed: Eu-L

272. American Poetry Since 1960 (Not offered 2008-09). 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. Gen Ed: Am-L

273. Irish Poetry (Not offered 2008-09). W.B. Yeats is the crux figure in modern Irish poetry, and in this course we will use him as a lens to examine the whole. We will see how Yeats reinvented (and distorted?) the traditions he inherited, and we will also look at how subsequent Irish poets have sought to define themselves against his vision of Irishness. Stepping out of Yeats's shadow, they have sought

out poetic procedures and agendas of their own, either in relation to the Northern Irish Troubles, the roles of class, gender, and sexuality in Irish life, and the place of Ireland a postcolonial, globalized world. Gen Ed: Eu-L

274. Introduction to Black Poetry (Not offered 2008-09). We will explore the development of African-American poetic voices in North America. Spanning eras, we will nonetheless focus on the work of modern and contemporary poets. 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. Readings and recordings may include poetry from Wheatley, Harper, Horton, Dunbar, H. Johnson, Hughes, Brooks, Sanchez, Baraka, Mullen, Komunyakaa, Morris, Mullen, among others. Gen Ed: Am-L, CDAA

275. Renaissance Drama (Not offered 2008-09). 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*). Gen Ed: Eu-L

276. Modern Drama (Not offered 2008-09). A reading of the work of four master playwrights from the late 19th to mid-20th century: Henrik Ibsen, Anton Chekhov, Bertolt Brecht, and Samuel Beckett, who revolutionized stagecraft with their radical vision of tragedy, comedy, and the human condition. Gen Ed: Eu-L

277. Tragedy (Not offered 2008-09). Selected tragic masterworks from ancient Greece, Elizabethan-Jacobean England, and modern Europe. Focus on tragedy as a grappling with the critical problems of human existence, as a celebration of human greatness, and as a painful meditation on the power of evil. Gen Ed: Eu-L

278. Comedy (Not offered 2008-09). The nature of comedy, as shown in prose fiction and drama. Includes works by Aristophanes, Boccaccio, Rabelais, Shakespeare, Twain, and Kafka. Draws upon the work of various students of comedy (Bergson, Freud, and others) to get some philosophical-psychological understanding of humor. Gen Ed: Eu-L

279. Epic (Not offered 2008-09). An introduction to epic literature from a comparative perspective. Epics have a value that is essentially, not accidentally, historical. Though they come down to us from the ancient world, their orientation is retrospective to begin with (since they take, for their subject, the distant past of their "original" audience). Readings will include *Gilgamesh*, *Exodus*, *The Odyssey*, and *Njal's Saga*. Gen Ed: An-L

280. Satire (Not offered 2008-09). 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*. Gen Ed: Eu-L

281. Romance: Medieval to Modern (Not offered 2008-09). This course follows the development of the romance, from its coming of age in twelfth-century France to its twentieth-century descendants. Gen Ed: Eu-LS

282. Gothic (Not offered 2008-09). (Cross-listed with WGS 229) How shall we define the term "Gothic?" Combining elements of tribal "barbarism" (the Goths) and medievalism (or the "Dark Ages"), Gothic fiction was a very prominent fixture of 18th- and 19th-century literature whose popularity continues to this day. Its pleasure derives from fear or terror, mystery, the irrational or supernatural, and the unconscious; haunted castles, dark villains, ghosts, monsters, and terrorized victims characterize its fictions. This course will explore traditional Gothic literature, its parodies, its heirs and some filmic adaptations. Gen Ed: Eu-LS

283. Autobiography (Spring, Kuhn). "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*. Gen Ed: Eu-LS, Am-LS

284. Gender and Genre (Not offered 2008-09). (Cross-listed with WGS 237) 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. Gen Ed: Eu-LS

285. Film as Fictive Art: American and European Films (Not offered 2008-09). A study of the formal, technical, and ideological elements of selected American films. Gen Ed: Eu-L, Am-L

287. Science Fiction (Winter, Pease) 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. Gen Ed: Am-L

### Author Studies Courses

292. Milton (Not offered 2008-09). 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. Gen Ed: Eu-L

### Advanced Courses

#### Junior Seminars

300. Junior Seminar: Poetry Workshop (Not offered 2008-09). A workshop course for students with some experience and a serious interest in the writing of poetry.

301. Junior Seminar: Fiction Workshop (Spring, Staff). A workshop course for students with some experience and a serious interest in the writing of fiction.

302. Junior Seminar: Post-Colonial Literature and Theory (Not offered 2008-09). (Cross-listed with WGS 225) An introduction to Anglophone writing from or relating to communities in former colonies, with an emphasis on gendered histories of imperialism and resistance. The following topics will be considered: historical and literary representations of post-colonial identities; projects of Orientalism, ethnocentrism, and nationalism; geopolitical differences in colonizing and post-colonial situations; and the relationship of aesthetics to politics. Gen Ed: CDAA, CDEA or CDLA

303. Junior Seminar: Literary Theory (Winter, Kuhn). Developments in modern theoretical approaches to language literature, and culture. Focus on the relationship between various formalist approaches to texts (new criticism, structuralism, and post-structuralism) and more historical or cultural approaches (Marxism, new historicism, and "cultural studies"). Reading will range from Plato and Aristotle to contemporary critics. Gen Ed: Eu-L

304. Junior Seminar: Caribbean Diasporas (Not offered 2008-09). This course will examine the complex histories and literatures of the Caribbean. We will explore the connections between African and Asian diasporas and their location within a Latin American context. By reading works from writers of various ethnicities, this course will discuss the construction of categories of race, gender, empire, and diasporas in the hopes of redefining the "Caribbean." Possible writers include Cristina Garcia, Derek Walcott, Paule Marshall, Julia Alvarez, Charles Johnson, Shani Mootoo, and others. Gen Ed: CDAA, CDLA

305. Junior Seminar: The Brontës (Not offered 2008-09). (Crossed-listed with WGS 305) 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 *The Life of Charlotte Brontë*. We will consider biographical, interpersonal, and intertextual relations alongside questions of gender, class, religious vocation, communal authorship, pseudonymous publication and the cult of genius. Gen Ed: Eu-L

306. Junior Seminar: Bob Dylan (Not offered 2008-09). A close study of the lyrics, music and life of the often prophetic artist who documented, defined and shaped many of our views of the political,

social, philosophical and spiritual history of the United States in the second half of the 20th century. Gen Ed: Am-L

307. Junior Seminar: Chaucer: Troilus and Criseyde and the Shorter Poems (Not offered 2008-09). (Cross-listed with WGS 336) Although we think of Chaucer as the author of the *Canterbury Tales*, in his own lifetime Chaucer's poetic reputation would have been built on an entirely different set of texts. Chaucer's earlier works reflected and shaped the values and anxieties of the international court culture in which he lived and worked. We will read *The Book of the Duchess*, *The House of Fame*, *Anelida and Arcite*, *The Parliament of Fowls*, *The Legend of Good Women*, and *Troilus and Criseyde*. Gen Ed: Eu-L

308. Junior Seminar: Chaucer: *Canterbury Tales* (Fall, Doyle). If Chaucer is "the father of English poetry," the *Canterbury Tales* is the first poem in the modern tradition of English literature. We will read the *Canterbury Tales* in the light of its status as an originary text, with attention to issues of history, subjectivity, gender, and authorial identity. Gen Ed: Eu-L

309. Junior Seminar: Salman Rushdie (Not offered 2008-09). A reading of novels and essays by one of the most internationally (in)famous writers of our times, an Indian writer who seems to typify contemporary cosmopolitanism and migration. From the children's book *Haroun and the Sea of Stories* to the postcolonial theorizing of *Imaginary Homelands* to his novel set in cyber New York, *Fury*, we will study a variety of genres and themes as well as the commonalities between the works. Gen Ed: CDEA

310. Junior Seminar: Harlem Renaissance (Not offered 2008-09). In this course, we will examine the literature and social context of what is now known as the Harlem Renaissance, 1918-1940. This period was a time of vital ongoing literary and social activism; it was marked by an increase in the publication of anthologies, periodicals, and books by African Americans. The kinds of questions we will explore include the relationships between literature and social politics, cultural collection, community, and representation. We will explore the extent to which visual representation reflects, competes with, or complements the written form. Gen Ed: Am-LS, CDAA, LCC

311. Junior Seminar: Irish Literature and Sexual Identity (Winter, Bracken) This course will examine a number of Irish literary texts, focusing on issues relating to gender and sexuality in the post-colonial culture of 20th century Ireland. We will be looking at the ways in which traditional configurations of gender and sexuality are destabilized in these texts, operating as a response to conservative prescriptions of nationalist Irish identity. Attention will be paid to representations of the body, and the manner in which these representations are connected with language and writing. Texts will include James Joyce's *Ulysses* (selections), Kate O'Brien's *As Music and Splendour*, Samuel Beckett's story "First Love", Flann O'Brien's *At-Swim-Two-Birds*, Marina Carr's *Portia Coughlan* and Eavan Boland's *Outside History*. Gen Ed: Eu-L

313. Junior Seminar: Feminist Literary Study (Not offered 2008-09). This course will provide an introduction to the key issues, debates, and texts in feminist literary studies. We will pay special attention to the intersections between race, class, gender, and sexuality in literary and cultural texts and the ways in which feminist literary theory and criticism challenge and uphold these categories. Possible writers include Virginia Woolf, Adrienne Rich, Audre Lorde, bell hooks, Judith Butler, and others. Gen Ed: Eu-L, Am-L

316. Junior Seminar: The Independent Press and Contemporary Poetry (Not offered 2008-09). An examination of the importance of independent (little, literary) presses and journals on the development of American poetry. Writers will include William Carlos Williams, Robert Creeley, Alice Notley, Paul Blackburn, and Eleanor Lerman. Gen Ed: Am-L

317. Junior Seminar: The Grotesque in Modern Literature and Art (Not offered 2008-09). Thomas Mann once noted that "the striking feature of modern art is that it sees life as tragic-comedy[and that] the grotesque is its most genuine style." This class will explore the nature of grotesque art-art which blends elements of terror and ugliness with humor and beauty while presenting a world at once familiar and alien. The course will study writers and visual artists who have helped to define the genre for our time, in America, in Europe, in Latin America: fiction by such writers as Sherwood Anderson, Nathanael West, Flannery O'Connor, Carson McCullers, Joseph Heller, Franz Kafka, Gunter Grass, Gabriel Garcia Marquez; poetry by Ted Hughes, Allen Ginsberg, others; work by visual artists from Schiele and deKooning to Diane Arbus; films by Woody Allen and the Coen brothers. Gen Ed: Eu-L, Am-L

318. Junior Seminar: Literature of the American South (Spring, Pease) The literary wealth of the American South is rooted in the region's history and in its diverse cultures, and exploring them will be a prominent part of this course. Students will get a chance to sample many Southern literary flavors:

works by Mark Twain, Eudora Welty, Flannery O'Connor, Alice Walker, John Kennedy Toole, Richard Wright, William Faulkner, and Tennessee Williams. Discussions and reading will focus on both the regional and the universal aspects of Southern Literature, its ghosts and stereotypes, as well as its many original voices. To make for a richer learning experience, movies and music will also be a part of this course.

319. Junior Seminar: Emily Dickinson (Spring, Wineapple). A very close reading of the dense and highly original poetry of Emily Dickinson in the context of her contemporaries (Hawthorne, Whitman, the Brownings), her region (New England), her life (largely reclusive), her friends (myriad), her gender (self-conscious), her influence (on modern poetry) and the various issues (transcendentalism, abolition, feminism, fame) swirling around, and in, her work. Gen Ed: Eu-L

320. Junior Seminar: Blake (Winter, McCord) A consideration of the distinctive interdisciplinary achievement of William Blake, as poet, philosopher, radical theologian, illustrator, and artist. The class will study most all of Blake's "illuminated books" as composite works in which text, design, and illustration work together to communicate possible meanings.

321. Junior Seminar: Poe and His Progeny (Fall, Selley). A reading of the short stories and novel, and possible some poetry and literary criticism, of a major figure of American Romanticism. Although sometimes identified wrongly with his drug-addicted, raving homicidal narrators, Poe was in fact an astute commentator on the dark side of American individualism and self-reliance. The course will also consider Poe's "progency"—illustrators, filmmakers, and especially authors who owe Poe a debt. Poe invented the modern detective story and modern science fiction. He influenced the French symbolist poets and a who's who of American writers, including Melville, Bierce, Fitzgerald, Flannery O'Connor, and Singer. His influence even extends to popular culture; he has the distinction of having had his poem *The Raven* recited on *The Simpsons*. Gen Ed: Am-L

## Senior Seminars

400. Senior Seminar: Poetry Workshop (Not offered 2008-09). An advanced workshop course in the writing of poetry.

401. Senior Seminar: Fiction Workshop (Not offered 2008-09). An advanced workshop course in the writing of fiction.

402, 403. Senior Seminar: Honors Thesis Seminar I & II (Fall, Lewin; Winter, Lewin). 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.

404. Senior Seminar: Leo Tolstoy (Fall, Heinegg) A reading of *War and Peace* along with some of his shorter masterpieces. The course will survey Tolstoy's astonishing career as artist, prophet, and impossible person. Gen Ed: Eu-L

405. Senior Seminar: Hughes and Hurston (Winter, Lynes) Langston Hughes and Zora Neale Hurston shared a literary life. When Hughes died in 1967, he was well-known as a celebrated artist and activist. When Hurston died in 1960, she was buried in an unmarked grave: known by few, celebrated by even fewer. Through our explorations of their lives and their texts, we will begin to know the story of how Hurston was recovered by Alice Walker, how both Hurston and Hughes have come to represent African American literature, and how they both infused American culture with African American folk forms and literary traditions. In this course, we will read their primary works of poetry, ethnography, short stories, drama, and essays; we will put their primary works into context with the critical readings of those works. For each artist, we will read the reception and criticism of their primary works. Readings will likely include Zora Neale Hurston's autobiography *Dust Tracks on the Road*, her novels *Their Eyes Were Watching God* and *Jonah's Gourd Vine*, her ethnography *Mules and Men*, and selected short stories and essays; Langston Hughes's autobiography *The Big Sea*; *Complete Poems*; selected short stories, plays, and essays. We will also read letters between Hurston and Hughes, along with the play (*Mule Bone*) that ruptured—but did not destroy—their close friendship. Critics may include: Richard Wright, Cheryl Wall, Houston Baker Jr., Akasha (Gloria) Hull, and others. GenEd: Am-LS, CDAA, LCC

406. Senior Seminar: Jane Austen (Spring, Doyle) Virginia Woolf remarked that she envied anyone who had Jane Austen to read for the first time. In order to understand such a recommendation,

## 100 / English

students will explore the contexts of the novels – particularly the architectural, horticultural, and sartorial – within which the characters are developed in economic, intellectual, and ethical terms. These contexts are also central to Austen’s project of exposing the tension between a prevailing social order and the opportunities or lack thereof for women, another key focus in the course. Moreover, the plot has thickened since Woolf made that pronouncement: the recent spate of films made of the novels – *Persuasion*, *Sense and Sensibility*, *Emma*, *Mansfield Park* and, of course, *Pride and Prejudice* (some of which have seen celluloid/video more than once) – offers a new approach to reading, one that helps us identify the richness of Austen’s original novels; viewing several of the film versions, we will compare the quite varied ways in which directors have tried to adapt the texture and complexity of Austen’s vision to the screen. Gen Ed: Eu-L

Independent Study – English Honors  
295H-296 H. Sophomore Honors Project I & II

Independent Study & Senior Thesis (non-Honors)  
490-491. Independent Studies Directed reading and research on arranged topics. By permission of department chair, after a petition submitted in the fifth week of the previous term.  
496-497. Senior Thesis Two-term senior thesis.

# 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 aspects of environmental issues. Completion of this minor will not qualify graduates to practice as environmental engineers, but will help them contribute to design teams working in these areas. Students must complete Math 112 or 113 and Physics 110 or 120 to complete this minor.

Requirements for the minor: ENS100: Introduction to Environmental Science and Policy, and five courses from the following list of electives:

- ENS 200: Energy
- ENS 208: Waste Management and Recycling
- ENS 209: Renewable Energy Systems
- ENS 250: Water Resources and the Environment
- ENS 252: Environmental Geotechniques
- ENS 253: Environmentally Friendly Buildings
- ENS 307: Hydrology
- ENS 310: Environmental Engineering

See Environmental Science and Policy for a description of these courses.

Program Directors: Professor Jewell, (Engineering, Environmental Science and Policy).

## Environmental Science and Policy

The ESP program is focused on students with an interest in the science 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 ESP program choose either a BS degree in Environmental Science or a BA degree in Environmental Policy. The BS degree emphasizes the biological, chemical, geological sciences, and also physics and engineering. The BA degree emphasizes the social sciences and humanities, and there is considerable overlap between these two tracks. All students take a common introductory course, a core of between 8 and 11 required courses, and 4-6 courses that define an area of concentration. During the senior year, students complete 2 terms of independent research, and participate in a senior seminar.

### Environmental Science

Includes ENS 100, between 11 and 13 science courses; 2 math/statistics courses; 2 policy courses; senior seminar, and 2 thesis credits, for a total of 18-20 courses. Specific requirements include completion of A-D below:

A. 8-10 required core courses (ENS 100; BIO 102; BIO 101 recommended; BIO 315 or 320 or 324 or 350T; CHM 101, CHM 102 or 110; GEO 101, 102, or 107; GEO 203 or 204; MTH 110; MTH 104 or 112)

B. 2 environmental policy courses (ECO 228, HST 335, PHL 273, PHL 274, SOC 270, 358T, 359; 450.)

C. 6 upper level science courses in one of five areas of concentration (no more than 4 courses from any one department except for Environmental Engineering and Technology students; no double counting from A-C, above):

- Ecology (BIO 256T, 257, 315, 320, 322, 323, 324, 325, 328, 350, 350T, 351, 352T; GEO 202, 254, 300, 301)
- Water Lakes and Oceans (BIO 328, 352T, CHM 231, 240, 340; GEO 207, 301, 302, 304; ENS 250)
- Global Climate Change (BIO 257, 315, 320, 323, 324, 328, 350T; CHM 231, 240; GEO 109, 254, 300, 301, 302, 304)
- Energy and Environmental Physics (PHY 110 and PHY 111; or PHY120 and PHY 121; or IMP 111-113; and 4 from the following: ENS 200, MER 471; PHY 122, 123, 220, 300, 310).
- Environmental Engineering and Technology (PHY 120; and 5 from the following: MER 231, ENS 200, 208, 209, 250, 251, 252, 253, 307, 310, 370, GEO 203, 204)

D. Senior Seminar (ENS 460)

E. 2 terms of thesis research (ENS 498 and 499)

### Environmental Policy

Includes ENS 100, 4 core policy courses, 1 quantitative method spatial analysis; 3 required science courses; 4 upper level policy courses; 1 environmental seminar; 1 senior seminar; 2 thesis credits for a total of 17 courses. Specific requirements include completion of A-G below:

A. introductory course (ENS 100);

B. 4 required policy courses (ECO 228; and 3 from: HST 335; PHL 273, 274, PSC 272, SOC 358T, 359)

C. 1 quantitative methods and spatial analysis course (one course from ECO 243; MTH 104; SOC 300; or GEO 203 or 204)

D. 3 required science courses (BIO 102 or 113; and BIO 320 or 350T or 324; and GEO 100 or 102)

E. 4 upper level policy courses in one of four areas of concentration (no double counting from A-D, above; up to 2 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 Director of the Environmental Science and Policy Program; specific internships include: ANT 232T, 490T; ECO 390; PSC 277; PSC 279T; SOC 385):

- Environmental Law and Management (ENS 208, HST 335; PHL 273, 274; PSC 264, 273; SOC 240, 270, 358T, 359)

## Environmental Science and Policy / 103

- Environmental Problems and Response (ANT 241; EGL 251; ENS 208; HST 335; PHL 273, 274; SOC 202, 270, 359, 370; TAB 355T)
- Marine Studies (BIO 256T, 328, 352T; SOC 358T, 359, TAB 355T)
- Energy and Sustainability (BIO 322, CHM 101; ENS 200, 208, 209; PSC 272, SOC 359; TAB 333T)

F. Environmental Seminar (SOC 450)

G. Senior Seminar (ENS 460)

H. 2 terms of thesis research (ENS 498 and 499)

Minor in Environmental Science and Policy: Includes ENS 100, 3 science courses, and 3 policy courses. Science courses must be selected from: BIO 320, 322, 323, 324, 328; CHM 101; ENS 200, 208, 209, 250, 251, 252, 253, 307, 310, GEO 102, 104, 107, 108, 109, 202, 203, 204, 207, 252, 300, 301, 302, 304, 355T; no more than 2 courses may be taken from any one Department and no more than one course may be taken at the 100 level. Policy courses must be selected from: ANT 241; ECO 228, ENG 251; ENS 208, HST 335; PHL 273, 274, PSC 272, SOC 358T, 359, 450; no more than 2 courses may be taken from any one Department.

Requirements for Honors: The major requirements as specified above are required, as are the GPA requirements of Union College described elsewhere in this catalogue.

Program Director: Professor Rodbell (Geology)

Program Advisors: B. Boyer, Corbin, LoGiudice, Rice, (Biology); Hagerman, Macmanus-Spencer, (Chemistry); Kenney (Economics); Cockburn, Frey, Garver, Hollocher, Shaw (Geology); Morris (History); Wilk (Mechanical Engineering); Ghaly, Jewell, Mafi (Engineering); Kaplan (Sociology).

100. Introduction to Environmental Studies. (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.

200. Energy. (Winter, Shaw,) 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.

201. Nuclear Technology in War and Peace: A Study of Issues and Choices. Explores the technology of nuclear weapons and nuclear energy for electric power generation. Associated problems of nuclear weapons proliferation and technological alternatives are considered.

208. Waste Management and Recycling. (Fall, Ghaly) Waste Management: This course will introduce students to various sources of solid waste materials including hazardous and non-hazardous 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 non-recyclable 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.

209. Renewable Energy Systems. (Spring, Wilk) 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

## 104 / Environmental Science and Policy

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. Prerequisites: MER 231 or PHY 122.

250. Water Resources and the Environment. (Winter, Jewell) Fluid mechanics as applied to water resources and environmental engineering. Study of pollution in streams, lakes, and reservoirs from point and non-point sources. Introduction to hydrology, water supply development and treatment, and wastewater collection and treatment. Prerequisites: Math 112 or 113, and Physics 120.

251. Environmental Science and the Atmosphere. (not offered 2008-09) The study of the atmosphere and air pollution. Fundamentals of the chemical and physical processes associated with the atmosphere. Basic meteorology; sources, effects, and control of air pollution. Global climate change, ozone depletion, acid rain. Air pollution law and air quality management. Indoor air quality. Prerequisite: College-level math and science.

252. Environmental Geotechniques. (Spring, Ghaly) 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.

253. Environmentally Friendly Buildings. (Fall, 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. Prerequisite: open to sophomores and up.

307. Hydrology. (not offered 2008-09) The study of the processes of surface water hydrology; including the rainfall/runoff process, river and stream routing, and reservoir analysis and design. Introduction to drainage system design, culvert design, and groundwater hydrology. Spreadsheets and computer software are used to assist in analysis and design. Four lecture hours per week. Prerequisite: ENS-250 or MER331.

310. Environmental Engineering. (not offered 2008-09) Analysis and design of water supply and wastewater conveyance systems. Study of the physical, chemical, and biological processes involved in water supply and wastewater treatment. Four lecture hours and three laboratory hours per week. Prerequisites: ENS-250 or MER331, and Chemistry 101 or 110.

460. Senior Seminar in Environmental Studies. (Winter) This capstone course for the environmental studies program brings together the expertise and experience of all environmental studies 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: Senior standing (open to all seniors).

490-491. Independent Study in Environmental Studies. Independent work on an environmental topic of particular interest under the direction of a faculty advisor. Prerequisite: Permission of the instructor.

498-499. Research in Environmental Studies. 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. Substantial writing is required for ENS 499 (must satisfy WAC-WS requirements, for which WS credit

## Environmental Science and Policy / Film Studies / 105

is awarded). 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: Senior standing in the environmental studies program and permission of the instructor.

Other courses are listed under their individual departments.

## Film Studies

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.

Program Directors: Prof. Chilcoat (Modern Languages and Literatures), and Prof. Feffer (History)

### Courses

Requirements for the Minor

A minimum of six approved courses from at least two of the following categories: Film History and Culture, Film Theory and Criticism, Film Technologies (see listings below; then 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.

#### I. Film History and Culture

- AAH 220 History of Photography I
- AAH 221 History of Photography II
- ANT 188 Pacific Cultures Through Film
- EGL 244 Asian American Literature and Film (Fall, Tuon)
- EGL 247 Irish Literature and Film (Fall, Bracken)
- EGL 286 Film: The American Western
- GER 402 German Film Studies (Fall, Ricci)
- HST 333 Hollywood Film: An American History
- MLT 201 Chinese Cinema (Also EAS 201)
- MLT 203 Asian American Film and Performance (Also EAS 203 and WGS 268)
- MLT 215 What is French Cinema? (Also FRN 312) (Winter, Chilcoat)
- MLT 273 Re-Viewing Spanish Cinema: From Dictators, Bullfighters and Flamenco to Nationalisms and Globalization
- MLT 281 Screening Identities in Latin American Cinema (Also WGS 220) (Winter, Garcia)
- MLT 286T Gender and Identity in Contemporary Brazilian Cinema
- SPN 302 Open Your Eyes: Spanish Culture through Film since 1929

#### II. Film Theory and Criticism

## 106 / Film Studies

- ANT 111 Ethnographic Film (Fall, Gandsman)
- ANT 160 Photographing Culture
- ANT 240 Culture and Technology
- CLS 231 The Ancient World in Film and Literature.
- EGL 285 Film as Fictive Art: American and European Films
- HST 331 Representing America: United States History in Film (Spring, Feffer)
- MLT 212 Sex Lives and Videotape: Casting Sexuality in French and Francophone Film (Also FRN 402 and WGS 228)
- MLT 261 Cinema, Crimes, and Punishment
- MLT 287 Filming Margins: Cinema Verité and Social Realism in Latin America
- PHL 135 Philosophy in Film (Fall, J. Walker)
- PSC 247 Politics and Film
- SOC 290 Personality, Media and Society
- SPN 402 Dressing Up the Canon: Cross-Dressing in Hispanic Literature and Film (Also WGS 402) (Spring, Garcia)
- SPN 433 Latin American Colonial Crossroads at the Movies (Spring, Mosquera)
- WGS 495 Capstone Course on Women and Gender Theory: Feminist Film (Also PSC 434) (Spring, Marso)

### III. Film Technologies

- AVA 120 Photography I (Fall, Winter, Benjamin)
- AVA 220 Photography II (Winter, Spring, Benjamin)
- AVA 320 Photography III (Spring, Benjamin)
- AVA 160 Digital Art (Winter, Orellana)
- AVA 262 Real and Recorded Time (Spring, Orellana)
- CSC 385 Computer Graphics
- ECE 347 Image Processing
- ECE 370 Engineering Acoustics (Fall, Catravas)

### IV. Film Project or Internship

• IDM 490-492. Interdepartmental Independent Study. May take form of independent film project. Prerequisite: 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.

# Geology

Professor Garver, Chair; Professor Hollocher; Professor Rodbell; Professor Shaw; Assistant Professor Frey; Visiting Assistant Professor Cockburn; Research Professor Fleischer; Research Professor Finks.

Requirements for the Geology Major: Twelve courses in the department including: one of Geology 100, 102, 105, 106, 107, 108; one of 101, 103, 104, 208; one of 303, 300, or 301, each of 200, 201, 202, 250, 253, and 405, and three elective geology courses. Also required are two terms each of: mathematics (or equivalent such as Math 113); chemistry; and biology or physics. 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. Senior Geology majors may not take these introductory courses for major credit. A senior thesis is the final product of 405, which may be a research thesis (required for honors) if accompanied by senior level research (495-498). Only one senior level research credit may count toward the three 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: 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 one term of 495-498 (independent research with a faculty member) and 405. Only one 495-498 credit may count toward the three geology electives.

Requirements for Interdepartmental Majors: Interdepartmental majors will follow the guidelines described elsewhere in this catalog. Students taking geology as part of an interdepartmental major should take any introductory level course at the 100 level, plus any other geology courses needed 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 the Minor: A minor in geology requires six courses including any introductory level course at the 100 level, 200, and any four electives numbered higher than 200. All prerequisites apply.

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.

100. Physical Geology (Fall; Hollocher). Examination of how our dynamic planet works including plate tectonics, how geologic age is determined, the processes that form the stunning variety of rocks we see at the Earth's surface, the development of the even more stunning variety of landscapes we see, and many topics of contemporary interest including floods, the nature of underground water resources, coastal erosion, earthquakes, interpreting topographic maps for land use purposes, and climate change. No prerequisites, GenEd lab science credit SCLB.

101. The Earth and Life Through Time (Winter; Garver). The Earth's dynamic history and evolutionary changes over the last 4.5 billion years. Includes 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 development of basins, sedimentology and depositional environments, and the occurrence and use of coal, oil and gas. No prerequisites, GenEd lab science credit SCLB.

102. Environmental Geology (Spring; Rodbell). 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. No prerequisites, GenEd lab science credit SCLB.

103. Great Moments in The History of Life (Spring; Shaw). This course examines major "events" in the development of life on Earth including the origin of the chemical elements that make up our

## 108 / Geology

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. No prerequisites, GenEd science credit SCIE.

104. Global perspectives on Energy. (Spring, Shaw) This course addresses the geologic factors important in energy supply and the impacts associated with energy use. In addition to discussing the various non-renewable and renewable energy resources, constraints on energy production (including physical laws, environmental effects, political and economic factors) will be examined for each. Students will learn how to access data related to energy resources and incorporate it into an analysis of a particular problem associated with energy use. No prerequisites, GenEd science credit SCIE.

106. Restless Oceans (Not offered 2008-09). A survey of the physical, chemical, and biological. Involves an examination of the present ocean basins including important sea floor features, plate tectonic concepts, ocean currents and the forces driving them, oceanic sedimentation and the climate records they hold, the role of the oceans in climate change including the Ice Ages, coastal processes and sea level change, biological productivity, and the ocean fishing and minerals industries. No prerequisites, GenEd science credit SCIE.

107. Natural Disasters (Fall; Frey). Geology as it specifically relates to geologic hazards affecting people and society. An introduction to the geologic processes causing floods, earthquakes, volcanoes, landslides and other natural hazards. 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. No prerequisites, GenEd science credit SCLB.

108. Earth Resources (Fall, Shaw). 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. No prerequisites, GenEd lab science credit SCLB.

109. Global Climate Dynamics (Winter: Cockburn). Climate change has become one of the key scientific issues of our time. This course examines climate change on different time scales (years to millions of years), and focuses on the causes of climate change, both natural and anthropogenic. We also explore the role media has played in shaping public opinion on climate change. Lectures explore the principle scientific aspects of climate dynamics, and the laboratories investigate some of the major scientific findings that support the conclusions presented in consensus scientific reports that shape the geopolitical dialogue. No prerequisites, GenEd lab science credit SCLB, 5 labs as scheduled.

200. Mineral Science (Winter; Frey). 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: Chemistry-101; weekly lab.

201. Stratigraphy and Depositional Environments of New York (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. Prerequisites: Any introductory geology course; weekly lab.

202. Origin and Evolution of Landscapes (Fall; Rodbell). The 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 river, lake, wind, and limestone cave systems, the processes of chemical and physical weathering, and the relationships between landforms and tectonic and climatic controls. Prerequisites: Any introductory Geology course; weekly lab.

203. Introduction to Remote Sensing (Not offered 2008-09). An introduction to the techniques of observing the Earth's land, ocean, and atmosphere from air- and space-born sensors. The course focuses on the application of remote sensing to geology, biology, land use, and the environment, and also covers technical issues affecting the acquisition, processing, and analysis of images, the properties of Earth's surface materials affecting remote sensing, and the range of instruments used to observe the Earth and other planets. Prerequisites: Any introductory geology course or permission of the instructor; weekly lab.

204. Geographic Information Systems (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 archaeology, 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. Two class hours and two lab hours weekly. Prerequisites: A good background in the use of modern computer software.

207. Ground and Surface Water Geology (Not offered 2008-09). Hydrologic and engineering aspects of ground and surface water, including an introduction to the analysis of water quality. Course addresses characteristics of water movement, engineering applications of the basic equations of the mechanics of water flow, and the transport of contaminants in water. The course emphasizes quantitative approaches to groundwater production and management and practical applications in water supply and remediation of contaminated aquifers. Prerequisite: A good background in math, science, or engineering, or any introductory geology course; weekly lab.

209. Field Geology (Not offered 2008-09). Study of the geology of a selected area will be followed by an extended field trip to the area to examine the important geologic features. Areas will vary from year to year and may include the Grand Canyon, Colorado Plateau, southern Appalachians, Canadian mineral districts, Cascade volcanoes, glaciated Rocky Mountains, and others. There may be additional costs associated with field trip expenses. Prerequisite: Any introductory geology course and permission of the instructor.

250. Origin of Igneous and Metamorphic Rocks (Spring; Staff). 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: Geology 200; weekly lab and three all-day trips.

252. Environmental Geotechniques (also ENS 252). (Spring; Ghaly). 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.

253. Structural Geology (Spring; Garver). 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: Any geology course numbered 200 or higher, or permission of the instructor; weekly lab.

254. Global Climate Change (Not offered 2008-09). Climate is fundamentally relevant to modern

## 110 / Geology

and ancient societies. Global warming is occurring today, and whether it is driven by human activities (e.g., CO<sub>2</sub>, CH<sub>4</sub> emissions) or by natural climate cycles can only be determined by understanding natural climatic variability. Fortunately, there are many tools, natural climatic records, that 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. Lectures will be punctuated by numerous class meetings with discussion of current climate literature, and specific issues relevant to global climate change. Prerequisite: Any introductory level geology course.

255. Volcanology (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: any introductory geology course. Weekly lab.

300. Glacial and Quaternary Geology (Not offered 2008-09). 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: Geology 202.

301. Lakes and Environmental Change (Winter; Rodbell). Modern limnology and the record of environmental change as recorded in lake sediments. Includes records from proglacial lakes in North America, and interpretation of proxy paleoenvironmental indicators preserved in lake sediments from North America, Europe, and the Southern Hemisphere. Prerequisites: any introductory geology course and Biology 110, 112 or 320; or permission of the instructor; weekly lab.

302. Geochemical Systems and Modeling (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, stable and radioactive isotopes, 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 system using the acquired data. Clear scientific writing is an important component of this course. Prerequisites: Chemistry 101; weekly lab.

303. Introduction to Geophysics (Not offered 2008-09). 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: Physics 100 or 120; weekly lab and field exercises.

304. Carbonate Sedimentology (Not offered 2008-09). 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. Prerequisites: Option 1: i) Any Geology course at 100 level; and ii) Geology 201 or 202 (may be concurrent) or permission of instructor. Option 2: i) Any Geology course at 100 level; 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.

355T. Living on the Edge (Offered June 2009 – Alaska; Garver, Cockburn). 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. Prerequisites: Any introductory geology course. Mini-term abroad

356T. Volcanoes and Society (Not offered 2008-09). 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. Prerequisites: Any introductory level geology course and permission of the instructor. Mini-term abroad.

405. Geology Senior Seminar (Winter; Frey). Senior writing course required of all majors, for which a senior thesis the final product. The senior thesis associated with this course may be a research thesis (required for honors) if combined with senior level research (495-498). Prerequisites: Geology major and senior standing. WAC: WS

490-494. Independent Study in Geology (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: Permission of the instructor.

495-498. Research in Geology (Fall, Winter, Spring; Staff). Geological research under the direction of a faculty member. One term required for honors. Only one term can be counted toward the three geology electives. Prerequisite: Permission of the instructor.

## History

Professor Meade, Chair; Professors Berk, Sargent, Walker, Wells; Associate Professors Cramsie, Feffer, Foroughi, Madancy; Assistant Professors, Aslakson, Morris, Peterson; Lecturer Lawson, Visiting Assistant Professors Brennan, Paik

Requirements for the Major: Twelve courses including a five-course core; at least one course on the period before 1700; at least one course each in US and European history; at least one course from the following areas: Africa/Middle East, Asia, Latin America; two-300 level courses, a seminar, and a two-term senior project.

Students will choose a five-course core in Africa/Middle East, Asia, Europe, Latin America, or US, or in 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 no later than the start of Winter Term of the Junior year.

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. 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 seminar before beginning the thesis. Classics 121 and 125 may be counted toward the history major, but not toward a core.

Requirements for the Interdepartmental Major: Eight courses, including the core requirement or thematic concentration for majors, the seminar, one 300-level course, and the senior thesis. Students must complete a seminar before beginning the thesis. Interdepartmental majors may count one term of the senior thesis toward the field requirements.

Requirements for the 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.

Departmental Honors: To be eligible for departmental honors, a student must fulfill the following requirements: (1) a minimum index of 3.30 in history; (2) completion of one history seminar with a grade of “B+” or better; (3) a grade of “A minus” or higher on the senior project; and (4) 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.

Requirements for Secondary School Certification in Social Studies: The College recommends that any undergraduate seeking New York State secondary teacher certification should consider attending the five-year Master of Arts in Teaching program at Union Graduate College in their fifth year. To prepare for that program, students are required to take PSY 246 and EDS 500A, B (Field Experiences) in their junior or senior year. Students must complete the history major, including at least one course each in United States history, European history, Latin American, Asian, or Africa/Middle East. In addition, students must take at least one course from each of the Departments of Economics, Political Science, and Sociology or Anthropology (see your departmental advisor for recommended courses from each of these disciplines).

Interdepartmental Majors in History Seeking Secondary School Certification: The College recommends that any undergraduate seeking New York State secondary teacher certification should consider attending the five-year Master of Arts in Teaching program at Union Graduate College in their fifth year. To prepare for that program, students are required to take PSY 246 and EDS 500 A, B, & C (Field Experiences). Students must take eight courses from the Department of History and must meet the field, seminar, and project requirements in history. They must complete the other half of their interdepartmental major with the Department of Economics, Political Science, Sociology, or Anthropology, and they must take at least one course from two of the social science departments in which they are not majoring.

Africa/Middle East

107. Africa to 1800 (Not offered 2008-09). 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. GenEd: CDAA,LCC

108. Africa since 1800 (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 post-colonial 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. GenEd; CDAA, LCC

184: Making of Modern India: (Winter; Paik). To examine the history of South Asia since 1880. 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. The culture of colonialism, the nature of the colonial state and the emergence of nationalism are themes which are explored. Thematically, this course explores the making of modern Indian subcontinent in the course of interaction with colonial 'modernity' and the birth of organized nationalist movement. 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.

194. The Modern History of the Middle East (Not offered 2008-09). 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.

195. The Early History of the Jews (Spring; Berk). History of the Jewish people in its first 1600 years from tribal beginnings to the destruction of the second Commonwealth.

286: Women in South Asia: (Spring; Paik). To explore women in the South Asia, particularly in India, Pakistan, and Bangladesh. We will study traditional topics like patriarchy, marriage and family, gender and sexuality, but also explore women as political actors, intellectuals, and professionals. The perspective will enable us to focus on the social and political dynamics of South Asia, as well as the daily activities of ordinary Asian women. We shall move from there to a discussion of the position of women in South Asia, and particularly India, looking at a diverse and wide array of texts.

302. Comparing Muslim Cultures (Spring; Peterson). 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. GenEd: CDAA, LCC

401. Seminar in Africa/Middle East: Islam in Africa (Not offered 2008-09). This course will examine the social, cultural and political history of Islam in Africa during the nineteenth and twentieth centuries. More particularly, we will explore the relationship between Islam and colonialism, Sufism and 'modernist reformers,' Muslim states and slavery, political Islamism and democracy, and the intersection of local and global forces in the constitution of Muslim societies in Africa. How 'African' is Islam? What are the particular itineraries and modes of entry of Islam into the region? How has Islam's political role changed over the past two centuries? How has Islam influenced or transformed social and cultural life?

## 114 / History

The geographic focus is West, North and East Africa with case studies drawn from particular countries. The course will begin by examining the initial spread of Islam into Africa, exploring the trans-Saharan trading system, and medieval Islamic towns and states in Africa. After looking at the role of Muslim states and holy wars during the nineteenth century, we will shift our focus to the colonial period. The course will end with discussions focused on post-colonial and contemporary Africa. GenEd: CDAA, LCC

402 Seminar in Africa/Middle East: French Empire (Not offered 2008-09). 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. GenEd: CDAA, LCC

### Asia

181. East Asian Tradition (Not offered 2008-09). 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. GenEd: CDEA, LCC

182. Modern East Asia (Spring; Madancy). An analytical overview of the major themes and historical processes that shaped China, Japan, and Korea from the nineteenth century to the present. GenEd: CDEA, LCC

281. Modern Japanese History (Spring; Madancy). 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. GenEd: CDEA, LCC

283. The Mao Years (Not offered 2008-09). 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. GenEd: CDEA, LCC

284. Women in China and Japan: Power and Limitations (Also Women's and Gender Studies 226) (Not offered 2008-09). 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. GenEd: CDEA, LCC

285. The Samurai: Lives, Loves, and Legacies (Winter; Madancy). 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. GenEd; CDEA, LCC

380. Special Topics in East Asian History (Not offered 2008-09). Prerequisite: any 100-level or 200-level history course or permission of the instructor. Gen-Ed: CDEA, LCC

381. Asian Encounters with the West: Commerce, Conquest, and Conversion (Not offered 2008-09). Examines the motivations behind the western presence in China and Japan from the seventeenth century to the recent past, and analyzes the impact of the West on the economy, society, politics, and ideology of East Asia. Prerequisite: any 100-level or 200-level history course or permission of the instructor. GenEd: CDEA, LCC

383. The Last Dynasty: The Glory and Fall of the Qing Empire, 1644-1911 (Not offered 2008-09). 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: any 100-level or 200-level history course or permission of the instructor. GenEd: CDEA, LCC

481. Seminar in East Asian History: World War II in Asia (Not offered 2008-09). 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: any 100-level or 200-level history course or permission of the instructor. GenEd: CDEA, LCC

482. Seminar in South Asia: Caste and Caste Conflict in Contemporary India (Spring; Paik). This seminar examines caste and identity in post-independence India, and caste and caste conflict in contemporary India. Through writing and discussion of Ideas and concepts such as rights, identities, modernity, and development, we seek to understand how certain groups are disadvantaged and dispossessed by reason of ethnicity, race, religion, class and language. Attention will be focused on the Untouchables or Dalits in India, the other minorities (like Sikhs of the Punjab or Muslims), and the 1990 agitation by the so-called 'backward castes' for a greater share of government jobs, college positions, and so forth. LCC

### Europe

141. Medieval Europe (Fall; 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.

142. Renaissance and Reformation Europe (Not offered 2008-09). 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.

143. Entrepreneurship in Medieval and Renaissance Europe (Fall; Sargent). 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.

145. Early Modern Europe (Not offered 2008-09). European society from the seventeenth century through the Enlightenment, stressing social, economic, institutional, and intellectual developments.

148. Europe Between Two Wars (Not offered 2008-09). 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.

149. The Second World War Era (Winter; 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.

154. Russia in the Imperial Age (Winter; Berk). Major institutional and ideological developments from the time of the first Romanov to the February Revolution of 1917.

155. The Rise and Fall of the Soviet Union (Not offered 2008-09). 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.

156. History of Poland (Not offered 2008-09). 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.

157. Modern Jewish History (Not offered 2008-09). 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.

158. The Holocaust (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.

161. The Making of Ireland (Not offered 2008-09). The social, religious and political forces that have shaped the history of Ireland from its origins to the present. Course topics include changing Irish identities, including those of modern Irish women, the global movement of the Irish people, the struggle for independent Ireland and the Troubles, and the challenges facing Ireland following the peace accords of the 1990s. It examines these questions through historical, literary, and artistic sources.

162. Modern Scotland (Not offered 2008-09). 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

240. The Crusades: Christianity and Islam in Conflict (Not offered 2008-09). 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.

241. Mystics, Magic, and Witchcraft in Medieval and Early Modern Europe (Not offered 2008-09). A survey of learned and popular beliefs about the influence of supernatural and occult powers on individuals and society.

242. The Scientific Revolution, 1400-1700 (Not offered 2008-09). 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.

253. Physics and Politics (Also Physics 53) (Not offered 2008-09). 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. GenEd: SCIE

254. Human Evolution and Prehistory (Also Anthropology 174, and Biology 89) (Not offered 2008-09). A historical perspective on, and our current biological understanding of, human evolution and early human societies. GenEd: SCIE

261. Tudors and Stewarts, 1509-1625. (Fall; Cramsie). The fates of England, Ireland, Scotland, and Wales in a dramatic age of religious conflict and reformation. Particular attention is given to the Renaissance monarchies of Henry VIII and the Scottish Stuarts, the queenships of Mary Queen of Scots and Elizabeth I, the terrible effects of religious upheaval and Tudor imperialism on the peoples of Britain and Ireland, and the accession of Mary Stuart’s son, James VI & I, the first king of Great Britain and Ireland.

262. British Revolutions, 1625-1745: (Spring; Cramsie), This course focuses on how the Stuart dynasty failed to manage religious bigotry, ethnic rivalry, and political divisions in Britain and Ireland during a tumultuous and bloody century. Special attention is given to the troubled legacy of James VI & I and Charles I’s reign over a ‘united’ Britain, the ethnic wars of the 1640s which led to the execution of Charles, how the conflicts of the 1640s and 1650s haunted the second half of the century, the revolutions of 1688-1691, and the formal union of England and Scotland in 1707 which remained unsettled until the defeat of the pro-Stuart Jacobites in 1745.

340. Special Topics in European History: (Not offered 2008-09). Prerequisite: any 100-level or 200-level history course or permission of the instructor.

351. The French Revolution (Not offered 2008-09). Covers the political, social, and cultural events in France from 1789-1815. Focuses on problems of interpretation through the study of significant secondary texts, and on primary research utilizing a substantial number of period documents in translation. Prerequisite: any 100-level or 200-level history course or permission of the instructor.

353. Modern European Ideas (Spring; Walker). This course will survey important ideas in modern European history, including the writings of Jean Jacques Rousseau, Karl Marx, Charles Darwin, Friedrich Nietzsche, Sigmund Freud, Albert Einstein, Jean-Paul Sartre, Simone de Beauvoir, and Michel Foucault. Prerequisite: any 100-level or 200-level history course or permission of the instructor.

361. The British Empire: (Not offered 2008-09). 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? 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. Prerequisite: any 100-level or 200-level history course or permission of the instructor.

362. “Black Britain:” Race and Ethnicity in British History (Not offered 2008-09). With the collapse of the British Empire, the rise of nationalist parties in Scotland and Wales, and post-war migration, Britain suffers from an identity crisis. What is British history and what does it mean to be British?

Through an analysis of history, literature, sit-coms, and film, this course explores the multi-ethnic British past and how widespread ignorance of that past fuels racism in Britain today and shapes the struggles that define Britishness. Prerequisite: any 100-level or 200-level history course or permission of the instructor.

363. Women in British History (Also Women's and Gender Studies 341) (Winter; Cramsie). This course is built around a changing collection of case studies that examine women's lives in Britain, Ireland, and the Empire. It studies traditional topics like patriarchy, marriage and family, and sexuality, but also explores women as political actors, intellectuals, spiritual beings, workers, and professionals. The course format emphasizes the creative and critical examination of topics through active reading and discussion. Prerequisite: any 100-level or 200-level history course or permission of the instructor.

431. Seminar in European History: Undiscovered Britain (Fall; Cramsie). 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, their own island was an undiscovered country 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 by 1800. What was the experience like for those British 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? Students in this seminar 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 both a research paper and make an oral presentation of their findings.

441. Seminar in European History: National Socialism (Not offered 2008-09).

### Latin America and the Caribbean

171. Europe and the Americas in the Era of Columbus (Also Women's and Gender Studies 161) (Fall; Meade). 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. GenEd: Eu-C, Am-C, CDAA, CDLA, LCC

172. Reform and Revolution in Latin America and the Caribbean (Also Women's and Gender Studies 163) (Not offered 2008-09). 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. GenEd: Am-C, CDAA, CDLA, LCC

270. History of Latin American Popular Culture (Not offered 2008-09). 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. GenEd: Am-C, CDAA, CDLA, LCC

271. History of Mexico (Not offered 2008-09). 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

## 118 / History

cultural, social, and economic issues, including the Zapatista rebellion, NAFTA, and the changing nature of the borderlands region between Mexico and the USA. GenEd: CDLA,LCC

272. History of Brazil (Not offered 2008-09). A general survey course covering the history of Brazil from the period of the Portuguese conquest, approximately 1500 to the present. GenEd: CDAA, CDLA, LCC

273. The History of the Caribbean and Central America (Not offered 2008-09). Study of the people and cultures of the Caribbean and Central American regions from the fifteenth century to the present. Includes English, French, Spanish, and Dutch settlements. GenEd: AM-C, CDAA, CDLA, LCC

370. Special Topics in Latin American History (Not offered 2008-09). Prerequisite: any 100-level or 200-level history course or permission of the instructor. GenEd: CDLA, LCC

372. History of Latin American Women (Also Women's and Gender Studies 352) (Not offered 2008-09). The changing roles of women in Latin America from the colonial period to the present. The course aims to understand the transformations that have occurred in women's history and the impact of colonialism, imperialism, economic development, and political change on women's work, the sexual division of labor, and male-female relations. The course also seeks to understand the intersection of gender with race, class, and national divisions within societies. Prerequisite: any 100-level or 200-level history course or permission of the instructor. GenEd: CDLA,LCC

471. Seminar in Latin America: Individual in Latin America (Winter; Meade). 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. GenEd: CDLA, LCC

### United States

101. History of the United States to the Civil War (Fall; Brennan). Political, economic, and social developments in the colonial and early national periods.

102. History of the United States Since the Civil War (Winter; Morris). Political, economic, and social developments: continuity and change in modern America.

113. The Origins of American Society (Not offered 2008-09). The evolution of American society from its 17th-century origins through the aftermath of the Revolution.

114. The American Revolution (Spring; Wells). The causes and consequences of the American Revolution (1763-1815).

118. Civil War and Reconstruction (Not offered 2008-09). 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.

120. The Progressive Era and the Great War, 1890-1920 (Not offered 2008-09). The impact of urbanization and industrialization on the creation of the modern United States, 1890-1920.

121. The Depression and New Deal (Not offered 2008-09). 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.

123. Postwar America and the Origins of the Cold War (Spring; Morris). 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.

125. Coming Apart?: America in the Sixties (Also Women's and Gender Studies 153) (Winter; 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.

126. *Since Yesterday: United States History, 1974-2000* (Also Women's and Gender Studies 131) (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.

127. *America in the Vietnam War* (Not offered 2008-09). This course examines America's involvement in what would become the Vietnam War from 1945 to 1975. It explains why Americans tried so hard for so long to stop the spread of Communism in Indochina and why they ultimately failed. As the course progresses, its focus moves from the "high policy" of diplomatic and military strategy to the experiences of ordinary people on all sides of the conflict.

128. *The American Jewish Experience* (Winter; Berk). 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.

129. *History of Sports in America* (Fall; Brennan). 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.

131. *African-American History I* (Winter; Aslakson). 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?" GenEd: Am-C, CDAA, LCC

132. *African-American History II* (Spring; Aslakson). 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. GenEd: Am-C, CDAA, LCC

135. *Latinos(as) in U.S. History* (Not offered 2008-09). 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. GenEd: Am-C, CDLA, LCC

211. *American Indian History* (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. GenEd: Am-C

212. *Women in Colonial and Victorian America* (Also Women's and Gender Studies 250) (Spring; Foroughi) 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. GenEd: Am-C

213. *Women in Modern America* (Also Women's and Gender Studies 251) (Not offered 2008-09). 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. GenEd: Am-C

215. *Revolutions in Americans' Lives* (Not offered 2008-09). Major changes in American population

## 120 / History

patterns will be examined. The effect of these changes on individuals, their families, and American society and history will also be explored.

216. The Writing and Ratification of the Constitution (Not offered 2008-09). A study of the major influences on the US Constitution, how it was written, and how it was adopted.

217. American Folk Music/American History (Spring; Wells). From “Amazing Grace” to “Blowin’ in the Wind,” Americans have composed and sung songs about what matters in their lives. The course will examine folk songs, both famous and obscure, to show their history and historical meaning. GenEd: AM-C

218. Death in America (Fall; Wells). The history of American attitudes, experiences, and practices concerning death from the Puritans to the present.

222. Other Voices: Women in the History of American Ideas (Also Women’s and Gender Studies 204) (Not offered 2008-09). The contribution of women to the development of American intellectual and cultural life, from Charlotte Perkins Gilman to Angela Davis. GenEd: Am-C

223. Twentieth Century American Intellectual History (Spring; Feffer). An overview of the major social and political issues that shaped and unshaped American liberal thought from John Dewey to Andrea Dworkin. GenEd: Am-C

231. The Civil Rights Movement (Spring; 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. GenEd: CDAA, LCC

310. Special Topics in United States History (Not offered 2008-09). Prerequisite: any 100-level or 200-level history course or permission of the instructor.

311. Frontiers in the Americas (Not offered 2008-09). Analyzes the concept of “frontier” as it applies to Canada, Latin America, and the United States prior to 1900. Examines the geographic context of frontier, as well as how various groups of people experience the frontier process. Prerequisite: any 100-level or 200-level history course or permission of the instructor. GenEd: CDLA, LCC

312. History of Women’s Rights in the United States (Also Women’s and Gender Studies 312) (Winter; Foroughi). 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: any 100-level or 200-level history course or permission of the instructor.

322. Slavery and Freedom (Not offered 2008-09). 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: any 100-level or 200-level history course or permission of the instructor. GenEd: CDAA, LCC

331. Representing America: United States History in Film (Spring; 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: any 100-level or 200-level history course or permission of the instructor. GenEd: Am-C

332. Transnational America (Not offered 2008-09). 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: any 100-level or 200-level history course or permission of the instructor.

333. Hollywood Film (Not offered 2008-09). 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: any 100-level or 200-level history course or permission of the instructor.

335. American Environmental History (Not offered 2008-09). 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 pre-colonial times until the present. Prerequisite: any 100-level or 200-level history course or permission of the instructor.

411. Seminar in US History: Socialist Tradition (Not offered 2008-09). With the evolution of American capitalism political ideologies and movements emerged that challenged the fundamental assumptions of private property, unregulated markets, corporate power and imperial ambition. In this course we will read through some of the literature of that American socialist tradition (including anarchist, anarcho-syndicalist, and communist currents in American thought), concentrating on writers and activists from the late 19th through the 20th century, including Eugene Debs, Emma Goldman, William Z. Foster, John Reed, Howard Selsam, Kenneth Burke, Richard Wright, Tillie Olsen, C. Wright Mills, Angela Davis and others.

412. Seminar in US History: Origins of the Constitution (Winter; Wells). A study of the Constitution of the United States from its roots, to its writing, through the struggle for its ratification.

413. Seminar in US History: American Disasters (Spring; Morris). 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.

### Special Topics

105. History and Society: The Emergence and Character of Traditional Civilization (Not offered 2008-09). The Eurasian, African, and American civilizations from their origins to the eighteenth century. The course stresses ecological, political, economic, ideological, and social factors.

191. The Museum: Theory and Practice (Also Anthropology 265) (Spring; Staff). 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.

192. Construction for Humanity (Not offered 2008-09). 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. GenEd: Am-C, Eu-C

193. Science, Medicine, and Technology in Culture (Spring; Walker). A foundation course based on case studies ordered chronologically from prehistory to the present. Each of the sciences (biology, chemistry, computer science, geology, mathematics and physics) and branches of engineering (computer, electrical, and mechanical engineering) will be represented.

203. Judaism/Christianity/Islam (Also 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.

### Independent Study and Senior Projects

295H-296H. History Honors Independent Study (Fall, Winter, Spring).

490-493 (190-192). Independent Study in History (Fall, Winter, Spring).

498-499 (09-199). Senior Project in History (Fall, Winter, Spring).



## International Programs

Union College offers a range of formal resident-study programs in foreign countries. All courses may be used toward meeting graduation requirements for General Education and the major. In the foreign country, the student in most instances lives independently with a family or in an international dormitory and participates in the normal cultural life of the community. A Union faculty member accompanies the group, except in Greece and Japan.

Courses in those programs that emphasize knowledge of the native language ( Brazil, China, France, Germany, Italy, Japan, Mexico, and Spain) include language study and a broad examination of the history, literature, art, and politics of the region. In the Study of National Health Systems, students are engaged in an intensive ten-week field study of health care institutions subsidized by the state in Canada, England, and Holland.

Eligibility for these programs is contingent upon (1) a cumulative index and a preceding term index of at least 2.5 (3.0 for Japan) and (2) certification by the dean of students that the student is well prepared to participate in foreign study. Students must take three courses (four courses in Greece, Japan and Partnership for Global Education programs) 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 (usually the senior thesis).

Terms Abroad courses may not be taken pass-fail or cannot be dropped. Applications and additional information about Union International Programs may be obtained in the Humanities Building, Room 211. Alternate Year Programs include Australia (Tasmania)(Winter 2010); Brazil (Fall 2009); Spain (Winter 2010).

Partnership for Global Education (with Hobart and William Smith Colleges), Fall 2008: Australia, Central Europe, Ireland, Vietnam. For further information, please go to: <http://academic.hws.edu/pge>.

### China

Fall, 2008, in Shanghai. Prerequisite: Chinese 100 preferred, but not required.

Chinese 204T, 205T. The Chinese Language Studied Abroad. An intensive study of modern Chinese with emphasis on speaking.

Chinese 320T. Chinese Civilization. A study of Chinese civilization as exemplified by cultural, social, and political institutions.

Faculty Member in Residence for 2008: Professor Ferry

### Czech Republic

Fall, 2008, in Prague. Students will select four courses from the offerings of the Czech Technical University in Prague. ([www.cvut.cz/en](http://www.cvut.cz/en))

### England

Fall, 2008, in York. Students will select three courses from York St. John University.

Faculty Member in Residence for 2008: Professor McCord

### Fiji

Fall 2008, one course in anthropology recommended, but not required.

ANT 185T: Peoples and Cultures of the Pacific

ANT 232T: ECO 232T: Culture and Entrepreneurship in Fiji

ANT 255T: Culture and Work

Faculty Member in Residence for 2008: Professor Brison

### France

Fall, 2008, in Rennes. Prerequisite: Completion of French 201 or equivalent.

## 124 / International Programs

French 204T-207T. The French Language Studied Abroad. An intensive study of modern French with emphasis on speaking and writing.

French 208T. Contemporary France (Fall term in Rennes).

French 306T. Readings in French and Francophone Culture). France and the French of today as reflected in selected literary works from various genres and periods. Prerequisite: French 121 or permission of instructor. GenEd: Eu-LS

Faculty Member in Residence for 2008: Professor Ndiaye

### Germany

Spring, 2009, in Freiburg and Berlin. Prerequisite: Completion of German 101 or 201.

German 204T. The German Language Studied Abroad I. An intensive study of modern German with emphasis on speaking and writing. Prerequisite: German 101.

German 205T. The German Language Studied Abroad II. An intensive advanced study of modern German with emphasis on speaking and writing. Prerequisite: German 101.

German 300T. German Civilization: Culture, Art, and Architecture. An introduction to the cultural history of German-speaking Europe. GenEd: Eu-S. Prerequisite: German 101.

Faculty Member in Residence for 2009: Professor Ricci Bell

### Greece

Fall, 2008, in Athens. Students will select four courses from the offerings of College Year in Athens. ([www.cyathens.org](http://www.cyathens.org))

### Italy

Spring, 2009, in Florence. Prerequisite: Italian 100 or equivalent.

Italian 104T. The Italian Language Studied Abroad. A continuation of Italian 100. A course in basic skills with emphasis on speaking and conversation.

Italian 315T. Renaissance Italian Civilization. A study of late Medieval and Renaissance art and architecture, which will emphasize the original contexts of the works. Virtually all classroom time will be spent in churches, monasteries, palaces, civic buildings, and public spaces in addition to occasional museum visits.

Faculty Member in Residence for 2009: Professor Ogawa

### Italy (Sicily)

Spring 2009 in Sicily

Italian 104T. The Italian Language Studied Abroad. A continuation of Italian 100. A course in basic skills with emphasis on speaking and conversation.

Terms Abroad 328T. Science Research. Work on a research project with researchers at the National Research Council in Palermo, Sicily. Projects can be chosen from among a large variety in the fields of biology, chemistry, and biophysics. Students will work in small groups closely with faculty and advanced students on ongoing research, learning new techniques and participating in state of the art studies at this national facility. A project report will be written at the conclusion of the work.

Terms Abroad 329T. The Culture and History of Sicily. Through a combination of lecture/discussion and weekend travel, the culture and history of Sicily will be explored. The influence of the Greeks, Romans, Spanish, Normans, Arabs, and others in developing Sicilian culture will be a major part of this course.

Faculty Member in Residence for 2009: Professor Newman

### Japan

Fall, 2008 in Osaka. Preferred: Japanese 100.

## International Programs / 125

Japanese 204T: The Japanese Language Studied Abroad. A continuation of Japanese 100 with an emphasis on speaking.

Three courses from the Kansai-Gaidai University catalogue ([www.kansai-gaidai.ac.jp](http://www.kansai-gaidai.ac.jp))

### Marine Term

Spring 2009, in Bermuda, Woods Hole, and Newfoundland. Prerequisite: One course in either sociology or biology.

Sociology 358T: Marine Policy and the Maritime Environment. An examination of social life in maritime communities and the shaping of national and international marine policies.

Biology 256T: Coastal Biology. Study of the diversity and adaptations of marine organisms in their environment, with emphasis on subtropical, temperate and subarctic communities.

Terms Abroad 355T: Images of the Sea. An examination of environmental, technological, and social issues that are associated with the marine environment.

Faculty Members in Residence for 2009: Professors Kaplan and B. Boyer

### Mexico

Winter 2009, in Cuernavaca. Prerequisite Spanish 203.

Spanish 204T: The Spanish Language Studied Abroad. An intensive study of modern Spanish with emphasis on speaking and writing.

Spanish 209T: Mexican Civilization. A study of Mexican Civilization as exemplified by the art, architecture, literature, and history of Mexico. In addition to lectures and readings, there will be conducted visits to museums and other places of interest.

Spanish 330T: Mexican Women's Contemporary Short Fiction. This course focuses on Mexican women's contemporary short fiction written since the XX century. 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. GenEd: CDLA

Faculty Member in Residence for 2009: Professor Mosquera

### Study of National Health Systems

Summer, 2008. Prerequisites: Completion of the sophomore year, consent of the instructor, and completion of an orientation program conducted on the Union College campus.

Terms Abroad 323T: Health Care Policies and Administrative Structures of the National Health Services of Canada, England, and Holland. An analysis of health care administration and policy in the light of the ideology and economic and social policies of each of these countries.

Terms Abroad 324T: Historical and Cultural Factors in the Department of the National Health Services of Canada, England, and Holland. An analysis of the historical and cultural background surrounding the development of "socialized" medicine in these countries, from the "poor laws" of the Renaissance through the various social and political reform movements of the 19th and 20th centuries.

Terms Abroad 325T: Field Study of Health Care Facilities in the United States, Canada, England, and Holland. A program of site visits to health care facilities in each of these countries, including visits to clinics, hospitals, hospices, geriatrics programs, planning facilities, rehabilitation centers, and psychiatric hospitals.

Faculty Member in Residence for 2008: Professor Weiner

### Independent Study Abroad (ISA)

Students, working with a faculty member or members, design their own study abroad experience

## 126 / International Programs

that can occur anywhere in the world. Examples of an ISA include internships, service learning, language study, or research on a subject of interest to the student. An ISA must take place during the winter and/or spring term. The International Programs Office will provide more information about this program, including how and when to apply.

### Non-Union Programs

The Committee on Study Abroad will approve a limited number of non-Union programs, provided that they address curricular needs that cannot be met by a Union program and take place during winter and spring terms. Normally, programs take place in countries where Union does not have a program. The International Programs Office will be happy to supply more information.

On an occasional basis, Union offers three-week miniterms during the summer and December breaks. Each miniterm is worth one course credit. A miniterm costs \$3,500

EGL-342T	American Southwest Mini-Term
FRN-305T	Mini-Term in Martinique
MLT-271T	Hiking the Trail in Spain
TAB-326T	Brazil Mini-Term Abroad
TAB-327T	Australia Mini-Term Abroad
TAB-330T	China Mini-Term Abroad
TAB-333T	New Zealand Mini-Term
TAB-336T	Mini-Term: Three Weeks in the Louvre
TAB-337T	Spain Mini-Term Abroad
TAB-339T	India Mini-Term
WGS-328T	Argentina Mini-Term

## Latin American and Caribbean Studies

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 General Education curriculum, fulfilling literature/civilization, diversity, and writing requirements.

### Requirements

Requirements for the Major: Fourteen courses, including five in Latin American history, politics, society and culture; one of the following courses contributing to an understanding of Latin American problems – AAH 460, ANT 110, ANT 183, ECO 354, ECO 376, EGL 302, HST 171 (WGS 161), HST 311, HST 332, PSC 239, PSC 241, or SOC 265; six courses in Spanish 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 in Barbados, Brazil (São Paulo), Mexico (Cuernavaca), France (Rennes) and Spain (Seville), and mini-terms in Argentina (Buenos Aires), Brazil (São Paulo), Jamaica, and Martinique.

Requirements for the Interdepartmental Major: Eight courses including three in Latin American history, politics, society and culture; four courses in Spanish or Portuguese, and a one-term senior project. No course can be counted twice. It is strongly recommended that 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 460, ANT 110, ANT 183, ECO 354, ECO 376, EGL 302, HST 171 (WGS 161), HST 311, HST 332, PSC 239, PSC 241, or SOC 265.

Requirements for the Minor: Six courses including three in Latin American history, politics, society and culture; three in French, Portuguese\* or Spanish. 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.

Requirements for Honors: 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 senior project; (4) distinctive performance in an oral exam based on the senior project.

Director: Professor Christine Henseler

Advisors: Professors Austin, Batson, Chilcoat, Cox, Feffer, Foroughi, Fleishman, García, Gandsman, Henseler, Jain, Loth, Martínez, Meade, Mosquera, Moyano, Ndiaye, Nichols, Olsen, Osuna, Seri

Courses in Latin American and Caribbean Studies, designated CDLA:

### Art History

AAH 263. Latin American & Caribbean Art: A Cultural Survey of the Modern Era

AAH 460 Visual Culture, Race & Gender

### Anthropology

ANT 183. Peoples and Cultures of Latin America

ANT 260. Tourists and Tourism

### Biology

## 128 / Latin American and Caribbean Studies

BIO 257 Tropical Biology

Economics

ECO 376. Seminar in Global Economic Issues

English

EGL 302 Post-Colonial Literature and Theory

EGL 304 Caribbean Diasporas: Junior Seminar

History

HST 135. Latinos(as) in U.S. History

HST 171 (WGS 161). Europe and the Americas in the Era of Columbus

HST 172 (WGS 163). Reform and Revolution in Latin America and the Caribbean

HST 271. History of Mexico

HST 272. History of Brazil

HST 273. The History of the Caribbean and Central America

HST 311. Frontiers in the Americas

HST 332. Transnational America

HST 370. Special Topics in Latin American History: Latin American Popular Culture

HST 372 (WGS 352). History of Latin American Women

HST 471. Seminar: The Individual in Latin American History

Modern Languages and Literatures

French

FRN 304. Studies in the French Caribbean

FRN 305T. Mini-term in Martinique

FRN 307. Negritude Movement: Point of Departure in Black African and Afro-Caribbean

Literatures in French

Spanish

SPN209T Mexican Civilization

SPN 325 (T) Staging Conflict: Studies in One-Act Mexican Theater

SPN 326 (WGS 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 Identities in Latin America

SPN 329 The Paradox of Tradition in Spanish American Poetry

SPN 330T Mexican Women's Contemporary Short Fiction

SPN 350 (WGS 350). Visions and Voices: Chicana Icons from Myth to Matter

SPN 375. Smoke and Mirrors: Dreams, Mirages and Delusions in Peninsular and Latin

American Fiction

SPN 376. Down to Earth: Cross-Cultural Explorations of the Hispanic World

SPN 377 Popular Religion and Art in Latin America

SPN 378 Short Fictions From Naturalism to Neoliberalism

SPN 400 Crossing Borders: A Study in Mexican and Chicano Literatures

SPN 401 Bodies and Power in Latin American Narrative

SPN 402 (WGS 402). Dressing Up the Canon: Cross-dressing in Hispanic Literature and Film

SPN 416 "Testimonio" and Resistance Writings in Central America as Literary

Discourse

SPN 417 (WGS 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 @ the Movies

Modern Languages in Translation

MLT 280. The Nobel Laureates of Latin America

## Latin American and Caribbean Studies / 129

MLT 281 (WGS 220). 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 285 (WGS 285). From Virgin to Sex Goddess: Re-Envisioning the Chicana Experience

### Through Art and Literature

MLT 286T (WGS 286T). Gender and Identity in Contemporary Brazilian Cinema  
MLT 287 Cinema Verité in Latin America  
MLT 288 Torture & Dictatorship in Latin American Literature  
MLT 289 (WGS 289) Literature of the Mexican-American Border

### Music

AMU 133. Music of Latin America

### Political Science

PSC 241. Religion and Politics  
PSC 243 Latin American Politics: Facing the World  
PSC 259 Wealth and Power Among Nations

### Sociology

SOC 323T Survey of Brazilian Society

### Women's Studies (cross-listed)

WGS 161 (HST 171) Europe and the Americas in the Era of Columbus  
WGS 163 (HST 172) Reform and Revolution in Latin America and the Caribbean  
WGS 200T (LAS 200T). Women, Environment, and Social Change in Brazil  
WGS 220 (MLT 281). Screening Identities in Latin American Cinema  
WGS 285 (MLT 285). From Virgin to Sex Goddess: Re-Envisioning the Chicana Experience

### Through Art and Literature

WGS 286T (MLT 286T) Gender and Identity in Contemporary Brazilian Cinema  
WGS 289 (MLT 289) Literature of the Mexican-American Border  
WGS 326 (SPN 326). Women Weaving Histories: Short Narratives by Latin American Female

### Writers

WGS 328T Gender Studies in Argentina  
WGS 350 (SPN 350). Visions and Voices: Chicana Icons from Myth to Matter  
WGS 352 (HST 372). History of Latin American Women  
WGS 417 (SPN 417). Death and Revenge in the Southern Cone Film  
WGS 402 (SPN 402). Dressing Up the Canon: Cross-dressing in Hispanic Literature and Film

### Term Abroad only

FRN 305T. Mini-term in Martinique  
MLT 286T (WGS 286T). Gender and Identity in Contemporary Brazilian Cinema  
SOC 323T. Survey of Brazilian Society  
SPN209T Mexican Civilization  
SPN 325 T Staging Conflict: One-Act Mexican Theater  
SPN 330T Mexican Women's Contemporary Short Fiction  
TAB 126A. Water Resources of Sao Paulo, Paraty, and Rio de Janeiro  
WGS 200T (LAS 200T). Women, Environment, and Social Change in Brazil  
WGS 286T (MLT 286T) Gender and Identity in Contemporary Brazilian Cinema  
WGS 328T Gender Studies in Argentina WGS 286T (MLT 286T) Gender and Identity in

### Contemporary Brazilian Cinema

LAS 490-491 Independent Study (Fall, Winter, Spring).  
LAS 497 Senior Project (Fall, Winter, Spring).  
LAS 498-499 Senior Thesis (Fall, Winter, Spring).

## Law and Public Policy

This three-year program is specifically designed for students admitted to the joint Union College/Albany Law School six-year B.A./J.D. degree program. By choosing appropriately from the allowable courses listed below, Law and Public Policy majors can emphasize either the political science or economics aspects of public policy.

Requirements for the Major: Fourteen courses from among the following: Political Science 111, 112, 113, 238, 260, 261, 263, 264, 267, 270, 272, 273, 281, 282, 287, 333, 369, 371, 385; Economics 101, 228, 234, 242, 243, 339, 352, 354, 355, 378, 391. In addition, Political Science 220, 222 or 223 and a fundamental course in computer science are suggested.

Alternatively, the pursuit for three years of any major will qualify for this program, subject to the approval of the College, and provided that it is of a kind which develops analytical and writing skills.

Importantly, admission into Albany Law School is conditional. Prior to admission to law school students must take the Law School Admissions Test (LSAT) and receive a score that is no lower than the median LSAT score for students enrolled at Albany Law School in the prior year. Also, students must have a cumulative GPA 3.3 or better in the three years of study at Union College. Failure to satisfy the LSAT or GPA requirement means students will not be eligible for the program and will have to complete a fourth year to receive a B.A. from Union College.

Advisor: Professor Hays

M.B.A. degree:

MS: LIM 500, 503, 544, 545, 553, 571, MBA 510, 512, PHL 574, HCM: 617, 674, 684

MBA students will take the following additional courses: HCM 526, 1/2 course in 645 & 646, 680, MBA 506, 520, 531, an elective (instead of LIM 571), and an MBA internship (plus two courses at AMC in their first year.)

For course descriptions, consult the graduate course catalog of Union Graduate College.

Students who enter the program with advanced placement credit have greater flexibility of course selection. To be eligible for the M.B.A., students should enter the program with at least one advanced placement science or math credit. Union will grant advanced placement and course credit in accordance with its normal procedures, but AP credits do not reduce the number of required courses. When advanced placement credit is given for a course specifically designated in the curriculum, students will take elective courses.

Students must maintain minimum cumulative grade point averages of 3.40 both in overall course work (including graduate courses) and in their mathematics and science courses. Courses for which advanced placement credit has been given will be included in these grade point averages with an "A-minus" (3.70) being given for an advanced placement score of 4 and an "A" (4.00) being given for an advanced placement score of 5. 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.

Advisors: Prof. Weisse, Director of Health Professions Program, Prof. Pytel (Union College), and Vice President Fitzgerald (Union Graduate College)

## Leadership in Medicine/Health Systems Program

The Leadership in Medicine/Health Systems Program is offered jointly by Union College, Union Graduate College, 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 21<sup>st</sup> 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 Union Graduate College, provided that the student maintains satisfactory standards of academic achievement as defined below and that the Union College - Union Graduate College-Albany Medical College Policy and Promotions Committee determines the student fit to enter 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 Union Graduate College, 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.

Requirements: Over four academic years and two summers (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 Union Graduate College to earn an M.S. degree or 20 graduate courses to earn the M.B.A. degree. (Note: 11 of the courses count towards both degrees.)

Important curricular requirements include:

- an interdepartmental major, one part of which is either biology or chemistry and the other part of which is in the social sciences or humanities;
- a special program in bioethics
- an international experience;
- the program in health care management through the UGC Center for Bioethics and Clinical Leadership (either the M.S. or the M.B.A.).

All students enrolled in the program will take 16 Union College Math/Science courses and 15 Social Science and Humanities courses. Students take the following courses toward the M.S. and

## Mathematics

Associate Professor Cervone, Chair; Professors Barbanel, Fairchild, Johnson, Lesh, Niefield, Rosenthal, Taylor, Tønnesen-Friedman, Zimmermann, Zwicker; Associate Professors Black; Lecturer Friedman; Visiting Assistant Professors Plofker, Wang; Emeritus Professors Bick, Gillette, Maddaus, Seiken

### Requirements for the Major in Mathematics

Twelve courses in the mathematics department including Math 113 (or both 110 and 112), 115, 117, 199, 332, 336, 340, 497 or 498-99; at least one course chosen from 219, 221, 224, 234, and 235; and Physics 120. It is also recommended that two courses with substantial mathematical content be taken outside the department and that majors considering graduate work take one of French, German, or Russian as a foreign language.

### Requirements for the Major in Applied Mathematics

Math 113 (or both 110 and 112), 115, 117, 127, 128, 130 or 234, 138, 199, 340, 497 or 498-499; one of Math 238 or MBA 506; one of math 332, 336, or a 300-level applied mathematics seminar; and a sequence of six courses in an application area as described below.

We require that students have some basic knowledge of an application area. The goal is to provide the basic foundation in another field in which the student intends to pursue further work, and the sequence of courses should be consistent with the depth and rigor of a minor in another discipline. The sequence of courses might not explicitly include the mathematical connections, but the sequence should provide a base level of knowledge necessary to aid the student in creating those connections. The set of courses should be submitted for approval to the department at least one year before the student's graduation, and amendments to a student's set of courses should be made prior to enrolling in courses that represent any changes.

Examples of sequences include those leading to a minor in mechanical engineering, electrical engineering, computer engineering, computer science, physics, geology, economics, chemistry or biology. A combination of courses that does not fulfill the requirements for a minor is also acceptable, but requires more careful planning and consultation to ensure that it is consistent with the spirit of the requirement.

Note that Math 127 is a required course that has a programming pre-requisite. Students enrolling in Math 127 must take a course that offers an introduction to a programming language and covers the implementation of basic algorithms.

Requirements for Students Seeking Secondary School Certification as Part of a Four-Year Bachelor's Program: PSY 246, EDS 500A, EDS 500B, and EDS 500C and two terms of a foreign language. PSC 281 is strongly recommended. Mathematics majors must take 12 mathematics department courses including Math 113 (or both 110 and 112), 115, 117, 128, 199, 224, 332, 336, 340, and 497 or 498-99. They must also take MBA 506, Computer Science 105, and Physics 120.

The college recommends that any undergraduate seeking New York State secondary teacher certification should consider attending the Master of Arts in Teaching program in their fifth year. Mathematics majors who wish to apply to a master's program in teaching are advised to incorporate Math 128, Math 224, Math 332, Math 336, Statistics and Computer Science into their undergraduate program.

Mathematics Requirements for Any Interdepartmental Major Having Mathematics as a Component: Eight mathematics courses, including Math 113, (or both 110 and 112), 115, 199, and either two courses from List 1 or one from List 1 and one from List 2.

— List 1: Math 325, 330, 332, 336, 340, 432, 436, 448, 480.

— List 2: Math 127, 219, 221, 224, 234, 235

Requirements for a Minor in Mathematics: Six courses in the department including (1) calculus through Math 115; (2) Math 199; (3) at least one course having Math 199 as a prerequisite; (4) at least one additional course chosen from Math 117, 119, 127, 128, 130, 138, or any 200, 300, or 400-level course. Advanced placement credit may be used to satisfy at most one of the six required courses.

Requirements for Honors in Mathematics: Candidates for honors in mathematics must fulfill

the college-wide criteria for honors. In addition, they must have a grade point average of at least 3.5 in mathematics courses numbered 199 and above, complete a two-term honors thesis with a grade of A or A-, and take at least two of the following courses: 330, 432, 436, 448, 480.

Requirements for Honors in Applied Mathematics: Candidates for honors in applied mathematics must fulfill the college-wide criteria for honors. In addition, they must have a grade point average of at least 3.5 in mathematics courses numbered 199 and above, complete a two-term honors thesis with a grade of A or A-, and take at least two of the following courses: 330, 332, 336, 432, 436, 448, 480.

## General Education 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 (51 through 60) represent alternatives that also fulfill that requirement. These courses normally are not open to students who have passed calculus courses.

51. Cryptology: The Mathematics of Secrecy (Spring). 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.

53. Visualizing the Fourth Dimension (Fall). 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.

54. Number Theory: From Clock Arithmetic to Unbreakable Codes (Fall). 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, quadratic reciprocity, and others.

55. Ancient Greek Mathematics (Not offered 2008-09). 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.

57. Game Theory and its Applications in the Humanities and Social Sciences (Not offered 2008-09). 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. Not open to students who have passed Math 199.

58. Applications of Mathematics to Economics I (Not offered 2008-09). 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. Not open to students who have passed a college calculus course.

59. Applications of Mathematics to Economics II (Not offered 2008-09). Differential and integral calculus with applications in the social sciences. Students who wish to continue the calculus after Math 59 should enroll in Math 112. Prerequisite: Math 58. Not open to students who have passed a college calculus course.

60. Topics in Mathematical Political Science (Winter) (Same as Political Science 123). 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 112 would be relevant.

## Courses

100, 101, 102. Calculus with Precalculus (100 – Fall; 101 – Winter; 102 — Spring). This sequence covers the same material as Math 110 and Math 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

## 134 / Mathematics

fulfill the Quantitative and Mathematical Reasoning requirement.

104. Introduction to Statistics: Analysis of Data (Winter). An introductory course on the concepts and application of probability and the analysis of sampling data. Topics include an introduction to numerical and graphical descriptions of data, probability, random variables, linear regression, sampling theory, and inference. Applicable for Environmental Studies, not open to students who received credit for Math 52 or PSY 200.

110. Calculus I: Differential Calculus (Fall, Winter). Calculus of one real variable. Differentiation of algebraic functions, and applications. Not intended for students who have passed a calculus course or Math 59.

112. Calculus II: Integral Calculus (Winter, Spring). Integral calculus of functions of a single variable, the fundamental theorem, formal integration and applications, calculus of logarithmic, exponential, and inverse trigonometric functions. Prerequisite: Math 110.

113. AP Calculus (Fall, Winter). Self-contained treatment of the main topics in Math 110 and Math 112. Intended for freshmen who have been introduced to (but have not yet mastered) the basics of differential and integral calculus.

115. Calculus III: Differential Vector Calculus and Matrix Theory (Fall, Winter, Spring). Geometry of 3-space, differential calculus of functions of several variables, linear systems, matrices. Prerequisite: Math 102, 112, or 113.

117. Calculus IV: Integral Vector Calculus (Fall, Winter, Spring). Double and triple integrals, line integrals and Green's theorem, divergence and curl, divergence theorem and Stokes' theorem. Prerequisite: Math 115.

127. Numerical Methods (Not offered 2008-09). Newton's method, numerical differentiation and integration, solution of ordinary differential equations, error estimates. Prerequisites: Math 115 and fluency in some mathematical programming language.

128. Probability (Winter). Probability theory and applications. Prerequisite: Math 102, 112, or 113.

130. Ordinary Differential Equations (Winter, Spring). Linear differential equations and power series. Not open to students who have passed Math 234. Prerequisite: Math 115.

138. Methods of Applied Mathematics I (Fall) 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: Math 130 or 234.

180. Linear Algebra and Matrix Theory (Not offered 2008-09). Vector spaces, matrices, and solutions of linear systems of equations, linear transformations, eigenvectors, and eigenvalues. Not open to students who have passed Math 340. Prerequisite: Math 115 or equivalent.

188. Programming with Mathematica (Not offered 2008-09). Designed to show how to use Mathematica as a symbolic calculator and programming language. Various styles of programming will be studied: functional, procedural, and recursive. The course will develop a reasonably high level of fluency in writing programs for the students' scientific needs and interests.

197. Discrete Mathematics for Computer Science (Fall). An introduction to fundamental concepts and methods of proof in mathematics and computer science. Topics include elementary logic, functions, relations, sets, and basic combinatorics.

199. Introduction to Logic and Set Theory (Fall, Winter, Spring). 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. Prerequisite: Math 102, 112, or 113.

219. Topics in Discrete Mathematics (Fall). Topics may include graph theory, partially ordered sets, algebraic coding theory, computational complexity, number theory. Prerequisite: Math 199 or permission of the instructor.

221. Mathematical Cryptology (Not offered 2008-09). 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. Math 221 normally is closed to students who have passed Math 235 or Math 51. Prerequisite: Math 199 or permission of the instructor.

224. Geometry (Winter). Topics in Projective, Affine, Euclidean, and/or non-Euclidean geometries. Prerequisite: Math 199 or permission of the instructor.

234. Differential Equations (Spring). Topics include systems of ordinary differential equation, series solutions, asymptotic solutions, integral equations. Not open to students who have passed Math 130. Prerequisite: Math 115 and Math 199, or permission of the instructor.

235. Number Theory (Spring). 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 Math 221. Prerequisite: Math 199 or permission of the instructor.

238. Methods of Applied Mathematics II (Winter). Provides a more rigorous development of the mathematical techniques and analysis of ordinary differential equations, partial differential equations, and calculus of variations. The emphasis is on the equations arising from physical, biological, and economic phenomena. Prerequisite: Math 138.

235. Knot Theory (Not offered 2008-09). 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. Not open to students who have passed Math 225. Prerequisite: Math 221, 235, 332, or 340, or permission of the instructor.

330. Complex Analysis (Not offered 2008-09). An introduction to analytic functions of a complex variable. Prerequisite: One 200-level course or permission of the instructor.

332. Abstract Algebra I (Spring). Algebraic structures including groups, rings and fields. Prerequisite: One 200-level course or permission of the instructor.

336. Real Variable Theory (Fall). A study of point sets on the real line and of real functions defined on these sets. Prerequisites: Math 332 or Math 340 or permission of the instructor.

340. Linear Algebra (Winter). Vector spaces, linear transformations, inner product and dual spaces, eigenvalues and eigenvectors, special topics. Prerequisite: Math 115 and one 200-level course, or permission of the instructor.

432. Abstract Algebra II (Not offered 2008-09). Continuation of Math 332. Certain topics will be selected for more intensive study. Prerequisite: Math 332.

436. Topology (Fall). Topological spaces, connectedness, compactness, continuous mappings and homeomorphisms. Prerequisite: One 300-level course or permission of the instructor.

448. Differential Geometry (Winter). 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: Math 117 and Math 340, or permission of the instructor.

480. Foundations of Mathematics (Not offered 2008-09). Propositional and predicate logic, Gödel completeness theorem, introduction to recursion theory. Prerequisite: Math 332 or permission of the instructor.

## Independent Studies and Thesis

295H-96H. Two-Term Math Honors Independent Study

490-96. Independent Study in Mathematics (Fall, Winter, Spring). Independent study in a particular area of mathematics under the supervision of a faculty member.

497. One-Term Senior Thesis (Fall, Winter)

498-99. Two-Term Senior Thesis (Fall-Winter)

## Mechanical Engineering

Professors Anderson, Wilk; Associate Professors Bucinell; Keat (Department Chairman), Wicks; Assistant Professors Bruno, Cortez, Hodgson, Ramasubramanian, Rapoff; Visiting Assistant Professors Currey, Tchako

Mission Statement for Mechanical Engineering at Union College: 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. For further information, see [www.union.edu/academic\\_depts/mechanical\\_eng/department/mission.php](http://www.union.edu/academic_depts/mechanical_eng/department/mission.php)

Requirements for the Major: Freshman, sophomore, junior, and senior requirements are given for the Class of 2012 below. Students should consult their academic advisor about scheduling courses. Students seeking department honors should consult their academic advisors concerning the requirements.

### Freshman Year

ESC100 (Exploring Engineering), MER101 (Engineering Graphics), MTH113 (AP Calculus)\*, MTH115 (Calculus III), MTH117 (Calculus IV), PHY120, Physics 121, CHM101, First Year Preceptorial, Elective\*\*

### Sophomore Year

MER201 (Particle Mechanics), MER212+ (Rigid Body Mechanics), MER213 (Material Science), MER214+(Strength of Materials), MER231 (Thermodynamics I), MER232+ (Thermodynamics II), MER301 (Engineering Reliability), MTH130 (Differential Equations), Sophomore Seminar, Elective\*\*

### Junior Year\*\*\*

CSC070 (Computer Programming for Engineers), ECE222 (Circuits), MER311+ (Advanced Mechanics), MER312+ (Dynamics and Kinematics), MER322+ (Dynamics of Physical Systems), MER331+ (Fluid Mechanics), MER333+ (Heat Transfer), Elective\*\*, Elective\*\*, Elective\*\*

### Senior Year

MER419+ (Design of Mechanical Systems), MER439+ (Design of Thermal/Fluid Systems), MER497 (Senior Project I), MER498 (Senior Project II), Elective\*\*, Elective\*\*, Elective\*\*, Elective\*\*, Elective\*\*, Elective\*\*

+ A minimum grade of C- must be earned in the prerequisite mechanical engineering course(s) in order for a student to enroll in this course.

\* An alternate mathematics sequence in the first year is possible depending on the math preparation of the student. Consult with your academic advisor.

\*\* The 11 Elective courses must be satisfied as follows: 6 core component courses (2 courses outside the core component requirements can be counted toward the 8 course core component requirement), 2 Engineering Electives (any ME, EE, or CS course that counts towards the respective major, or those approved by Mechanical Engineering Department chair) and 3 Free Electives.

\*\*\* The junior year is the recommended term for satisfying the Linguistic and Cultural Competency component of the Core Components 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 Components Curriculum and should work closely with their academic advisor to develop the appropriate plan of study that will allow them to pursue the desired option.

Requirements for the Minor: There are two ME department minors. The solid mechanics minor requires MER201, MER212, MER214, MER231, MER311, MER312. The thermal energy minor requires MER 201, MER212; MER231, MER232, MER331, MER333. Additionally, the college offers a bioengineering minor and an energy studies minor. These are described in the catalogue under

## Bioengineering and Energy Studies.

Selected graduate courses in engineering mathematics, solid mechanics, and the thermal fluid sciences offered by the School of Engineering and Computer Science of the Graduate College of Union University are available to qualified undergraduates. For further information, please consult the catalog of the Union Graduate College.

Requirements for the Five-Year Combined BS/MS in Mechanical Engineering: Union undergraduate students may apply to this program offered in conjunction with Union Graduate College of Union 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 the Union Graduate College at [www.gcuu.edu](http://www.gcuu.edu)

## Major Courses

(Prerequisites and co-requisites are listed for each of the major courses below. Under extraordinary circumstances, a student may petition the instructor and department chairman to take a prerequisite as a co-requisite for a major course.)

010. Senior Seminar (Fall, Winter, Spring). Discussion of special topics in mechanical engineering important to professional development such as current engineering practices, engineering ethics, codes and standards and intellectual property. Oral presentations by each senior on his/her senior project.

101. Engineering Graphics (Winter, Spring). 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.

201. Particle Mechanics (Fall, Winter). A basic engineering science course concerned with the kinematics and kinetics of particles. The course material includes both Newtonian and energy approaches to problem solutions. Students are introduced to the use of free body and mass-acceleration diagrams in the solution of problems. The approach taken to the solution of problems relies heavily on vectors and calculus. This course is taught in a studio format that combines lectures with laboratory exercises. Prerequisites: PHY120, MTH115 or IMP 112.

212. Rigid Body Mechanics (Winter, Spring). A basic engineering science course concerned with the kinematics and kinetics of rigid bodies. The course material includes both Newtonian and energy approaches to problem solutions. Free body and mass-acceleration diagrams are used throughout the course. Vectors and calculus approaches are used in the solution of problems. This course is taught in a studio format that combines lectures with laboratory exercises and includes a design project. Prerequisite: MER201.

213. Material Science (Fall, Winter). A basic engineering science course required in several of the engineering curricula. The principles formulated in the science of materials allow engineers to understand the nature and behavior of a wide variety of engineering materials. This course provides the information for engineers to anticipate the properties of materials not yet studied or developed. Includes a laboratory where students build an intuitive appreciation for the phenomenon being discussed in lecture. Prerequisite: CHM101.

214. Strength of Materials (Fall, Spring). A basic engineering course required in the mechanical engineering curricula. Strength of materials is 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. Classroom lectures are supplemented with demonstrations. Includes a laboratory where students build an appreciation for the phenomenon being discussed in lecture. Prerequisite: MER212.

## 138 / Mechanical Engineering

231. Thermodynamics (Fall, Winter). Basic thermodynamic principles, properties of simple substances, energy and the first law of thermodynamics, entropy and the second law of thermodynamics. Applications include basic vapor power cycles, ideal gas cycles, refrigeration and heat pump cycles. Elementary environmental economic and sustainability considerations related to thermodynamic processes. Prerequisites: PHY120, MTH112 or 113 or IMP112. Co-Requisite: CHM101.

232. Thermodynamics II (Winter, Spring). Application of the fundamental laws of thermodynamics to the analysis of energy conversion devices, systems, and processes. The course moves beyond MER231 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 particular attention given to environmental and sustainability implications. Prerequisites: MER231, CHM101.

301. Engineering Reliability (Fall, Spring). 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. Prerequisite: MTH115 or IMP112.

311. Advanced Mechanics (Winter, Spring). Advanced topics in stress analysis, deflection and stiffness, energy methods, failure analysis, fracture mechanics, statistical considerations, impact, fatigue, introduction to finite element methods. Two-hour design laboratory each week. Prerequisite: MER214.

312. Dynamics and Kinematics (Fall, Winter). Approaches kinematics using vector, complex number, and graphical techniques. Linkage analysis and synthesis, cam design, machine dynamics, computer aided kinematic design, kinetics and balancing. Two-hour design laboratory each week. Prerequisite: MER212.

322. Dynamics of Physical Systems (Fall, Winter, Spring). Time and frequency response of lumped-parameter mechanical, electrical, and fluid systems. Three lab hours each week. Prerequisites: CSC070 (or equivalent), MER212, ECE222 or ECE225; MTH130 or MTH131.

331. Fluid Mechanics I (Fall, Winter). Analysis of fluid systems according to the control volume formulations of Newton's second law and the conservation laws of mass and energy. Applications. Three lab hours each week. Prerequisites: MER231, MTH117 or IMP113. Co-Requisite: MER212.

333. Heat Transfer Analysis and Design (Winter, Spring). Introduction to the physical mechanisms that govern heat transfer processes and the relevance of these processes to industrial and environmental problems. Extends classical thermodynamic analysis by studying the modes of heat transfer and through the development of rate equations for calculating conduction, convection and radiation heat transfer. Three lab hours each week. Prerequisites: MER231 and MER331.

419. Design of Mechanical Systems (Winter, Spring). 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. Prerequisites: MER311, MER312.

439. Design of Thermal/Fluid Systems (Fall, Winter). 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. Prerequisites: MER331, MER333.

497. Mechanical Engineering Senior Project (Fall, Winter, Spring). 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. Prerequisites: MER311, MER331, MER333, or permission of the faculty advisor, and concurrent registration and participation in senior seminar MER010.

498. Mechanical Engineering Senior Project Continuation (Fall, Winter, Spring). 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. Prerequisites: MER 497 and concurrent registration and participation in senior seminar MER010.

499. Mechanical Engineering Senior Project Continuation (Spring). Optional follow-on to MER497, MER498, for students who wish to go above and beyond their completed objectives for

## Mechanical Engineering / 139

MER497, MER498. Can be counted as a free elective in the Mechanical Engineering curriculum. Prerequisites: MER498, permission of the MER498 project advisor and the department chair. Consult the Mechanical Engineering Department Chairman for additional requirements.

### Elective Courses

(These may be taken to satisfy the engineering or free elective requirements. Consult Mechanical Engineering Department chair and course listing for additional MER, ESC, CSC, ECE, and GCUU courses that satisfy the engineering elective requirement.)

240. Introduction to Bioengineering. (Winter) In this course, students will explore the application of engineering principles and analyses to the study of biological systems and seek to understand the potential benefits and constraints of engineered materials and devices in medical and environmental applications. The course will cover principles of solid mechanics, fluid mechanics and neural information processing and control. Topics include the mechanics of support and locomotion, circulatory transport, heat and mass transfer from organisms and ecosystems, and sensory information processing. Course prerequisites: MTH110 or equivalent and one course in BIO, CHM or PHY that counts towards the major. (Cross listed with BIO240.)

245. Biomechanics. This course is designed to acquaint the student with basic applications of mechanics to biological systems and devices. Course prerequisites: MTH112 and PHY120. (Cross listed with BIO245)

332. Fluid Mechanics II. (Spring) Emphasis on the differential approach to fluid mechanics. Coverage includes advanced topics such as: potential flow theory, the theory of lift, turbulence, turbomachinery analysis, compressible flow, and computational fluid dynamics. Prerequisite: MER331 or equivalent.

440. Orthopedic Biomechanics (Spring) (Cross-listed with BIO440). Structure, function, mechanical properties, constitutive models, and methods of analysis of bone and other biologic hard tissues; introduction to the analysis of skeletal joints, prosthetics, and implants. Prerequisite: MER214.

451. Advanced Dynamics. (Not Offered in 2007-08) Analytical dynamics with engineering applications to particles and rigid bodies. Topics include three-dimensional kinematics and dynamics, Lagrangian dynamics and an introduction to robotics. Prerequisites: MER212, MER312 or equivalent.

471. Solar Energy Analysis and Design. (Fall) Analysis and design techniques applicable to the use of solar energy for heating, cooling, and electric power generation. Prerequisites: MER333 or permission of the instructor.

490. Independent Study. (Fall, Winter, Spring) Offered with department approval only.

491-493. Mechanical Engineering Practicum. (Fall, Winter, Spring) Any mechanical engineering undergraduate can practice their profession during their senior year of study 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.

## Modern Languages and Literatures

Associate Professor Batson, Chair; Professors Moyano, Thomas; Associate Professors, Bidoshi, Chilcoat, Ferry, Garcia, Henseler, Martinez, Mosquera, Ndiaye, Ueno; Assistant Professors Nelson, Ricci Bell; Visiting Assistant Professors Loth, Triplette, Zhang; Lecturer Osuna

All students who begin the study of a new foreign language at Union 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 on the basis of secondary school record and testing scores. Students may construct full majors or interdepartmental majors in French, German, and Spanish. Students in Chinese, 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 East Asian Studies.

### French Requirements

Requirements for the Major in French: A minimum of 10 courses beyond the 101-level, including two 300-level courses, three 400-level courses, and 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.

Requirements for the Interdepartmental Major in French: A minimum of seven courses beyond the 101-level, including two 400-level courses and either 489 or a project that integrates the two disciplines.

Requirements for the Minor in French: A minimum of six courses, including two 300-level courses.

### German Requirements

Requirements for the Major in German: A minimum of ten courses beyond the 101-level, including three 300 level, and two 400 level, and 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.

Requirements for the Interdepartmental Major in German: 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 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.

Requirements for the Minor in German: A minimum of six courses for those who begin with 100, or a minimum of five courses for those beginning at the 101-level or above, including at least two 300-level courses. Minors are strongly encouraged to take a Term Abroad. Minors have the option of taking one MLT for German credit if they have participated in the German Term Abroad.

### Spanish Requirements

Requirements for the Major in Spanish: A minimum of ten courses beyond the 101-level, including

## Modern Languages and Literatures / 141

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, interdepartmental major, or minor. 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.

Requirements for the Interdepartmental Major in Spanish: 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.

Requirements for the Minor in Spanish: A minimum of six courses for those who begin with 100 or a minimum of five courses for those beginning at the 101-level or above. All minors must take 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 MLT course (on Peninsular Spanish or Latin American literatures and cultures) can be counted towards the minor.

### Chinese, Japanese, and Russian Requirements

Requirements for the Interdepartmental Major in Chinese, 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 China or Japan, or a study abroad in Russia.

Requirements for the Minor in Chinese, Japanese, or Russian: A minimum of 7 courses, starting at the 100-level, including one MLT course. If combined with participation in the Term Abroad in China, Japan, or study abroad in Russia, students may complete a minor in Chinese, Japanese, or Russian with 3 additional courses (making the total six courses).

### Requirements in All Languages

Requirements for Honors: A candidate for Honors in the Department shall achieve an index in departmental courses of not less than 3.5 and an overall index of not less than 3.3. The candidate shall have achieved a grade of a full “A” in three courses in the department. (For complete details concerning the specific requirements for the candidate’s specific degree, the candidate should consult with a departmental advisor). For the full majors in French, German, and Spanish, for example, we require at least one of the “A’s to be achieved in a course above the Intermediate Language Sequence, with at least an “A-minus” achieved in two 400-level courses. For the interdepartmental majors in Chinese, Japanese, and Russian, the candidate shall have achieved an “A-minus” in no fewer than three courses above the Intermediate Language Sequence, and one in an MLT course. For the full major, the honors candidate shall complete, in the language studied, a project of a literary and/or cultural nature which achieves a grade no lower than “A-minus” For the interdisciplinary major, the project should be written in the language deemed appropriate by the faculty advisor and normally should reflect the candidate’s chosen disciplines. When declaring candidacy for honors, a student shall present to the faculty member chosen to supervise the honors project, as well as to the chair of the department, a written statement outlining the nature and scope of the project. The candidate’s proposal must meet with the approval of both faculty members. The completed project shall be approved or disapproved for honors by its director and at least one other member of the department, and then given a grade by the director.

Requirements for Secondary School Certification: PSY 246, and “Structured Field Experiences” (EDS 500A, 500B, and 500C each a non-credit course). Requirements within the major include:

- (1). Twelve courses in the same language sequence (French, German, Spanish), including FRN 303, GER 202 or SPN 203, a civilization/culture course, a survey course, three courses at the 400 level, and 450.
- (2). Participation in at least one of Union’s Terms Abroad in an appropriate country as required.

## 142 / Modern Languages and Literatures

Additional experiences in foreign cultures, intensive language programs, and/or terms abroad are highly recommended.

(3). Interdepartmental, interdisciplinary, and dual majors must complete all requirements listed for the individual major to qualify for the program.

(4). MLL majors are encouraged to take courses in more than one language and also to seek certification in more than one language. A student must complete a full major in each language in which certification is sought. Students seeking certification in more than one language are recommended to complete the combined degree program which will allow for greater flexibility in course selection as well as the possibility for two terms abroad.

### Modern Literature, Culture, and Cinema in Translation (Taught in English)

#### Chinese

MLT 200. Modern Chinese Literature (Not offered 2008-09). An introduction to a wide variety of Chinese literature. Students will study aspects of the function of history, memory, and the global/local in the Chinese context. GenEd: CDEA

MLT 201. Chinese Cinema (Also East Asian Studies 201) (Not offered 2008-09). From the glitzy production studios of 1930s 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 will explore questions of aesthetics, Chinese identity, transnationalism, and representation. GenEd: CDEA

MLT 202. Gender and Sexuality in Modern China (Also WGS 202 and EAS 202) (Not offered 2008-09). An examination of representations by and about women in 20th-century China through and understanding of the concepts Woman and Modernity. We will take into account women's and men's relationship to literature, selected genres, opinions on literary creativity, character representation, and social engagement to explore short stories, essays, diaries, poetry, and film. GenEd: CDEA

MLT 203. Asian American Film and Performance (Also EAS 203 and WGS 268) (Not offered 2008-09). An examination of topics in Asian American studies through film and performance by and about Asian Americans. Class material will draw from feature and documentary films by well-known and independent filmmakers, theatrical and artistic performance, as well as theoretical and critical texts on culture and diversity, the diaspora, and ethnicity. GenEd: CDEA, AM-C

MLT 204. Literary Traditions in East Asia (Also EAS 204) (Winter, Zhang). 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. GenEd: CDEA

MLT 205. Perspectives in Modern East Asian Literature (Also EAS 205) (Not offered 2008-09). The literary and artistic developments in East Asia since the mid-19th century. It will consider questions of tradition, culture, modernity, globalism, and technology by examining cultural artifacts — novels, short stories, plays, paintings, architecture, music, and film. GenEd: CDEA

MLT 207. China's Cultural Revolution (Also EAS 207) (Not offered 2008-09). An interdisciplinary approach to examine the historical, political, and artistic preconditions and ramifications of the Chinese Cultural Revolution (1966-1976).

MLT 209. The New Wall of China (Also EAS 209) (Not offered 2008-09). An interdisciplinary overview of the cultural, historical, and artistic 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 construction, students will be introduced to the intricate connections between all the above factors and engineering, technology, and the environment. GenEd: An, L, C, S, CDEA.

#### French

MLT 210. The Artist as Hero (Also FRN 420) (Not offered 2008-09). The reaction of the artistic temperament to its times, and of the times to the artistic temperament, as expressed in the works of Goethe, Balzac, Flaubert, Zola, Mann, Joyce, and Gide. GenEd: Eu-L

MLT 211. Histoire de la danse, Danse de l'histoire / History of Dance, Dance of History (Also FRN 421, ADA 53, and WGS 211) (Not offered 2008-09). 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 *littérateurs* (Molière, Gautier, Cocteau). GenEd: Eu-CS

MLT 212. *Sex Lives and Videotape: Casting Sexuality in French and Francophone Film* (Also FRN 402 and WGS 228) (Not offered 2008-09). 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 Chéri*. 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. GenEd: Eu-C

MLT 213. *West African Oral Literature* (Also FRN 430) (Not offered 2008-09). 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. GenEd: CDAA

MLT 215. *What is French Cinéma?/Qu'est-ce que le cinéma français?* (Also FRN 312) (Winter; Chilcoat). 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.

## German

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 Major should register for the corresponding German course number (see GER 330-334) 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 German 201.

MLT 230. *Forging a Nation – German Culture and Society I (1750-1914)* (Also GER 330) (Not offered 2008-09). Study of the social, political and cultural challenges of building a unified German identity and nation—including religious tolerance, imperialism, sexual politics industrialization and urbanization. GenEd: Eu-C, Eu-L

MLT 231. *Guns, Jazz & Politics—German Culture and Society II (1914-1933)* (Also GER 331) (Not offered 2008-09). Study of how violence, economic and political volatility, technology, and changing moral codes affected German society and culture (literature, visual arts, film, music) from the onset of the First World War to the rise of Hitler. GenEd: Eu-C, Eu-L

MLT 232. *Identity after the Holocaust – German Culture and Society III (1945-Present)* (Also GER 332) (Not offered 2008-09). Study of the cultural, political, and social impact of WWII's mass violence on modern Germany, focusing on issues such as deNazification and reeducation, rebellious youth, the 'Historian's debate,' and reunification. GenEd:Eu-C, Eu-L

MLT 233. *Metropolis Berlin: Cultural Representations of Germany's Capital* (Also GER 333) (Not offered 2008-09). An exploration of how the city Berlin has been constructed and contested as a political and cultural as well as physical site. GenEd: Eu-C

MLT 234. *Femmes fatales? Women in 19th- and 20th-Century German Culture and Society* (Also GER 334 and WGS 222) (Not offered 2008-09). 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. GenEd: Eu-LS

MLT 235. *Voices from Abroad: German Exile Culture, 1933-1990* (Also GER 335) (Not offered 2008-09). This course, taught in translation, is designed for both Germanists and other students

## 144 / Modern Languages and Literatures

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 émigrés to Germany and incorporates theoretical assessments of exile, considering works by Said, Milosz and others. GenEd: Eu-LS/C

MLT 336. *The Thrill of Victory: Reading German Sports (and) Culture* (Also GER 336) (Not offered 2008-09). 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. GenEd: Eu-L

### Japanese

MLT 250. *Japanese Sociolinguistics* (Also WGS 256) (Not offered 2008-09). This course will focus on societal aspects 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. GenEd: CDEA

### Russian

MLT 260. *The Vampire as Other in East European and American Culture* (Spring; Bidoshi). 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. Gen Ed: EU-

MLT 261. *Cinema, Crimes, and Punishment*. (Not offered 2008-09) Investigates the irrational in our human psyche and inquires into the problems of desire, suffering, violence, and death. Films by Truffaut, Bergman, Hitchcock, Balabanov, and Mikhalkov are studied. Gen Ed: Eu-C

MLT 262. *Russia: Magnificence, Mayhem, and Mafia* (Not offered 2008-09). 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? GenEd: Eu-C

MLT 263. *Nationalism and Empire: Russian Music and Art of the 19th Century* (Not offered 2008-09). The philosophical tenets of Romanticism and Nationalism as depicted in Russian music and art of the mid-19th century. We will concentrate on the interaction between music and art to explore methods by which Russian artists and composers manipulated canvases and scores to express issues of Nationalism. The course is thematically organized to explore such topics as identity politics, ethnicity, and nation and empire. Class material will draw from documentary films, and theoretical and critical texts on culture, identity, nationalism and romanticism. GenEd: Eu-C

MLT 264. *Illness and Its Representation: Madness, Disease and Death in 19th- and 20th-Century Russian Culture* (Not offered 2008-09). 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. GenEd: Eu-L

### Spanish

MLT 270. *The Way of St. James: An Interdisciplinary Study* (Also AAH 212) (Not offered 2008-09). Prerequisite to the course "Hiking the Trail in Spain." Teaches the history, literature, art, and architecture of the route to Santiago de Compostela in northern Spain. Readings include selections from Berceo, the Songs of Mary, and various texts on Romanesque art and architecture. GenEd: EuC

MLT 271T. *Hiking the Trail in Spain* (Also AAH 213T) (Not offered 2008-09). Students who take this "mini-term" abroad must have taken MLT 270 on campus. The course takes place in Spain, where students will walk a portion of the actual route to Santiago de Compostela.

## Modern Languages and Literatures / 145

MLT 272. Art and Politics in Spain: From the Civil War to Postfrancoism and Postmodernity (Not offered 2008-09). 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. GenEd: Eu-L

MLT 273. Re-Viewing Spanish Cinema: From Dictators, Bullfighters and Flamenco to Nationalisms and Globalization (Not offered 2008-09). This course examines the works of such well known artists/filmmakers as Medem, Almodóvar, Bigas Luna, de la Iglesia, 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. GenEd: EuC

MLT 274. Trash and Transgression: Spanish Surrealism and Popular Culture in Dalí, Lorca and Buñuel (Not offered 2008-09). This course studies the work of a group of young Spanish poets, playwrights, filmmakers and painters, generally known as the Group of '27, who constituted the most important Spanish renaissance of the last centuries, and which was broken abruptly by the Civil War of 1936. We will examine the popular roots of some of their works as well as some of their most distinct contributions to Surrealism, as exemplified by Buñuel's cinematic innovation and its religious confusions and repressed sexual longings. Gen.Ed. EU-L, Eu-C

MLT 280. The Nobel Laureates of Latin America. (Not offered 2008-09). An analysis of aesthetic, philosophical, and political problems in Latin American literature as expressed in the writings of five laureates — Gabriela Mistral, Pablo Neruda, Miguel Angel Asturias, and Gabriel Garcia Marquez, and Octavio Paz. GenEd: CDLA

MLT 281. Screening Identities in Latin American Cinema (Winter; Garcia). 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). GenEd: CDLA

MLT 282. North/South Relations and Diasporic Politics (Not offered 2008-09). 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. GenEd: CDLA

MLT 283. Beyond the Sunny Paradise: Literature and Politics in the Caribbean (Not offered 2008-09). 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. GenEd: CDLA, CDAA

MLT 284. Popular Religion and Politics in Latin America (Fall; Mosquera). 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, ethno-historical 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. GenEd: CDLA, CDAA

MLT 285. From Virgin to Sex Goddess: Re-Envisioning the Chicana Experience Through Art and

## 146 / Modern Languages and Literatures

Literature (Also WGS 285) (Not offered 2008-09). In “Guadalupe the Sex Goddess,” Sandra Cisneros gives the Virgin of Guadalupe an “extreme makeover.” She undresses the sacred image and envelops her in a cloak of contemporary sexual politics. In the same vein, other Chicana artists and writers re-examine, re-present, and re-write traditional practices to define the experience of the Mexican-American woman in the late 20th century. This course presents students with the resisting and affirming powers of Chicana works of art. It introduces them to the Mexican-American civil rights movement and to myths and archetypes in order to allow for a reevaluation of gender identities through installation art, muralism, poster art, and painting. Issues of sexuality, language, ethnicity, race, and class will be examined through these visual art forms as well as in narratives and essays by authors as influential as Ana Castillo, Gloria Anzaldúa, Tey Diana Rebolledo, and, of course, the creator of the sex goddess herself, Sandra Cisneros. GenEd: AM-C, AM-L, CDLA

MLT 286T. Gender and Identity in Contemporary Brazilian Cinema (Also WGS 286T)(Not offered 2008-09). This course offers an interdisciplinary study 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. GenEd: CDLA

MLT 287. Filming Margins: Cinema Verité and Social Realism in Latin America (Not offered 2008-09). 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 Buñuel’s *Los Olvidados* (1950), Hector Babenco’s *Pixote* (1981) and Fernando Meirelles’ *City of God* (2002), and others. GenEd: CDLA

MLT 288. Torture and Dictatorship in Latin American Literature (Also WGS 288) (Spring; Martinez). 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. GenEd: CDLA

MLT 289. Literature of the Mexican-American Border (Not offered 2008-09). 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 understanding 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. GenEd: LACS

### Course Offerings in Individual Languages

#### Arabic Language Sequence

ARB 100. Basic Arabic I (Fall). Basic skills for students who begin with no knowledge of Arabic.

ARB 101. Basic Arabic II (Winter). A continuation of Arabic 100. Prerequisite: Arabic 100 or permission of instructor.

ARB 102. Basic Arabic III (Spring). A continuation of Arabic 101. Prerequisite: Arabic 101 or permission of instructor.

ARB 200: Intermediate Arabic I. Review and continued development of all skills in Arabic. Prerequisite: Arabic 102 or permission of the instructor.

### Chinese Language Sequence

CHN 100. Basic Chinese I (Fall). Basic skills for students who begin with no knowledge of Mandarin.

CHN 101. Basic Chinese II (Winter). A continuation of Chinese 100. Prerequisite: Chinese 100 or permission of instructor.

CHN 102. Basic Chinese III (Spring). A continuation of Chinese 101. Prerequisite: Chinese 101 or permission of the instructor.

CHN 103. Chinese for the Term Abroad (Not offered 2008-09). 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 100-102 sequence cannot take this course.

CHN 200. Intermediate Chinese I (Fall). Review, and continued development of all skills in Mandarin. GenEd: CDEA

CHN 201. Intermediate Chinese II (Winter). Continuation of Chinese 200. Prerequisite: Chinese 200 or permission of instructor.

CHN 202. Intermediate Chinese III (Spring). Continuation of Chinese 201. Prerequisite: Chinese 201 or permission of instructor.

CHN 204T, 205T. The Chinese Language Studied Abroad (Fall term in Shanghai). See International Programs.

CHN 250T, 251T. The Chinese Language Studied Independently Abroad.

CHN 300. Advanced Chinese I (Fall). Continued formal study of the Chinese language. Prerequisite: Chinese 202 or equivalent. GenEd: CDEA

CHN 301. Advanced Chinese II (Winter). A continuation of Chinese 300. Prerequisite: Chinese 300 or permission of instructor. GenEd: CDEA

CHN 302. Advanced Chinese III (Spring). A continuation of Chinese 301. Prerequisite: Chinese 301 or permission of instructor. GenEd: CDEA

### French: Language Sequence

FRN 100. Basic French I (Fall, Winter). Basic skills for students who begin with no knowledge of French.

FRN 101. Basic French II (Winter, Spring). A continuation of French 100. Prerequisite: French 100 or two years of secondary school French.

FRN 102. Basic French III (Fall, Spring). A continuation of French 101, with introduction of readings. Prerequisite: French 101 or three years of secondary school French

FRN 200. Intermediate French I (Fall, Winter). Intensive review and development of all language skills, with emphasis on vocabulary building, conversation, and composition. Prerequisite: French 102 or equivalent.

FRN 201. Intermediate French II (Winter, Spring). Continuation of extensive review and development, vocabulary building, conversation, and composition. Prerequisite: French 200 or equivalent.

FRN 204T-207T. The French Language Studied Abroad (Fall term in Rennes).

FRN 250T, 251T. The French Language Studied Independently Abroad.

FRN 303. Advanced French (Not offered 2008-09). 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: FRN 204T or equivalent.

### French and Francophone Studies

(Prerequisite for 300-level courses listed in this section is French 201 or another 300-level course. Prerequisite for all 400-level courses is a 300-level course.)

FRN 208T. Contemporary France (Fall term in Rennes). See Terms Abroad program. Gen Ed: Eu-CS

FRN 300. Modern France/La France actuelle (Spring; Batson). Studies of contemporary French culture through authentic material — texts, films, radio, and television broadcasts dealing with current historical, political, sociological, and aesthetic issues. Prerequisite: French 201, any 300-level or permission of instructor. GenEd: Eu-C

## 148 / Modern Languages and Literatures

FRN 301. A Survey of French Literature I (Not offered 2008-09). The evolution of French literature from the earliest writings through the age of Enlightenment. Readings of major works from each period to illustrate trends. Prerequisite: French 201, any 300-level or permission of instructor. GenEd: Eu-LS

FRN 302. A Survey of French Literature II (Not offered 2008-09). 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: French 201, any 300-level or permission of instructor. GenEd: Eu-LS

FRN 304. Studies in the French Caribbean (Not offered 2008-09). 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 *négritude*, *créolité*, and bilingualism, as well as issues of class and gender. Prerequisite: French 201, any 300-level or permission of instructor. Gen-Ed: CDLA, CDAA

FRN 305T. Mini-term in Martinique (Not offered 2008-09). See Terms Abroad Program. Continuation of the themes of FRN 304, studied and experienced on the island of Martinique. Prerequisite: FRN 304. Gen Ed: CDLA, CDAA

FRN 306T. Readings in French and Francophone Culture (Fall term in Rennes). See Terms Abroad Program. France and the French of today as reflected in selected literary works from various genres and periods. Prerequisite: French 201, any 300-level or permission of instructor. Gen Ed: Eu-LS

FRN 307. Negritude Movement: Point of Departure in Black African and Afro-Caribbean Literatures in French (Not offered 2008-09). 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: French 201, any 300-level or permission of instructor. Gen Ed: CDLA, CDAA

FRN 308. Women on Top: Great Women Writers and Characters of French Narrative Fiction (Also WGS 365) (Spring; Loth). 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 Hébert, Marguerite Yourcenar, Simone de Beauvoir, Marguerite Duras, Andrée Chédid and Mariama Bâ. Focus on cultural, historical and political positioning of both writers and their subjects. Prerequisite: French 201, any 300-level or permission of instructor. GenEd: Eu-LS

FRN 309. Identifying Desire, Desiring Identity: French and Francophone Non-Narrative Literature (Not offered 2008-09). 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 Labé, Racine, Baudelaire, Tremblay, Césaire, and Schwartz-Bart. Prerequisite: French 201, any 300-level or permission of instructor. GenEd: Eu-LS

FRN 311. Studies in Francophone North America: Quebec(Not offered 2008-09). 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.

FRN 312. What is French Cinéma?/Qu'est-ce que le cinéma français? (Also MLT215) (Winter; Chilcoat). 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.

## Modern Languages and Literatures / 149

FRN 400. Whose Enlightenment? (Also WGS 416) (Fall; Chilcoat). 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. Prerequisite: One course at the 300 level. GenEd: Eu-L

FRN 401. The Writers of Romanticism. (Winter; Loth) Writers of personal and imaginative prose, poetry, and drama following the French Revolution. The beginning of Realism. Prerequisite: One course at the 300 level. GenEd: Eu-L

FRN 402. Sex Lives and Videotape: Casting Sexuality in French and Francophone Film (Also MLT 212 and WGS 228) (Not offered 2008-09). 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 Chéri*. 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. GenEd: Eu-C;

FRN 403. Studies in the French Theater (Not offered 2008-09). Studies of French-language theatrical texts and performances from the classical period to the present. Prerequisite: One course at the 300 level. GenEd: Eu-L

FRN 410. Studies in the Novel, 1800-1914 (Not offered 2008-09). The French novel from the revolution to the Great War. Special attention to historical, cultural and artistic movements and their effect on the novel. Prerequisite: One course at the 300 level. GenEd: Eu-L

FRN 411. The 20th Century Novel (Not offered 2008-09). A study of narrative technique and the representation of French culture in the works of authors such as Sagan, Perec, Vian, Gary, Sartre, Camus, Duras, and Beauvoir. Prerequisite: One course at the 300 level. Gen Ed.: Eu-L

FRN 420. Artist as Hero, 1800-1930 (Also MLT 210) (Not offered 2008-09). The reaction of the artistic temperament to its time, and of the times to the artistic temperament. Gen Ed: Eu-L

FRN 421. Histoire de la danse, Danse de l'histoire / History of Dance, Dance of History (Also ADA 53, MLT 211, and WGS 211)(Not offered 2008-09). 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 *littérateurs* (Molière, Gautier, Cocteau). GenEd: Eu-CS

FRN 430. West African Oral Literature (Also MLT 213) (Not offered 2008-09). 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. GenEd: CDAA

FRN 431. Voices of Francophonie Literature from French-Speaking Countries and Territories other than France (Spring; Chilcoat). 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 Bâ, Assia Djebar, Rachid Mînouni, Patrick Chamoiseau, and Maryse Condé. Prerequisite, One course at the 300-level. Gen Ed: CDAA

FRN 489. Senior Project (Winter; Batson). 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. WS

FRN 490-492. Independent Study (Fall, Winter, Spring). Individual directed readings in French literature. Prerequisite: At least one course at the 400-level and permission of the instructor.

### 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

## 150 / Modern Languages and Literatures

(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 Language Sequence

GER 100. Basic German I (Fall). Basic skills for students who begin with no knowledge of German.

GER 101. Basic German II (Winter). Continuation of German 100. Prerequisite: German 100 or two years of secondary school German.

GER 102. Basic German III (Spring). Continuation of German 101, with introduction of readings. Prerequisite: German 101 or three years of secondary school German

GER 200. Intermediate German I (Fall). Intensive grammar review, emphasis on vocabulary building, idiomatic expressions, conversation, and composition based on cultural and literary texts. Prerequisite: German 102 or equivalent.

GER 201. Intermediate German II (Fall, Winter). Continuation of extensive grammar review, vocabulary building, conversation, and composition based on more advanced cultural and literary texts. Prerequisite: German 200 or equivalent.

GER 202. Advanced German (Not offered 2008-09). Mastery of the spoken and written language, with an emphasis on the finer points of grammar, style, and colloquial expression. Prerequisite: German 201 or equivalent.

GER 204T-207T. German Language and Culture Studies Abroad (Spring). See International Programs.

GER 250T-251T. The German Language Studied Independently Abroad.

### 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 German 201 or another 300-level course. Prerequisite for all 400-level courses is a 300-level course.

GER 300T. German Civilization (Spring in Freiburg/Berlin; Ricci Bell). See International Programs. An introduction to the cultural history of German speaking Europe. Prerequisite: GER 201 or permission of the instructor. GenEd:Eu-CS

GER 301. German Culture and the Professions (Not offered 2008-09). 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: GER 201 or permission of the instructor.

GER 302. German Prose: A Survey (Not offered 2008-09). 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: GER 201 or permission of the instructor. GenEd: Eu-LS

GER 303. German Drama: A Survey (Not offered 2008-09). Theory and practice of German theater from the Enlightenment to the Present. Prerequisite: GER 201 or permission of the instructor. GenEd: Eu-LS

GER 306. Twentieth Century German Literature (Not offered 2008-09). Representative works by major writers, read as expressions of concern about their times. Prerequisite: GER 201 or permission of the instructor. GenEd: Eu-L

GER 330. Forging a Nation – German Culture and Society I (1750-1914) (Also MLT 230) (Not offered 2008-09). Study of the social, political and cultural challenges of building a unified German identity and nation—including religious tolerance, imperialism, sexual politics industrialization and urbanization. Prerequisite: GER 201. GenEd: Eu-C, Eu-L

GER 331. Guns, Jazz & Politics—German Culture and Society II (1914-1933) (Also MLT 231). (Not offered 2008-09). Study of how violence, economic and political volatility, technology, and changing moral codes affected German society and culture (literature, visual arts, film, music) from the onset of the First World War to the rise of Hitler. Prerequisite: GER 201. GenEd: Eu-C, Eu-L

GER 332. Identity after the Holocaust – German Culture and Society III (1945-Present) (Also MLT 232) Not offered 2008-09). Study of the cultural, political, and social impact of WWII's mass

## Modern Languages and Literatures / 151

violence on modern Germany, focusing on issues such as denazification and reeducation, rebellious youth, the 'Historian's debate,' and reunification. Prerequisite: GER 201. GenEd: Eu-C, Eu-L

GER 333. Metropolis Berlin: Cultural Representations of Germany's Capital (Also MLT 233) (Not offered 2008-09). An exploration of how the city Berlin has been constructed and contested as a political and cultural as well as physical site in art and architecture, literature and film. Prerequisite: GER 201. GenEd: Eu-C, Eu-L

GER 334. Femme fatales? Women in 19th and 20th Century German Culture and Society (Also MLT 234 and WGS 222) (Not offered 2008-09). 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. Prerequisite: GER 201. GenEd: Eu-LS

GER 335. Voices from Abroad: German Exile Culture, 1933-1990 (Also MLT 235) (Not offered 2008-09). 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 émigrés to Germany and incorporates theoretical assessments of exile, considering works by Said, Milosz and others. GenEd: Eu-LS, Eu-C

GER 336. The Thrill of Victory: Reading German Sports (and) Culture (Also MLT 336). (Not offered 2008-09). 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. GenEd: Eu-LS, Eu-C

GER 337. Flashy Erotics to Forbidden Laughter: German Cabaret through the 20th Century (Not offered 2008-09). 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. GenEd: Eu-LS, Eu-C

GER 401. Meeting the Other: Multiculturalism in Contemporary Germany (Not offered 2008-09). 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. Prerequisite: Any 300-level course or permission of the instructor. GenEd: EuLS

GER 402. German Film Studies (Fall; Ricci Bell). Decoding film-specific 'narratives' in German movies on the background of socio-political, economic, and cultural conditions of their production. Prerequisite: Any 300-level course or permission of the instructor. GenEd: Eu-LS

GER 403. Shoah: Literary, Artistic and Filmic Representations of the Holocaust (Not offered 2008-09). Comparing and contrasting works of German and German-Jewish writers. Prerequisite: Any 300-level course or permission of the instructor.

GER 489. Senior Writing Project (Winter, Spring; Nelson, Ricci Bell).

GER 490-492. Independent Study (Fall, Winter, Spring). Individual directed readings in German literature. Prerequisite: At least one course at the 400-level and permission of the instructor.

### Hebrew

HEB 100. Basic Hebrew I (Fall). A basic course for students who begin with no knowledge of Hebrew. Structure, reading, and audiolingual training.

HEB 101. Basic Hebrew II (Winter). A basic course for students who begin with no knowledge of Hebrew. Structure, reading, and audiolingual training.

HEB 102. Basic Hebrew III (Spring). A basic course for students who begin with no knowledge

## 152 / Modern Languages and Literatures

of Hebrew. Structure, reading, and audiolingual training.

### Italian

ITL 100. Basic Italian I (Winter). A foundation course in Italian, open only to students who have been accepted for specific International Programs.

ITL 104T. The Italian Language Studied Abroad (Spring term in Florence). A continuation of Basic Italian I. Prerequisite: Italian 100. See International Programs.

ITL 250T, 251T. The Italian Language Studied Independently Abroad.

### Japanese

JPN 100. Basic Japanese I (Fall). A foundation course in Japanese. Study of the structure of the language is supported by laboratory work, audiolingual training.

JPN 101. Basic Japanese II (Winter). A continuation of Japanese 100. Prerequisite: Japanese 100.

JPN 102. Basic Japanese III (Spring). A continuation of Japanese 101.

JPN 200. Intermediate Japanese I (Fall). Emphasis on grammar review and skills of oral communication. Prerequisite: Japanese 102 or equivalent.

JPN 201. Intermediate Japanese II (Winter). Continuation of grammar review and communication skills. Prerequisite: Japanese 200 or equivalent.

JPN 202. Intermediate Japanese III (Spring). A continuation of Japanese 201.

JPN 204T. The Japanese Language Studied Abroad (Fall; Term in Japan). A continuation of Basic Japanese I. Prerequisite: Japanese 100. See International Programs.

JPN 205T. Written Japanese Abroad (Fall; Term in Japan). A continuation of Basic Japanese I. Prerequisite: Japanese 100. See International Programs.

JPN 250T-252T (160A-162A). The Japanese Language Studied Independently Abroad.

JPN 300. Advanced Intermediate Japanese I (Fall). Continued formal study of the Japanese language. Prerequisite: Japanese 202 or equivalent.

JPN 301. Advanced Intermediate Japanese II (Winter). Continuation of Japanese 300. Prerequisite: Japanese 300 or permission of the instructor.

JPN 302. Advanced Intermediate Japanese III (Spring). Continuation of Japanese 301. Prerequisite: Japanese 301 or permission of the instructor.

JPN 490-492. Japanese Independent Study. Prerequisite: Permission of the instructor.

### Portuguese

POR 100. Basic Portuguese I. (Not offered 2008-09) 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.

POR 104T. Portuguese Language Studied Abroad (Not offered 2008-09). A continuation of Basic Portuguese I. Prerequisite: Portuguese 100. See International Programs.

POR 490. Portuguese Independent Study. Prerequisite: Permission of the instructor.

### Russian

RUS 100. Basic Russian I (Fall). For students with no knowledge of Russian. An introduction to the language, with emphasis on oral skills and communicative proficiency.

RUS 101. Basic Russian II (Winter). Continuation of Russian 100. Prerequisite: Russian 100 or two years of high school Russian.

RUS 102. Basic Russian III (Spring). A continuation of Russian 101, with increasing attention paid to reading simple, every day texts. Prerequisite: Russian 101 or equivalent.

RUS 200. Intermediate Russian I (Fall). Intensive development of the four proficiency skills (speaking, listening, reading, writing) with continued emphasis on strategies of basic conversation. Prerequisite: Russian 102 or equivalent.

RUS 201. Intermediate Russian II (Winter). Continuation of Russian 200. Prerequisite: Russian 200 or equivalent.

RUS 202. Advanced Russian (Spring). Development of skills and vocabulary necessary to deal with conversation about and texts on Russian cultural life. Basic grammar review. Prerequisite: Russian 201 or equivalent.

RUS 224T-227T. The Russian Language Studied Abroad.

RUS 250T, 251T. The Russian Language Studied Independently Abroad.

### Russian Literature and Culture

RUS 230. Contemporary Russian Culture (Not offered 2008-09). A course that combines expanding oral, aural, and written skills with an introduction to contemporary issues in Russian culture and political life. Prerequisite: Russian 202 or instructor's permission. GenEd: Eu-CS

RUS 300. Survey of Russian Literature I: From Pushkin to Revolution (Not offered 2008-09). 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: Russian 202 or instructor's permission. GenEd: Eu-LS

RUS 301. Survey of Russian Literature II: From Revolution to Present (Not offered 2008-09). Readings ranging from the great revolutionary writers (Mayokovsky, Babel, Platonov, etc.) to contemporary writers of interest. Prerequisite: Russian 300. GenEd: Eu-LS

RUS 302. The Russian Short Story: Pathologies of the Everyday (Not offered 2008-09). A survey of Russian short prose, with emphasis on its reflected/distorted images of Russian everyday life. Includes Gogol, Tolstoy, Gorky, Kharms, Petrushevskaia, and others. GenEd: Eu-LS

RUS 330. Special Topic in Russian Culture: The Forbidden: Eroticism, Passion and Death in Russian Culture (Not offered 2008-09). Through analysis of literature, film and painting we will ask questions such as: Is there a necessary link between the erotic and the forbidden? What does a portrayal of passion tell us about a society's value system? Is death in Russian culture celebrated or condemned? GenEd:EU-L

RUS 490-492. Independent Study (Fall, Winter, Spring). Prerequisites: One 300-level course and permission of the instructor.

### Spanish Language and Culture

SPN 100. Basic Spanish I (Fall). 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.

SPN 101. Basic Spanish II (Winter). A continuation of Spanish I. This course further develops all language skills. Prerequisite: Spanish 100 or two years of Spanish at high school level. Attendance of weekly sessions with the language assistant is required.

SPN 102. Basic Spanish III (Spring). A continuation of Spanish II. This course further develops all language skills. Prerequisite: Spanish 101 or three years of Spanish at high school level. Attendance of weekly sessions with the language assistant is required.

SPN 200. Intermediate Spanish I (Fall, Winter, Spring). Intensive and accelerated grammar review, and vocabulary growth. Further development of conversation and writing skills based on cultural texts. Prerequisite: Spanish 102 or equivalent or four years of secondary school Spanish.

SPN 201. Intermediate Spanish II (Fall, Winter, Spring). 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: Spanish 200 or four years of secondary school Spanish.

SPN 202. Intermediate Spanish III (Fall, Winter, Spring). 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: Spanish 201 or four years of secondary school Spanish.

## 154 / Modern Languages and Literatures

SPN 203. Advanced Spanish (Fall, Winter, Spring). 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: Spanish 202 or permission of the instructor.

SPN 204T-207T. The Spanish Language Studied Abroad (Winter). See International Programs.

SPN 208T. Spanish Civilization (Not offered 2008-2009). See International Programs.

SPN 209T. Mexican Civilization (Winter).

SPN 250T, 251T (160A, 161A). The Spanish Language Studied Independently Abroad. 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.

Studies in Spanish Peninsular Literatures and Cultures (300-324)

SPN 300T. Love in Andalusia (Not offered 2008-09). A broad look at concepts of love in Spanish literature. The action of most of the texts takes place in Seville or in Andalusia. We will examine the treatment of love from the courtly to 20th-century erotica; authors will include Cervantes, Lope de Vega, Garcia Lorca, Paloma Pedrero and Lucia Etxebarria. Prerequisite: SPN 203 or permission of the instructor. See Terms Abroad Program. GenEd: Eu-L

SPN 301. Pop, Punk, and Rock & Roll: Spanish Generation X Writers of the 1990s and the Mass Media (Not offered 2008-09). 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 Lucía Etxebarria, and *La pistola de mi hermano* by Ray Loriga. Prerequisite: SPN 203 or permission of the instructor. GenEd: Eu-L

SPN 302. Open Your Eyes: Spanish Culture through Film since 1929 (Spring; Henseler). In this course we will examine issues concerning Spanish culture through film. Students will learn to analyze, interpret and write about films, from note taking and first drafts to polished essays and research projects. At the same time, students will gain knowledge on the historical framework and the cultural and social environment of the films themselves. This double focus will lead to improved critical writing skills, better analytical abilities, and an increased sensitivity and understanding of cultural frameworks. Students will also gain knowledge of some of the most important directors and actors of the Iberian Peninsula. Prerequisite: SPN 203 or permission of the instructor. GenEd: Eu-C

SPN 303. Bodies and Souls: Saints, Sinners, and Spectacles in Early Modern Spain (Also WGS 303) (Not offered 2008-09). This course will explore the image of the body and its role in intellectual and spiritual formation in the literature of Medieval and Golden Age Spain. We will examine various representations of the body as it is defined and manipulated within the context of the sexual, the spiritual, the profane, and the divine. Some of the key themes will include: the relationship between body and text, the regulation and control of the body, the imperfect, mutilated, and weak body, gender and authority, consuming bodies and eating communities, the body of the Other, the body as spectacle, and corporeal love and desire. Readings will include selections from medieval lyric poetry, medieval, renaissance, and baroque narrative, and Golden Age drama, as well as contemporary images of the body in films such as *Fight Club*, *Thirteen*, and *María llena de gracia*. Prerequisite: SPN 203 or permission of the instructor. GenEd: EuC

SPN 304. Performing Identities in Contemporary Spanish Theater (Not offered 2008-09). Representative works by Spain's leading playwrights from the 1930s to the present (Garcia Lorca, Sastre, Buero Vallejo, Muñoz, Arrabal, Lopez Rubio, Cabal, Pedrero, Diosdado, Onetti) are studied from diverse theoretical approaches to reflect on the performative nature of identities. Prerequisite: Spanish 203 or permission of the instructor. GenEd: Eu-L

SPN 305. Music Videos and Reality Television in Contemporary Spanish Literature (Not offered 2008-09). In this course we will analyze two novels, *Héroes* (1993) by Ray Loriga and *Veo*

veo (1996) by Gabriela Bustelo, through theoretical articles and examples of music videos clips and reality television shows. Students will gain a historical and socio-cultural understanding of the characteristics that define contemporary Spanish Generation X narrative, and they will learn close reading and literary analytical skills. GenEd: EU-L.

Studies in Latin American Literatures and Cultures (325-349)

SPN 325. Staging Conflict: Studies in One-Act Mexican Theater (Fall; Garcia). 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, Víctor Hugo Rascón Banda, Sabina Berman, Hugo Salcedo, among others. GenEd:

CDLA

SPN 326. Women Weaving Histories: Short Narratives by Latin American Female Writers (Also WGS 326) (Not offered 2008-09). We will focus on short stories written in the 20th century by women throughout the Latin American region, including Isabel Allende (Chile), Elena Poniatowska (México), Luisa Velenzuela (Argentina), Rosario Ferré (Puerto Rico), Laura Antillano (Venezuela), María Teresa Solaris (Perú), 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: Spanish 203 or permission of the instructor. GenEd:

CDLA

SPN 327. The Nation at Home: Family and Nationhood in Spanish American Theater (Winter; Garcia). 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, Argüelles, 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: Spanish 203 or permission of the instructor. GenEd: CDLA

SPN 328. Inquiring Latin American Identities: Reading Context, Space & Cultural Artifacts (Not offered 2008-09). This course aims at reflecting on how Latin American identities are constructed through the lenses of written, visual, and oral texts. It will examine how newspapers and literature, movies and pictures, public and private spaces, popular customs, and peoples' voices converge to shape cultural identities of Spanish speaking people in Latin America. On-line collaboration with students on the term abroad in Mexico will facilitate the integration of authentic cultural artifacts and Mexican voices gathered through student's field research. Substantive theoretical readings will complement the assignments. GenEd: CDLA

SPN 329. Interruptions: The Paradox of Tradition in Spanish American Poetry (Not offered 2008-09). 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. GenEd: CDLA

SPN 330T. Mexican Women's Contemporary Short Fiction. 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

## 156 / Modern Languages and Literatures

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.

### Studies in Latina/o Literatures and Cultures (350-374)

SPN 350. *Visions and Voices: Chicana Icons from Myth to Matter* (Also WGS 350) (Not offered 2008-09). 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: SPN 203 or permission of the instructor. GenEd: CDLA, AM-C, AM-L

### Studies in Comparative Perspectives (375-399)

SPN 375. *Dreams, Mirages and Delusions in Peninsular and Latin American Fiction* (Not offered 2008-09). 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, Garcia Lorca, García Márquez, Cortazar, and Ana Lydia Vega. Prerequisite: SPN 203 or permission of the instructor. GenEd: CDLA

SPN 376. *Down to Earth: Cross-Cultural Explorations of the Hispanic World* (Fall; Osuna). This course furthers the development of cultural competency while maximizing language skills and providing the foundation for further studies in language, literature, and culture. The course is organized according to geographic regions that provide the framework to situate people and events in the context of historical pasts and contemporary cultural events. Prerequisite: Spanish 203 or permission of the instructor. GenEd: CDLA

SPN 378. *Short Fiction: From Naturalism to Neoliberalism* (Winter, Martinez). How do science, economics and political events affect literature? Find out in this survey of short fiction from the mid-nineteenth century to the present day from Spain and Latin America. The course examines the ways in which national and international events are expressed in literature.

### Literatures and Cultures (400-level courses)

(Prerequisites for 400-level courses listed in this section are two 300-level courses.)

SPN 400. *Crossing Borders: A Study in Mexican and Chicano Literatures* (Not offered 2008-09). An overview of Mexican and Chicano societies through literature and film dealing with Northern Mexico and the Southwestern United States. Topics will cover malinchismo, machismo, maquiladoras, and identity from the critical perspective of border studies and transnationalism. We will read texts by Carlos Fuentes, Rosina Conde, Hugo Salcedo, Tomás Rivera, Cherrie Moraga, and others. Prerequisites: Two 300-level courses. GenEd: CDLA

SPN 401. *Bodies and Power in Latin American Narrative* (Not offered 2008-09). 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. Prerequisites: Two 300-level courses. GenEd, CDLA

SPN 402. *Dressing Up the Canon: Cross-Dressing in Hispanic Literature and Film* (Also WGS 402) (Spring; Garcia). 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. Prerequisites: Two 300-level

courses. GenEd: Eu-L

SPN 403. The “Second Sex” in Latin America: Women’s Writing in the Twentieth Century (Also WGS403) (Not offered 2008-09). This course will focus on the ways in which female writers have expressed their struggle against powerful patriarchal systems, and how they have worked and continue to work toward gaining an equal voice in the literature of the Americas. Readings include narrative, theater and poetry by well-known and lesser-known women writers from various Latin-American countries. GenEd: CDLA/LCC

SPN 416. “Testimonio” and Resistance Writings in Central America as Literary Discourse (Not offered 2008-09). This course explores how social struggles in the last fifty years in Central America have led to new forms of cultural and literary expression. Through the writings of such authors as Manlio Argueta, Rigoberta Menchú, Humberto Ak’abal, Doris Tijerino, and others, we will also examine movements of ethnic or national liberation, women’s liberation, poor and oppressed peoples’ organizations of all types, ecological activism, and the like. Prerequisites: Two 300-level courses. GenEd: CDLA

SPN 417. Death and Revenge in the Southern Cone (Also WGS 417) (Fall; Martinez). 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*. Prerequisites: Two 300-level courses. GenEd: CDLA

SPN 418. Of Cock Fights and Crowded Elevators: Readings in Contemporary Mexican Theater (Not offered 2008-09). 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. Prerequisites: Two 300-level courses. GenEd: CDLA

SPN 431. Colonial Latin America 1492-1800 (Not offered 2008-09). 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. Prerequisites: Two 300-level courses. GenEd: CDLA

SPN 432. Islands Adrift: Race, Politics, and Diasporas in the Hispanic Caribbean (Not offered 2008-09). 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 Palés Matos, Nicolás Guillén, Pedro Mir, Heberto Padilla, Tomás Gutiérrez Alea, Aída Cartagena Portalatín, Celia Cruz, Ana Lydia Vega, Juan Luis Guerra, Reinaldo Arenas, Mayra Montero, among others. Prerequisites: Two 300-level courses. GenEd: CDLA, CDAA

SPN 433. Latin American Colonial Crossroads at the Movies (Spring; Mosquera). 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

## 158 / Modern Languages and Literatures

students with debates pertaining to reconstructing the colonial past for contemporary consumption. GenEd: LACS

SPN 446. Video Clip Literature, E-mail Novels, and Telephone Texts: Spanish Narrative and Technology of the Twenty-first Century (Not offered 2008-09). As technology—telephones, computers, televisions—contributes to the isolating experience of the human being, and as consumer culture increasingly covers up the real for an image of the real, individuals find themselves searching for a place to develop their identities. Authors and characters of the narrative production of the 1990s and the first decade of the twenty-first century fuse and confuse their identities with the technological world that surrounds them. In this class we will study how technology contributes to the creation of innovative narrative techniques and the construction of simulative modes of identification inside and outside of the text. Authors studied in this course include Lucía Etxebarria, Ray Loriga, Gabriela Bustelo, André Neuman, and Care Santos. Prerequisites: Two 300-level courses. GenEd: Eu-L

SPN 447. Virtual Embodiments: Video Games, Video Clips and Reality TV in Contemporary Spanish Narrative (Not offered 2008-09). In this course we will analyze three contemporary Spanish novels *Ático* by Gaby Martínez (2004), *Héroes* by Ray Loriga (1993), and *Veo* by Gabriela Bustelo (1996) that confront the construction of identity through technology. We will examine these novels in relation to theoretical articles on the video game, the video clip, and reality television. We will study the effects of these technologies on the construction of fictional subject identities as well as on our own lives. This will take place through close analysis of the novels and through multimedia assignments that include the navigation and examination of Spanish video games, the creation of a video clip that simulates the narrative style of the novel, and the production of a reality television “show.” Prerequisites: Two 300-level courses. GenEd: Eu-L

SPN 448. Trash and Transgression: Spanish Surrealism and Popular Culture in Dalí, Lorca and Buñuel (Winter; Moyano). This course studies the work of a group of young Spanish poets, playwrights, filmmakers and painters, generally known as the Group of '27, who constituted the most important Spanish renaissance of the last centuries, and which was broken abruptly by the Civil War of 1936. We will examine the popular roots of some of their works as well as some of their most distinct contributions to Surrealism, as exemplified by Buñuel's cinematic innovation and its religious confusions and repressed sexual longings. Prerequisites: Two 300-level courses. GenEd: Eu-L, Eu-C

SPN 489. Honors Senior Seminar (Spring; Moyano). For seniors who qualify for departmental honors; please contact the department during the Winter term.

SPN 490-492. Independent Study (Fall, Winter, Spring). Individual directed readings in the field of Spanish or Spanish-American literature. Prerequisite: At least one course in Spanish at the 400-level and permission of the instructor.

## Music

Associate Professor Olsen, Chair; Professor Tann; Associate Professor McMullen; Assistant Professor Matsue; Visiting Associate Professor, Director of Performance Klimash; Administrative Program Assistant Herrington; Office Assistant Goodman.

Requirements for the Major: Twelve courses, including the theory sequence (AMU 101, 102, 200); four music history courses (AMU 212, 213, 214, 215); a performance workshop (AMU 230/231/232/233/234) or written confirmation of exceptional service in one of the departmental ensembles, or a juried recital; two music electives chosen in consultation with the student's departmental advisor; a two-term senior project; and at least two years of practicum credit, one year of which must be in an ensemble.

Requirements for the Interdepartmental Major: Eight courses, including the theory sequence (AMU 101, 102, 200); three music history courses (chosen from AMU 212, 213, 214, 215); a performance workshop (AMU 230/231/232/233/234), or written confirmation of exceptional service in one of the departmental ensembles, or a juried recital; one music elective chosen in consultation with the student's departmental advisor; and at least one year of practicum credit in an ensemble.

Requirements for the Minor in Music: Six courses, including the theory sequence (AMU 101, 102, 200); two music history courses (chosen from AMU 212, 213, 214, 215); one music elective chosen in consultation with the student's departmental advisor; and at least one year of practicum credit in an ensemble.

Requirements for the Minor in World Musics and Cultures: Six courses, including AMU 101; ANT 110; two area courses (chosen from AMU 120/ANT 148, AMU 131, AMU 132, AMU 133, AMU 134, AMU 136, AMU 221, AMU 232, AMU 233, AMU 234); AMU 220/ANT 274; AMU 490 Independent Study as a capstone experience; and at least one year of practicum credit in an ensemble chosen from AMU 012, AMU 013, AMU 015.

Departmental Honors: To be eligible for departmental honors, a student must fulfill the following requirements: (1) a minimum index of 3.3 in music; (2) a grade of "A minus" or better in a two-term senior project in composition, performance, analysis, or research (AMU 498/499). In addition, the student must satisfy College requirements for departmental honors.

### Introductory Courses

AMU 050. The Language of Music (Not offered 2008-09). 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.

AMU 060. From Chant to Mozart (Not offered 2008-09). 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. Does not count towards major. GenEd: Eu-CS

AMU 061. Beethoven to Bernstein (Winter; McMullen). A study of composers and their works from the end of the 18th century through the present. Beethoven, Chopin, Berlioz, Mendelssohn, Schubert, Schumann, Verdi, Wagner, Brahms, Debussy, Stravinsky, Schoenberg, Ives, Copland, Varese, among others. Does not count towards major. GenEd: Eu-CS

AMU 110. Class Piano (Not offered 2008-09). 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.

### Music Theory Core Courses

AMU 100. Elements of Music Theory (Spring; Tann). The gentle art of combining melodic lines (counterpoint). An introduction to music theory for students with some ability to read (sing/play) music.

AMU 101. Music Theory I (Fall, Winter; Tann). The harmonic vocabulary and compositional techniques of Baroque and early Classical composers approached through short written exercises and

## 160 / Music

listening assignments. Corequisite: AMU 014 Union College and Community Chorale. Students are required to register for and participate in AMU 014 the same term they take AMU 101; students are encouraged to participate in the Chorale during additional terms and may receive one course credit upon the successful completion of three terms.

AMU 102. Music Theory II (Spring; Tann). A continuation of Music Theory I with models drawn from late Classical and Romantic composers. Prerequisite: AMU 101 or permission of the instructor.

### World Music and American Music

AMU 120. Introduction to World Music (Also ANT 148) (Not offered 2008-09). An introduction to various musics from world areas such as Africa, South Asia, and Europe. Readings, discussion, and listening assignments will explore music in society, including such concepts as the formation of new global musics, music's role in religious practices, and the connection between language and music. Students will ultimately gain the skills necessary to engage with music of the world with particular emphasis on music as an integral component of culture.

AMU 125. World Religions and Music (Not offered 2008-09). 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. GenEd: Eu-CS

AMU 130. American Music (Winter; Olsen). American music-cultures approached through performance, lecture, video, and audio. Survey samples from popular, classical, and folk traditions. GenEd: Am-CS

AMU 131. Music of Black America (Not offered 2008-09). 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. No prerequisite. Not open to students who have taken AMU 132. GenEd: Am-CS, CD-AA, LCC

AMU 132. The History of Jazz (Not offered 2008-09). A study of the important personalities and trends in the evolution of jazz, approached through reading, video and sound recordings, and live performance. No prerequisite. Not open to students who have taken AMU 131. GenEd: CD-AA, Am-CS, LCC

AMU 133. Music of Latin America (Not offered 2008-09). 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. GenEd: CD-AA, CD-LA, LCC

AMU 134. Music and Culture of Africa (Fall; Olsen). 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. GenEd: CD-AA, LCC

AMU 136. Popular Music in Modern Japan (Not offered 2008-09). An investigation of the position of popular music in modern Japan from Meiji period military music to contemporary Japanese urban popular musics. Intended for students interested in Japanese cultural history and music, ethnomusicology, popular music and culture, and music as modern text. No prerequisite. GenEd: CD-EA, LCC

### Intermediate Music Theory and Composition

AMU 200. Listening Workshop (Winter; Tann). An examination of the large-scale features of music through close listening, analysis of scores, and concert attendance. Prerequisite: AMU 102 or permission of the instructor.

AMU 204. Introduction to Composition (Fall; Tann). The creation and notation of freestyle compositions with emphasis on individual instruction.

### Music History and Cultural Studies

AMU 212. Baroque Music (Not offered 2008-09). 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. Prerequisite: AMU 101 or permission of the instructor. GenEd: Eu-C

AMU 213. Haydn, Mozart, Beethoven (Winter; 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. Prerequisite: AMU 101 or permission of the instructor. GenEd: Eu-LS

AMU 214. Romanticism (Fall; Staff). Through a study of scores and historical documents this course examines selected works from a variety of views, ranging from musical 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 19th century. Prerequisite: AMU 101 or permission of the instructor. GenEd: Eu-LS

AMU 215. Music in the 20th Century (Not offered 2008-09). 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: AMU 101 or permission of the instructor.

AMU 220. Music and Culture (Also ANT 274) (Spring; Matsue). An introduction to ethnomusicology, or the study of music and culture, through readings on the history and development of the discipline, and completion of a focused research project on music-making in the community. Discussion will explore the major theoretical approaches in the field supplemented by readings on specific world music areas. Students thus will encounter diverse peoples and their musical practices in cross-cultural comparison while also exploring research methodology through their own work.

AMU 221. Encounters with East Asian Music Cultures (Also Women's Studies 258) (Winter; Matsue). East Asian Performing Arts are rich in their diversity, ranging from quiet meditative moments to vibrant theatrical spectacles. Through exploration of genres such as Chinese Peking Opera, dramatic Korean narrative, and Japanese court music, students will consider performance practice throughout East Asia, larger questions of aesthetics, the history of cultural exchange between China, Korea, and Japan, gendered performance, and religious expression through music. GenEd: CD-EA, LCC

#### Performance Workshops

AMU 230. Vocal Workshop (Not offered 2008-09). Performance and historical study of music written for small vocal ensembles.

AMU 231. Chamber Music Workshop (Not offered 2008-09). Rehearsal and performance of chamber music primarily from Classical and Romantic periods.

AMU 232. Jazz Workshop (Spring; Olsen). Performance, analysis, and composition of music written in jazz idioms.

AMU 233. Japanese Wadaiko Workshop (Spring; Matsue). Study of Japanese music and culture, with an emphasis on the performance of Japanese Wadaiko (a popular ensemble drumming style). No prior musical experience necessary. GenEd: CD-EA, LCC

AMU 234. Balinese Gamelan Workshop (Not offered 2008-09). 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. GenEd: CD-EA, LCC

#### Special Topics in Music

AMU 301. Special Topics: Vocal Arranging (Not offered 2008-09). Writing and arranging for the voice, in folk, classical, jazz, and popular contexts. Prerequisite: AMU 102 or permission of the instructor.

AMU 302. Special Topics: Ethnomusicology Seminar (Not offered 2008-09). An overview of the field of ethnomusicology through exploration of relevant literature, documentaries, and performance. Prerequisite: AMU 050 or permission of the instructor.

AMU 303. Special Topics: Conducting (Not offered 2008-09). Fundamentals of conducting vocal and instrumental ensembles, including score reading and preparation, beat patterns, gestures, and rehearsal techniques. Prerequisite: permission of the instructor.

#### Independent Work

AMU 295H-296H. Sophomore Honors Independent Study

## 162 / Music

AMU 490-492. Independent Study

AMU 498-499. Two-Term Senior Project

### 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 013, AMU 014, AMU 015, AMU 016, or AMU 017). There are no limits on how many practicum courses can appear on the student's transcript. To earn course credit student must take three terms of the same practicum. At most two of these credits can be used towards graduation in the event that the student is behind in credits. Full music majors must accumulate at least two years of practicum credit (one year of which must be in an ensemble); ID majors and minors must accumulate at least one year of practicum credit in an ensemble.

AMU 010. Instrumental and Vocal Lessons. Individual instruction is offered in voice, keyboard, guitar, wind, string, brass, and percussion instruments. Lessons are paid for separately. For registration information and a list of approved instructors see Professor Olsen.

AMU 012. Union College Taiko Ensemble. (Not offered 2008-09). In the Union College Taiko Ensemble students will learn to perform on a variety of Japanese traditional drums. The ensemble meets weekly and offers one concert each term and may give additional performances both on- and off-campus. No previous musical experience is required, though students will need to audition/interview at the beginning of each term to determine enrollment. See Professor Matsue.

AMU 013. Union College and Community Gamelan Ensemble. (Not offered 2008-09). In the Union College and Community Gamelan Ensemble students and members of the community will learn to perform music for Balinese gong kebyar, a type of Indonesian orchestra featuring gongs, xylophones, drums, and cymbals. The ensemble meets weekly and offers one concert each term. No previous musical experience is required, though members may need to audition/interview to determine participation at the discretion of the instructor. See Professor Matsue.

AMU 014. Union College and Community Chorale. The rehearsal and performance of large-scale choral works with keyboard and orchestral accompaniment. Open by audition to all students and members of the community. The Chorale rehearses once a week and offers two formal concerts per year. See Professor Klimash.

AMU 015. Union College Jazz Ensemble. 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. 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 rehearse twice a week and offer one formal concert each term. See Professor Klimash.

AMU 017. Union College and Community Orchestra. The Orchestra meets once a week and presents one concert at the end of each term. The Orchestra is open by audition to all students and members of the community. Students usually occupy principal chairs, and may rotate to allow more players the opportunity for participation. See Professor Klimash.

## 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 have a good grounding in science and technology.

Requirements for the minor:

1. Required courses for all minors (two courses):  
Chemistry 224 /Engineering Science 224 (Frontiers of Nanotechnology and Nanomaterials)  
and Mechanical Engineering 213 (Materials Science)
2. Required science courses: Any two courses, outside of the student's major department, in Biological Science, Chemistry, or Physics which count toward that department's major.
3. Elective courses: Any two courses from the following list, including at least one course from Humanities or Social Sciences:
  - Anthropology 240 Culture and Technology
  - Chemistry 352 Quantum Chemistry
  - Engineering Science 100 Exploring Engineering
  - History 193 Science, Medicine and Technology in Culture (SMTC)
  - History 253 / Physics 053 Physics and Politics
  - Philosophy 232 Philosophy of Science
  - Philosophy 247 Technology and Human Values
  - Physics 350 Quantum Mechanics
4. The student's senior writing, research, or design project should involve elements of nanoscience or nanotechnology. This senior project should be approved by the Nanotechnology program director.

Program directors: Professors Hagerman (Chemistry) and Catravas (Electrical and Computer Engineering)

## Neuroscience

The major in neuroscience is designed for students with interests that intersect the fields of biology and psychology. Neuroscience focuses on the relationships among brain function, cognitive processing, and behavior. Researchers in this field come from widely disparate backgrounds, including cognitive psychology, clinical neuropsychology, neuroimaging, neurobiology, neuroethology, bio-psychology, physiology, neurology, chemistry, physics, mathematics, philosophy, genetics, and computer science. Thus, research questions are considered from many different levels, and many different converging methodologies are used.

The neuroscience major consists of two tracks: the bioscience track and the cognitive 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 processing that is traditionally studied in developmental or clinical psychology.

It is recommended that students in this major start with Biology 101 and 102 then Psychology 210 as these courses are prerequisites for neuroscience students to take the neuroscience related courses in the Psychology Department without taking Psych 100 (introduction to psychology).

Requirements for Neuroscience: The neuroscience major consists of four parts: (1) A core of required courses; (2) required courses in one of three tracks, bioscience, cognitive, or computational; (3) general electives; and (4) a senior writing requirement. Unless listed below, course descriptions are listed under their home departments.

1. Required courses for all neuroscience majors:

Biology 101 and 102 (Introductory Biology); Biology 225 (Molecular Biology of the Cell); Either Biology 362 (Introduction to Neurobiology) or Biology 363 (Introduction to Cellular Neurosciences); Psychology 200 (Statistical Methods in Psychology); Psychology 210 (Introduction to Cognitive Neuroscience) Psychology 220 (Psychology of Memory and Thinking); Philosophy 231 (Symbolic Logic); Computer Science 106 (Can Computers Think?)

Students must also take the following cognate courses: Math 110, Chemistry 101 and 102 (or Chemistry 110). Math 112 and one term of physics are also recommended.

2a. Bioscience track:

Any TWO from the following list: Biology 325 (Animal Behavior); Biology 330 (Comparative Animal Physiology); Biology 332 (Biology Vertebrate Anatomy); Biology 365 (Neural Circuits and Behavior); Biology 370 (Endocrinology); Biology 384 (Molecular Genetics); Psychology 211 (Sensation and Perception)

2b. Cognitive track:

Psychology 300 (Research Methods in Psychology), and ONE from the following list: Psychology 221 (Psychology of Learning), Psychology 211 (Sensation and Perception) Philosophy 365 (Philosophy of Mind);

3. Elective. TWO additional courses from the following list:

Biology 325 (Animal Behavior); Biology 330 (Comparative Animal Physiology); Biology 354 (Developmental Biology); Biology 362 (Neurobiology); Biology 363 (Introduction to Cellular Neuroscience); Biology 365 (Neural Circuits and Behavior); Biology 370 (Endocrinology); Biology 384 (Molecular Genetics); Chemistry 231 (Organic Chemistry); Computer Science 206 (Natural Language Processing); Computer Science 320 (Advanced Artificial intelligence); Psychology 211 (Sensation and Perception); Psychology 215 (Introduction to Health Psychology); Psychology 221 (Psychology of Learning); Psychology 225 (Psychology of Language); Psychology 240 (Developmental Psychology); Psychology 250 (Abnormal Psychology); Philosophy 231 (Symbolic Logic); Philosophy 232 (Philosophy of Science) Philosophy 365 (Philosophy of Mind); Philosophy 447 (Topics in Logic: Advanced Symbolic Logic); Philosophy 462 (Philosophy of Language).

4. Senior writing requirement

(a) ONE of the following senior seminars: Psychology 410, 411 Biology 487, 488, or 489, or

(b) A two- or three-term senior thesis or senior research project. Students should register for senior thesis or research in the department that corresponds to their neuroscience track. For the Bioscience track: BIO 497, 498, 499. For the Cognitive track: PSY 498 and 499 or PSY 487, 488, and 489. Option (b) is strongly recommended.

Requirements for the Minor: Six courses listed in sections 1, 2a, or 2b above with at least one course from 2a and one course from 2b. The minor must also include at least 2 courses whose primary designation is in Biology and 2 courses whose primary designation is in Psychology. For Biology and Psychology Majors, only 2 courses counted for the major may also count toward the minor.

Requirements for Honors: In addition to fulfilling college-wide honors requirements, to earn honors in neuroscience, a student must earn a minimum grade point average of 3.3 in the major (including thesis grades, but not including the cognate courses, or more than one term of independent study), a minimum of three grades of A or A- in courses in the major exclusive of the thesis, and satisfactory completion of a senior thesis with a minimum grade of A-.

Advisory Committee: Burns, Anderson-Hanley, Chabris, Weisse and Romero (Psychology); Fleishman, Kirkton, Olberg, and Chu-LaGriff (Biology); Martin (Philosophy); Barr and Striegnitz (Computer Science), Cervone (Math)

## Organizing Theme

### Overview

The student with a well-defined intellectual curiosity in a particular topic involving multiple disciplines may develop and request permission to pursue an “Organizing Theme” major or minor. The OT major calls on students to make significant use of at least three departments (two if one of the departments utilized is engineering.) The OT minor requires students to utilize at least two departments. Both the major and the minor encourage the exploration of thematic connections across disciplines.

### Requirements for the Major

The approved program must conform to the disciplines already established at Union. It consists of a total of 13 courses and should include:

- at least 12 courses that clearly relate to the organizing theme
- a central core of required courses
- at least two 300 level courses
- a one- or two-term senior project based upon the integration of knowledge and skills contributed by various courses in the major, ORT 498-499.

### Requirements for the Minor

Students who apply for an OT minor must have a GPA of at least 3.0. The approved program must conform to the disciplines already established at Union and should include:

- at least seven courses (from at least two departments) that clearly relate to the organizing theme
- a central core of required courses
- no more than four courses from a single department (unless the minor consists of more than seven courses.)
- at least four courses at the 200 level (or higher,) one of which must be a 300 level

Students may count two courses from their major or another minor toward the OT minor; however, the number of courses constituting the major and a minor must total 18 or more. Students applying for the OT minor may not count more than four courses that have already been taken (at the time of application) towards their OT minor.

### The Application Process

Both the major and the minor require the approval of an Organizing Theme advisor and a faculty committee established by the Dean of Studies. Both major and minor may be proposed no sooner than the third term of the freshman year and no later than the second term of the junior year. OT minor applications must be submitted to the OT committee by the sixth week of the term in which the student seeks approval. To find out more about Organizing Theme and the application process for the major and the minor, see the Organizing Theme Web page ([www.union.edu/academic\\_depts/org\\_theme](http://www.union.edu/academic_depts/org_theme)) or contact Professor Melinda Lawson, Assistant Director of Advising, at [lawsonm@union.edu](mailto:lawsonm@union.edu) or ext. 8041.

# Philosophy

Professor Martin, Chair; Professors Baker, Patrik; Associate Professor Davis; Assistant Professor Warenski; Visiting Assistant Professor Walker; Visiting Assistant Professor Wunderlich; Adjunct Assistant Professor Clark; Emeriti Professors Ludwig, Morris, Peterson.

Requirements for the Major: Eleven courses in philosophy, of which seven should be numbered 200[30] or above and three (excluding Phl 408/418, Phl 498/499, and Independent Study) numbered 400 or above. The eleven courses should include: two courses in the history of philosophy (i.e., two of the following: Phl 150, Phl 155, Phl 160, Phl 165, Phl 170, Phl 245, Phl 338, Phl 341, Phl 450); one course in logic (Phl 122, Phl 125, Phl 231, Phl 235, Phl 447, or Phl 480); and Phl 408/418. Majors are strongly advised to consult the advising information on the Departmental website at [www.union.edu/academic\\_depts/philosophy](http://www.union.edu/academic_depts/philosophy).

Requirements for the Interdepartmental Major: Seven courses in philosophy, of which four should be numbered 200 [30] or above and two (excluding Phl 408/418, Phl 498/499, and Independent Study) numbered 400 or above. The seven courses should include: two courses in the history of philosophy (i.e., two of the following: Phl 150, Phl 155, Phl 160, Phl 165, Phl 170, Phl 245, Phl 338, Phl 341, Phl 450); one course in logic (Phl 122, Phl 125, Phl 231, Phl 235, Phl 447, or Phl 480); and Phl 408/418. ID majors are strongly advised to consult the advising information on the Departmental website at [www.union.edu/academic\\_depts/philosophy](http://www.union.edu/academic_depts/philosophy).

Requirements for the Minor: Five courses in philosophy, of which two should be numbered 200 [30] or above. The five courses should include: one course in the history of philosophy (i.e., one of the following: Phl 150, Phl 155, Phl 160, Phl 165, Phl 170, Phl 245, Phl 338, Phl 341, Phl 450); and one course in logic (Phl 122, Phl 125, Phl 200, Phl 235, Phl 447, or Phl 480). Minors are strongly advised to consult the advising information on the Departmental website at [www.union.edu/academic\\_depts/philosophy](http://www.union.edu/academic_depts/philosophy).

Requirements for Departmental Honors: 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, one of which is the Honors Thesis (Phl 498/499); (4) publicly defend the thesis; and (5) 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. For possible changes in these requirements please consult the Departmental website at [www.union.edu/academic\\_depts/philosophy](http://www.union.edu/academic_depts/philosophy).

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 408/418 significantly develop a paper that they have written for a course that they finished prior to taking Phl 418.

## 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 [www.union.edu/academic\\_depts/philosophy](http://www.union.edu/academic_depts/philosophy).

051 Ethics Bowl Practicum. For students who want to participate in the Union College Ethics Bowl Team. This practicum provides students the opportunity to further develop their ethical reasoning, critical thinking, and communication skills by participating in the National Intercollegiate Ethics Bowl Program and the Bioethics Bowl. Ethics Bowls are case study competitions that combine the excitement and fun of a competitive quiz with an innovative approach to education in practical and professional ethics. Students enrolled in this course will represent Union College at three events in the 2008-2009 academic years. Petition required.

Issues-oriented:

100 . Introduction to Philosophy (Spring; Clark) 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?

105 Introduction to Ethics 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.

110 . Moral Problems: A Case Study Approach ( Fall: Wunderlich). 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.

115 . Paradoxes (Not offered 2008-09). A paradox arises when apparently acceptable premises and an apparently acceptable method of inference lead, surprisingly and annoyingly, to an unacceptable conclusion. We will examine famous paradoxes from many branches of philosophy, showing how attempts to resolve them yield valuable insights into such central philosophical concepts as truth, time, infinity, God, rationality, and morality.

120 . First-Year Seminar (Fall; Martin). 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.

125 . Introduction to Logic and Critical Thinking (Not offered 2008-09 ). 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.

130 . Cyberfeminism (not offered 2008-09). (Cross-listed with Women's and Gender Studies) This course will investigate the impact that digital technology has had on human perception, labor, and self-identity, including socialist feminist arguments about the restructuring of work and the possibility of women's liberation due to technology. Students will be taught how to write philosophical arguments in electronic hypertext, instead of on paper, and to use links creatively.

135 . Philosophy in Film (Fall; Walker). This course will be an exploration of the portrayal in film of philosophical issues, followed by a focused consideration of the issues themselves. We will view films such as *Minority Report*, *The Boondock Saints*, *The Thirteenth Floor*, *Shadowlands*; and *I-Robot*. The goal will be to stimulate students' philosophical imaginations through film and then use that energy as the springboard for philosophical study and discussion. Issues to be considered include: 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.

Historically-oriented:

150 . Ancient Philosophy (Not offered 2008-09). 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. GenEd: An-CS.

155 . Seventeenth and Eighteenth Century European Philosophy (Winter; Walker). An introduction to philosophy by way of some of the most important European philosophical works of the Seventeenth and Eighteenth Centuries. GenEd: Eu-CS.

160 . Nineteenth and Twentieth Century Philosophy (Not offered 2008-09). 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. GenEd: Eu-CS;

175. Jesus. (Spring; Martin). A survey of recent debates among historians, theologians, and interested onlookers over who Jesus was and how Christians can best respond to the challenge that recent scholarship poses to traditional Christian beliefs.

165 . Asian Philosophy (Not offered 2008-09). An introduction to the philosophical theories

developed in ancient India, China, Japan and Tibet (Hinduism, Buddhism, Jainism, Carvaka, Confucianism, Taoism, Zen and Vajrayana Buddhism), including consideration of concerns and techniques not prominent in the west, such as the emphasis in Indian philosophies of the search for enlightenment, realization of ultimate reality, the cycle of samsara, action as karma, reincarnation, and meditation, and in Chinese philosophies of the relation between humans and nature, the source of altruism, and guidelines for creating a beneficent state. GenEd: CD-EA, LCC.

170 (17). Philosophy in America Not offered in 2008-09 An introduction to philosophy by way of the works of major American philosophers. GenEd: Am-CS

180. Theories of the Good Life Not offered in 2008-09. This course takes a cross-cultural 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.

### 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, see <[www.union.edu/academic\\_depts/philosophy](http://www.union.edu/academic_depts/philosophy)>).

231 . Symbolic Logic ( Winter: Wunderlich; Spring: Warenski). 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.

232 . Philosophy of Science Not offered in 2008-09 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.

234 . Philosophy of History (Not offered 2008-09). An examination of how historical studies contribute to knowledge. Among the issues considered will be how historical interpretations differ from scientific theories, whether there are different ideals of objectivity in humanistic historical studies and in the sciences, and how, if at all, interpretational conflict in historical studies can be rationally adjudicated.

235 . Reasoning and the Law (; Fall; Clark; Spring: Walker ). 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.

237 . Introduction to Political Philosophy Not offered in 2008-09 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? GenEd: EU-CS.

238 . Business Ethics (Not offered 2008-09). An introduction to issues in business ethics, including questions about economic distributive justice and the moral justification of economic systems, the moral responsibilities of corporations, and the moral rights and responsibilities of employers and employees.

240 Contemplative Social Justice Ethics (Spring; Patrik) Social justice theories and practices aim to eliminate discrimination and unfairness. Racism, the lack of economic and educational opportunities, the spread of violence in poor communities, and the expanded use of incarceration for non-violent criminals are social justice problems. Social work organizations are directly involved in helping people affected by these problems, and some of these non-profit organizations use contemplative practices in their training of staff and in their programs for clients. This course investigates philosophical theories

## 170 / Philosophy

of altruism as well as several contemplative practices that are applied in social work projects. Students will study some of these contemplative practices and visit social work projects applying contemplation in their training of staff and their service to clients. There are three required field trips to non-profit organizations that use contemplative practices. The course has been scheduled for a once-a-week, all Tuesday afternoon time slot in order to fit in these field trips, but it will be necessary for at least one of these fieldtrips to run over into Tuesday evening.

245 Buddhist Ethics (Winter; Patrik) Ethics is one of the three main components of the Buddhist path, the others being meditation and wisdom. The earliest sources of Buddhist ethics are the Sutras, which contain Shakyamuni Buddha's teachings from the 6th Century B.C.E. Different Buddhist approaches to ethics began to appear in the centuries following the Buddha's death, as Buddhism split into the two main traditions of Theravada Buddhism and Mahayana Buddhism. The older school, Theravada, emphasized a morality that perfects individual saints; the Mahayana school emphasized a morality of compassion. In the contemporary period, Buddhists are concerned about issues relating to the environment, social justice, war, medicine and health, gender, and race. In general, Buddhist ethics emphasizes peace, selflessness, moral discipline, compassion, karma, and awareness. In this course we shall study some of the ancient ethical texts of Buddhism, as well as contemporary works on applying basic Buddhist ethical principles to today's moral problems. This is a GenEd CD-EA course.

246 . Art, Media, and Society (Not offered 2008-09). 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.

247 . Technology and Human Values (Not offered 2008-09). An examination of some of the challenges posed by emerging technologies to traditional conceptions and values. Topics to be discussed may include what it is to be a person, attitudes toward one's own body, privacy, and the significance of death.

248 . Philosophy and Current Affairs Topic for 2008 will be Evolution, Morality & Religion. "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.). GenEd: AM-C;

249 . The Self In Cyberspace (Winter; Davis). This course is an inquiry into claims about how computational technology affects who we think we are as self-aware individuals, as private individuals, and as public individuals. Students will be expected to participate in on-line discussions. No special knowledge of computer technology is presupposed. Freshmen admitted only by instructor's approval.

250 . Ethical Theory (Spring; Davis). 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. Gen-Ed: Eu-C;

255. On War and Killing. (Not offered in 2008-09). 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? Attempting to answer these questions will involve a theoretical component, in which we critically reflect upon attempts by both historical and contemporary philosophers to answer these questions in the abstract, as well as an applied component in which we apply these theoretical considerations in the evaluation of actual historical and contemporary situations. We will consider a wide array of violent conflicts and actions, including the dropping of the atomic bomb on Hiroshima and Nagasaki, the current war and occupation of Iraq, the issue of dealing with the alleged attempt by Iran to develop weapons of mass destruction, whether torture is an acceptable interrogation tool in times of war, the Rwandan genocide, and the current violence in Darfur.

261 . Philosophy of Religion (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.

264 . Philosophy of American Education An introduction to issues in the philosophy of education, including the nature, aims and means of education, with an eye to how these issues arise in an American educational context.

266. Philosophy in Literature (Not offered in 2008-09). This course examines works of literature that raise questions of philosophical interest. These works will be studied in conjunction with philosophical texts and will be used as a means of illuminating and illustrating philosophical issues. Although we will be reading some classics in literature, the focus of the course will be on the philosophical issues as opposed to literary analysis. Topics to be covered may include the nature of the good life, theories of morality and punishment, weakness of will, death, and personal identity.

273. Environmental Ethics ( Spring; Vitek). An exploration of the ethical and philosophical ideas that have shaped attitudes toward the environment and toward non-human species.

274. Environmental History and Literature (Not offered 2008-09). 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.

305. Relativism in Ethics and Politics (Not offered in 2008-09) Relativism is not just a ‘ theoretical’ issue: the Events of 9/11 it has 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 the theoretical, moral and political dimensions of the problems through a reading of theorists such as Rawls, Nagel, Harman, Thomson, Gutmann, and others. One philosophy course is prerequisite or permission of the instructor.

338 . Zen and Tibetan Buddhism (Not offered in 2008-09).

An intermediate level course on two schools of Mahayana Buddhism: Zen Buddhism and Tibetan Buddhism. Mahayana Buddhists emphasize compassion as the attitude and activity of enlightenment; instead of seeking personal nirvana, they develop virtues that contribute to the well-being of other sentient beings. Mahayana philosophy explores the nature of reality through reasoning and meditative practice. The nature of reality is said to be [unyata, emptiness, which is not a void but is luminous clarity that accommodates the impermanent, multitudinous, interdependent, productive relationships among things in the universe. Zen Buddhism was first developed in China (where it was called Ch’an) in the first century C.E.. Through much of its history, Zen has emphasized direct transmission of the essential Buddhist teachings from mind to mind, using unusual techniques to break down the mind’s habits of conceptualization. Tibetan (or Vajrayana) Buddhism spread from India to Tibet in the 8<sup>th</sup> century C.E. and then a second time in the 11<sup>th</sup> century. It, too, has emphasized intensive meditation techniques for overcoming negative emotions and for developing compassion and wisdom.

340 . Applied Philosophy Internship This internship trains philosophy majors in community involvement by integrating ethical, legal, business or social justice theory with hands-on work in a non-profit organization, law firm or business. In their junior or senior year, a philosophy major may apply for this internship. After locating an internship opportunity, the student must receive permission from the chair of the philosophy department in order to count the internship for one-term course credit. The student will study philosophy related to her or his internship work and will keep a journal

## 172 / Philosophy

about how these theories relate to the day-to-day internship activities. The student will work with a professor in the philosophy department to determine the reading assignments for their internship and will meet with this professor every other week.

341. Twentieth Century Philosophy. A study of 20th century European or American philosophies: phenomenology, existentialism, or analytic philosophy. GenEd: Eu-C.

359 . Postmodernism (Not offered 2008-09). Cross listed with WGS 359. 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: one philosophy course or permission of the instructor.

365 . Philosophy of Mind (Winter; Walker) 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.

366 . Epistemology Philosophical examination of the problems and issues surrounding our concepts of knowledge, justification, memory, and perception.

375. Biomedical Ethics (Winter; Clark) 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.

### 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](http://www.union.edu/academic_depts/philosophy)>.

408/418. New Directions in Philosophy (Fall, Winter; Spring; Martin). Preparation for bi-weekly talks by visiting philosophers and development of writing skills. This course extends over two terms. Only one course credit is given. Required of philosophy majors and of interdepartmental majors. During the first term, students should sign up for 408; during the second, they should sign up for 418. 408 may be taken during any year. Because 408 carries no credit, students should register for it in conjunction with three other full-credit courses. 418 must be taken during the senior year. Students who have not otherwise satisfied their Senior Writing Requirement may do so by taking this course. WS.

443 . Metaphysics (Spring; Warenski) An examination of such topics as determinism and free will, causation, time, personal identity, necessity and possibility, objectivity, and God. Prerequisite: two philosophy courses or permission of the instructor.

444 . Current Political Philosophy (Not offered 2008-09). A course in political theory concentrating on issues in contemporary political theory. Prerequisite: two philosophy courses or permission of the instructor. GenEd: EU-CS

445 . Topics in Metaphysics: May be repeated, if topic changes. Prerequisite: two philosophy courses or permission of the instructor.

446 Topics in Epistemology May be repeated, if topic changes. Prerequisite: two philosophy courses or permission of the instructor.

447 . Topics in Logic May be repeated, if topic changes. Prerequisite: Phl 231 or permission of instructor.

448 . Topics in Ethics or Value Theory: Reasons and Action (Fall; Wunderlich). When is something a reason for action? What is it about something's being a reason that gives it its normative force, that is, that makes it something that one ought to consider? Prerequisites: Two PHL courses.

450. Topics in the History of Philosophy: The Ethics of Aristotle and Spinoza (Fall; Walker) Seminar dealing with various issues and periods throughout the history of philosophy. The topics addressed in the course will vary from term to term. In the past, topics have included: Kant, Theories of Self and Personal Identity, 19<sup>th</sup> C. Continental Philosophy, Wittgenstein, as well as others. Students should consult the philosophy department (either in person or via the department's website) to find out the

## Philosophy / 173

topics that will be addressed in any specific offering of the course. This course may be repeated if the topic changes. May be repeated, if topic changes. Prerequisite: two philosophy courses or permission of the instructor.

462 . Philosophy of Language (Not offered in 2008-09) . 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: two philosophy courses or permission of the instructor.

474. Advanced Biomedical Ethics (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: two philosophy courses or permission of the instructor.

476. Philosophy of Law. 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: one philosophy course or permission of the instructor.

480 . Foundations of Mathematics (cross-listed with MTH 480) . An advanced course in logic, covering propositional and predicate logic, Gödel's completeness theorem, and introducing recursion theory. For a current course description and information about prerequisites, consult the Mathematics Department catalogue.

490-493 . Independent Study (Fall, Winter, Spring). Selected topics in philosophy. Prerequisite: Permission of the instructor.

498/499 Honors Thesis (Fall, Winter). Substantial written project on a selected philosophical topic, under the direction of an advisor, culminating in an honors thesis. Only of 498 and 499 count for one course credit. Normally taken in the senior year. WS.

## Physics and Astronomy

Professor Newman (Fall and Winter) and Senior Lecturer and Accelerator Manager LaBrake (Spring), Co-Chairs; Professors Reich and Vineyard; Associate Professors Koopmann, Maleki, Orzel, and Surman; Assistant Professor Amanuel; Lecturer and Observatory Manager Wilkin; Visiting Professor Marr; Research Professors Jones, Philip, and Schick.

Requirements for the Physics Major: Ten courses in physics (Physics 120, 121, 122, 123, 220, 230, 270, 300, 310, and 490); Math 115 and 117; and two science courses outside the department (note that a course in geophysics, Geology 303, is available). Students are expected to attend the weekly departmental colloquium series to gain an appreciation for current research areas in physics and related areas.

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 120, 121, 122, 123, 220, 230, 270, 300, 310, 311, 350, 490, 491; Math 115, 117, 119, 131 or 150. These students are also strongly encouraged to take electives from Physics 200 and 312, Astronomy 200, 210, 220, 230, and 240, and Electrical and Computer Engineering 225.

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. Examples include: Mechanical Engineering 212 for Physics 230 and Electrical Engineering 343 for Physics 270. Students must request formal approval from the Department of Physics and Astronomy for any such substitution.

Requirements for the Astronomy Major: Ten courses in Physics and Astronomy (Physics 120, 121, 122, 123, Astronomy 51 or 100, Astronomy 50 or Geology 303, Astronomy 230 or 240, Physics 490, and two courses selected from the following: Physics 230, Astronomy 52, 200, 210, 220, and 230 or 240, whichever is not counted as a required course); Math 113 and 115; and one science course outside the department. Students wishing to pursue graduate work in astronomy are advised to major in physics and minor in astrophysics.

Requirements for Departmental Honors: In addition to the requirements for the major given above, 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 Interdepartmental Major: Students taking physics or astronomy as part of an 8-6 or 8-4-4 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 Minor: The Department of Physics and Astronomy offers academic minors in physics, astronomy, and astrophysics. Students wishing to minor in physics should take either Physics 120, 121, 122, and three other courses in consultation with the Department, or, if a life science student, Physics 110, 111, 200, and three other courses in consultation with the Department. Students wishing to minor in astronomy should take Physics 120, 121, 122 or 123, Astronomy 51 or 100, Astronomy 50 or Geology 303, and one course from Astronomy 52, 200, 210, 220, 230, 240, and Physics 495; or Physics 110, 111, Astronomy 51 or 100, Astronomy 50 or Geology 303, and two courses from Astronomy 52, 200, 210, 220, 230, 240, and Physics 495. Students wishing to minor in astrophysics should take Astronomy 50 or Geology 303, and five courses selected from Astronomy 100, 200, 210, 220, 230, and 240.

Requirements for Secondary School Certification: PSY 246, EDS500A, 500B, 500C, and at least one year of a foreign language. Physics requirements are identical to those of the physics major. All science majors are encouraged to seek certification in more than one science. To become certified in a second science requires a full major in the second science. Those wishing to become certified in general science must include at least two courses each from the areas of biology (Biology 101 and 102), chemistry (Chemistry 101 and 102 or Chemistry 110), and earth science (any geology course or Astronomy 100).

Requirements for Course Credits: Students who have scored a grade of 4 or 5 on the Advanced

Placement C-exam (mechanics and/or electromagnetics), A on the physics A-levels, or 5 or higher on the Higher Level of International Baccalaureate exams are given credit for a maximum of two courses (Physics 120 and 121).

## Astronomy Courses

### General Education Courses

Courses numbered in the 50s are designed particularly for non-science majors seeking to satisfy General Education requirements, and all of these courses carry GenEd credit. These courses may count toward the major in astronomy or the interdivisional ID major (see requirements for the astronomy and ID majors, above), but they may not be counted toward the major in physics or toward any other science or engineering major.

Astronomy 50. The Solar System (GenEd lab; Winter). 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.

Astronomy 51. Introduction to Astronomy (GenEd lab; Fall). 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.

Astronomy 52. Relativity, Black Holes, and Quasars (Not Offered 2008-09). 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.

### Courses for Science and Engineering Majors

Astronomy 100. Introduction to Astrophysics (Fall). 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. Prerequisites: Physics 111 or 121 or IMP 113.

Astronomy 200. Stellar Structure and Evolution (Not Offered 2008-09). 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). Prerequisites: Physics 111 or 121 or IMP 113.

Astronomy 210. Galaxies (Not Offered 2008-09). 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. Prerequisites: Physics 111 or 121 or IMP 113.

Astronomy 220. Cosmology and General Relativity (Spring). 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. Prerequisites:

## 176 / Physics and Astronomy

Physics 111 or 121 or IMP 113, and Math 115. Physics 122 is recommended.

Astronomy 230. Observational Astronomy (Not Offered 2008-09). 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. Prerequisites: Physics 111 or 121 or IMP 113 or permission of the instructor (with some telescope experience).

Astronomy 240. Radio Astronomy (Not Offered 2008-09). 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. Prerequisites: Physics 111 or 121 or IMP 113, and Math 115.

## Physics Courses

### General Education Courses

Courses numbered in the 50s are designed particularly for non-science majors seeking to satisfy General Education requirements, and all of these courses carry GenEd credit. They may not be counted toward the major in physics or toward any other science or engineering major, but may count toward an interdivisional ID-major (see requirements for ID-major, above).

Physics 51. Seeing the Light: Concepts of Vision (GenEd lab; Not offered 2008-09) (Same as Biology 51). 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.

Physics 53. Physics and Politics (Same as History 253) (Not Offered 2008-09). 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.

Physics 54. Laser Technology and Modern Optics (GenEd lab; Not offered 2008-09). 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.

### Courses for Science and Engineering Majors

Integrated Math/Physics (IMP) 111 (Fall), 112 (Winter), 113 (Spring). An introductory team-taught, year-long sequence of integrated courses, three in mathematics and two in physics, roughly spanning the content of Mathematics 113, 115, and 117 and Physics 120 and 121. Designed for engineering students as well as other interested students. Prerequisite: Eligibility for Math 113.

Physics 100. First-Year Seminar (Fall). 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: 4 or 5 on AP exam or by invitation.

## Physics and Astronomy / 177

Physics 110. Classical and Modern Physics for the Life Sciences I (Fall, Spring). An introduction to classical mechanics, fluids, and thermodynamics with applications in the life sciences. Three lab hours each week. Prerequisite: Math 102 or 112 or 113 (may be taken concurrently). Students must major in a life science or be admitted by permission of the instructor.

Physics 111. Classical and Modern Physics for the Life Sciences II (Fall, Winter). An introduction to electromagnetism, optics, and the structure of matter with applications in the life sciences. Three lab hours each week. Prerequisite: Physics 110 or 120 or IMP 112.

Physics 120. Matter in Motion (Fall, Winter, Spring). 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. Prerequisites: Math 102 or 112 or 113 (may be taken concurrently).

Physics 121. Principles of Electromagnetics (Fall, Winter, Spring). 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: Physics 120 or IMP 112.

Physics 122. Relativity, Quantum, and Their Applications (Winter). Calculus-based introduction to the structure of matter, including quantum effects, particle, nuclear, atomic, and molecular physics, the solid state, and applications to materials of interest to engineers and scientists. Three lab hours each week. Prerequisite: Physics 121 or IMP 113.

Physics 123. Heat, Light, and Astronomy (Fall). Calculus-based introduction to thermodynamics, geometric and physical optics, and astrophysics. Integrated class and lab meets four times each week. Prerequisite: Physics 121 or IMP 113.

Physics 200. Molecular Biophysics (Not Offered 2008-09). 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. Prerequisites: Physics 111 or 121 or IMP 113, and some exposure to biology or permission of the instructor.

Physics 220. Relativity and Introduction to Quantum Mechanics (Spring). 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. One hour computational lab each week. Prerequisite: Physics 111 or 122.

Physics 230. Intermediate Classical Mechanics (Fall). 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. One hour computational lab each week. Prerequisites: Physics 110 or 120 or IMP 112, and Math 117 (pre- or co-requisite), or permission of the instructor.

Physics 270. Intermediate Electromagnetism (Winter). Electric and magnetic fields and potentials; electric and magnetic properties of matter; Maxwell's field equations. One hour computational lab each week. Prerequisites: Physics 121 or IMP 113, and Math 117, or permission of the instructor.

Physics 295H-296H. Sophomore/Junior Projects (Fall, Winter, Spring). Topic to be chosen in consultation with a faculty member and the student's advisor.

Physics 300. Methods of Modern Experimental Physics (Spring). A laboratory-based course dealing with contemporary techniques in experimental physics. Prerequisites: Physics 122 and one physics course at the 200-level or higher, or permission of the instructor.

Physics 310. Advanced Topics in Physics I (Spring, Nuclear/Elementary Particle Physics). Course topic for each year to be chosen from the following:

— 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

## 178 / Physics and Astronomy

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.

And others depending upon student interest. Course open to juniors and seniors only. Enrollment by permission of the instructor.

Physics 311. Advanced Topics in Physics II (Not Offered 2008-09). 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.

Physics 312. Advanced Topics in Physics III (Not Offered 2008-09). 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.

Physics 350. Advanced Quantum Mechanics (Fall). A second course in quantum mechanics with applications to selected problems in atomic, nuclear, and solid state physics. Prerequisites: Physics 220 and Math 117, or permission of the instructor.

Physics 490-493. Research in Physics (Fall, Winter, Spring). 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. WAC: WS (final term)

Physics 495-498. Independent Study in Physics (Fall, Winter, Spring). Topic to be chosen in consultation with a faculty member and the student's advisor.

## Political Science

Associate Professor Oxley, Chair; Professors Brown, Marso, Weiner; Associate Professors Angrist, Hislope; Assistant Professors Hays, Seri, Zhang; Research Professors Lobe, Strosberg; Visiting Instructor Watson

The following departmental requirements have been significantly revised and take effect beginning with the class of 2010. If you were admitted in an earlier class, please consult the course catalog of your entering year.

Requirements for the Major: Twelve courses in the department – students must take 111 or 112, 113, 498-499 (a two-term senior project), and eight other courses. Introductory courses may not be used to satisfy upper level distribution requirements. No more than two of these twelve courses may be internship courses (i.e., PSC 277, 279T). Of the eight non-specified courses at least three of the four major areas of the discipline must be covered: Political Theory, U.S. Politics, Comparative Politics and International Politics.

To fulfill the department's research requirement and to prepare for the senior project, students must take two of following courses. First, all students must take at least one "R" course. The presence of the "R" designation next to a course number (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 a methods course (appropriate courses are listed under "Research Methods Courses" below), or a seminar (PSC 339, 349, 359, 369), or an additional "R" course. Both research courses should be taken by the end of the student's junior year as preparation for the senior project (PSC 498-499). Students are welcome and encouraged to take more than two research courses; these are simply minimum requirements.

Majors also must complete a foreign experience requirement. The primary option to fulfill this 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 to not 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.

Majors are also required to take at least two courses in any of the other social sciences (economics, history, sociology, and anthropology) and/or psychology and philosophy.

Any request for exceptions to these requirements must be approved by the department chair.

Requirements for the Interdepartmental Major: Eight courses in the department, which must include 111 or 112, 113, 498-499 (one-term project, with the other term credited to the other major), and five other courses. To fulfill the research requirement Interdepartmental majors must take at least one "R" course. ID majors must also fulfill the foreign experience requirement described above. Internship courses, such as 277 and 279T, may not be counted toward the eight courses required for the interdepartmental major. Students considering interdepartmental majors must petition the department for approval of their proposed course programs.

Requirements for the Minor: The minor consists of six total courses. Students must take either 111 or 112; and 113. Of the four remaining courses, at least three upper-level courses must all be drawn from one sub-field (Political Theory, U.S. Politics, Comparative Politics and International Politics). No internships or independent studies may be counted toward the minor without approval of the Chair.

Departmental Honors: To receive departmental honors the student must fulfill the following requirements: (1) a minimum index of 3.30 in political science; (2) completion of a political science

## 180 / Political Science

seminar with a grade of “A minus” or better; and (3) a grade of “A minus” or higher on the senior project. Students who do not attain an A minus or better grade in the seminar may still be eligible for honors if their departmental average is a 3.5 or higher. In addition the student must satisfy College requirements for departmental honors.

Requirements for Secondary School Certification in Social Studies: PSY 246, EDS 500A, 500B, 500C and at least one year of a foreign language. PSC 281 is strongly recommended. Required political science courses are identical to those of the major. Majors seeking social studies certification are required to take at least seven courses in the Department of History and at least one course from both the Department of Economics and the Departments of Sociology and Anthropology.

Interdepartmental Political Science Majors Seeking Secondary School Certification: Students must be interdepartmental majors in political science and history. In addition, students must take at least one course from each of the remaining social science departments (economics, sociology, and anthropology).

050. PSA Journal Practicum (Fall, Winter, Spring; Oxley) This course provides direct experience editing a research journal. The course is open to students serving on the editorial board of the Pi Sigma Alpha Undergraduate Journal of Politics.

123. Topics in Mathematical Political Science. [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 112 would be relevant.

### Introductory Courses

111. Introduction to U.S. Politics. (Fall; Hays, Staff, Winter; Oxley, 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.

112. Introduction to Global Politics. (Fall; Lobe, Winter; Hislope, Spring; Angrist, Zhang Wu) 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.

113. Introduction to Political Thought. (Fall; Seri, Winter; Brown, Spring; Marso) 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.

### Research Methods Courses

220. Social Data Analysis. [Same as SOC 201]. 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: Any introductory social science course; a background in math is not necessary.

222. Qualitative Social Research Methods [Same as SOC 302]. Basic introduction to qualitative research methods. Equally concerned with research design, techniques for gathering data, ethics in research, and the translation of field data into texts. Students will design a research project and methodology and then conduct their own field research using strategies such as participant-observation and interviewing. Depending upon the individual project, students may also conduct archival research using newspapers and government reports.

223. Critical Comparisons in Politics (Spring; Hislope) Introduction to qualitative methods in comparative politics; the methodology of comparison; concept formation and innovation; theory-testing and evaluation; the survey of core comparative categories. Preparation of students to conduct in-depth comparative study of political phenomena.

### Political Theory Courses

Unless otherwise indicated the prerequisites for the following courses are PSC 113 or sophomore standing.

233. Intellectuals and Politics. Can and should intellectuals influence political life? Can intellectuals “speak truth to power?” This course examines the role of intellectuals, especially political theorists, in challenging dominant configurations of power, authority and values. In seeking to locate and evaluate these challenges to power, we will examine power in its most intimate (at the level of the personal and familial) as well as its most distant (state and international) settings. We explore the meanings and locations of power, the question of how and why it is (or should be) questioned, and isolate particular historical moments when intellectuals were able to play a role in challenging the political agenda. Each author we will read sees her/himself as directly confronting the “powers that be” in and through the acts of writing and speaking.

234. Women Political Theorists. [Same as WGS 234] 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.

237. Politics as Comedy, Politics as Tragedy. Explores comic and tragic perspectives on a wide range of political topics including power, democracy, justice, and gender. The course also considers various theoretical accounts of the nature of comedy and tragedy as ways of thinking about politics and so engages the longstanding tension between philosophy and more poetic modes of political thinking. Course materials range from Greek drama to contemporary literature and film.

238. Moral Dilemmas of Governing. An inquiry into the moral choices and responsibilities of political leaders in the light of recent findings in behavioral studies, the implications of political and social values of Western culture.

239. Feminist Political Theory. [Same as WGS 286] Have we entered a “post feminist” era? In this course, you will learn that not only is feminism relevant today, but that there can be no democracy without feminism. We will examine feminist texts beginning with the “second wave” and moving into contemporary work. Feminist theorists write about issues such as inequality in marriage, gendered

## 182 / Political Science

aspects of sexuality, the politics of sex and gender, as well as on issues of justice, democracy, and citizenship. Each thinker also examines the relationships between race, class, and gender oppression in the inequality between the sexes. Feminist analyses of social policies concerning issues such as welfare, abortion, sexual preference, and maternity leave might also be included.

330. Enlightenment and Its Discontents. (Spring; Brown) 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. GenEd: Eu-CS

331. Ancient Political Thought. 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. GenEd: AN-CS

332. American Political Thought To World War I. 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. GenEd: Am-C

333. Twentieth Century American Political Thought. (Winter; Marso) [Same as WGS 333] 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. GenEd: Am-C

334. European Political Thought. This course focuses on the major ideas coming out of Europe in the 20th century to today. Europeans are said to lead the way on critical issues of importance to democratic thought, and critical analysis of tyranny and power. We will learn about these ideas in this class and examine their relationship to US conceptions of the workings of politics. We will also study the impact of technology in the modern world and the limits of enlightenment. GenEd: Eu-C

339. Seminar: Political Theory (Winter; Seri) Selected topics in political thought. Preference given to sophomore and junior political science majors. Prerequisites: PS 111, 112, or 113 and permission of the instructor.

434. Feminist Film. (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.

### Comparative Politics Courses

Unless otherwise indicated prerequisites for the following courses are PSC 111 or 112 or sophomore standing.

240. Comparative Ethnic and Racial Politics. (Fall; Hislope) 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. GenEd: CDAA

241. Religion and Politics. An inquiry into the impact of religious belief systems and religious institutions on political behavior. A specific comparison of the impact of Protestantism in the U.S., Roman Catholicism in Latin America, and Islam in the Middle East.

243. Latin American Politics: Facing the World. Latin America’s political dynamics, with special reference to Latin America’s position in world affairs, economic and cultural patterns within the region, and U.S. influence. GenEd: CDLA

244. Japan: Conflict and Consensus. (Winter; Zhang Wu) An overview of political structure, process, and policy in contemporary Japan. Begins with a brief historical narrative of postwar politics and proceeds to discussions of Japanese culture and society, electoral politics, decision-making structures

and processes, foreign affairs, and political economy. GenEd: CDEA

246. Contentious Politics. (Spring; Zhang Wu) From the American and French revolutions to peasant riots in contemporary China, ordinary people all over the world have challenged the power of political and economic elites. This course explores why people who are usually submissive to authority sometimes rebel, why some social movements spread but not others, and what impact contentious politics has on ordinary politics. It introduces basic concepts of contentious politics and applies these concepts to the study of historical and contemporary patterns of social protest in Europe, America, and Asia.

247. Politics and Film. 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.

248. The Politics of the New Europe. (Fall; Watson) 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."

249. Middle East Politics. (Fall; Lobe) 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.

345. Contemporary Chinese Politics. A survey course on the politics of the People's Republic of China, with an emphasis on state-society relations. The first part briefly introduces the Chinese socialist system. The course then provides a historical overview of the main political and economic reforms in China since Deng Xiaoping's ascent to power. It also explores themes such as bureaucratic politics, regional disparities, center-locality relations, popular protest, and nationalism. GenEd: CDEA

346. Democracy and Democratization. Worldwide survey of the global diffusion of democracy. Focus on the patterns, challenges, and difficulties involved in democratic transitions and consolidations. Consideration of democratic subtypes (electoral, liberal, participatory) and their normative trade-offs.

347. Comparative Left Politics. (Spring; Hislope) A critical exploration of Marxian ideas and a comparative examination of how those ideas were, and are, translated into political practice.

349. Seminar: Comparative Politics. (Winter; Seri) Selected topics in comparative politics. Content may vary from year to year. Preference to junior and sophomore political science majors. Prerequisites: PS 111, 112, or 113 and permission of the instructor.

### International Politics Courses

Unless otherwise indicated prerequisites for the following courses are PSC 111 or 112 or 113 or sophomore standing.

251. American Foreign Policy. (Fall; Angrist) Students will examine the history of U.S. foreign policy, how policy is formulated, competing perspectives on how best to define and defend the "national interest," and numerous case studies of post-Cold War foreign policy decision making. Students will then play specific policy-making roles and work together in an intensive simulation designed to expose them to the substance and power dynamics of foreign policy making during the current administration.

252. International Organizations. 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.

253: International Politics in East Asia. (Fall; Zhang Wu) Surveys the main currents of international politics in East Asia in the 20th century and in the new millennium, with an emphasis on events since the end of the cold war. Examines the foreign policies of main players in this area, including China, Japan, Korea, Russia, and the United States. We will also explore the evolution of international institutions and norms pertinent to East Asia. GenEd: CDEA

254. Politics of the Arab-Israeli Conflict. (Winter; Angrist) 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.

256. Model United Nations. (Winter; Watson) 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. Its goals are to develop diplomatic skills amongst college students while at the same time helping to increase the levels of interaction and interdependence that exist between the academic communities around the world. At the simulation, students and faculty from five continents work feverishly to propose resolutions addressing regional conflicts, peacekeeping, human rights, woman and children, economic and social development, and the environment.

257. U.S. Empire in Crisis. The US is the sole superpower in the world, overwhelmingly powerful in military and economic affairs. Yet there is confusion and failure regarding its war on terror, its policies toward the Middle East, Israel and Islamic societies, and how even US allies view US policies, priorities, values, and its arrogance. The course evaluates this paradox, and develops alternative visions.

258. Chinese Foreign Policy. (Winter; Zhang Wu) This course surveys the main developments in Chinese foreign policy since the founding of the People's Republic of China. It analyzes China's relations with the world superpower(s) and its neighbors and examines China's rise as a world power and the impact this has on the balance of power in Asia and the world. It explains the behavior of China from the standpoint of competing theories of international relations. GenEd: CDEA

259. Wealth and Power Among Nations. (Spring; Watson) An examination of the tensions between North and South in the global political economy. Topics include world trade patterns, international organizations, military relationships, natural resources and environmental limits, and cross-cultural perceptions and identities. Prerequisite: Sophomore standing or PS 112 or ECO 101.

350. Theories of International Politics. 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.

351. Global Politics of Corruption and Organized Crime. 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.

355. Defense Policy. (Spring; Watson) 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

359. Seminar: International Politics. Selected topics in international politics. Content may vary from year to year. Preference to sophomore and junior political science majors. Prerequisites: PS 111, 112, or 113 and permission of the instructor.

### United States Politics Courses

Unless otherwise indicated prerequisites for the following courses are PSC 111 or 112 or sophomore standing.

260. Policy Making and American Society. 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.

261. Public Opinion. This course examines public opinion in the context of American political culture and values. We examine what the public thinks about a wide variety of issues in American domestic and foreign policy. We also explore contemporary issues with a concentration on the historical legacy of cultural values and beliefs that inform citizens' attitudes and opinions.

263. The Politics of Poverty and Welfare. (Spring; Weiner) 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. Prerequisites: Sophomore standing and PS 111 or SOC 100.

264. Congressional Politics. 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.

267. Race and the American Political System: Tyranny of the Majority? The evolution, nature, and role of race in U.S. Politics. Focuses on African-American political participation, although Latinos, Asian-Americans, and Native Americans are addressed. Political movements, electoral participation, and social conditions are explored. Particular attention paid to contemporary controversies. GenEd: CDAA

268. Electoral Politics. (Fall; Oxley) 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.

269. Media and Politics. 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.

270. Constitutional Law. (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.

272. The Environment, Energy, and U.S. Politics. 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 relevance of environmental policy to community life will be explored via local field trips to wastewater and drinking water facilities, waste management and energy facilities, government agencies and the State Capitol.

273. The Supreme Court and Judicial Politics. 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.

277. Local Government Internships. (Fall, Winter, Spring; Watson) Places students in internships in local political organizations and in offices in local and state government. Students draw on their internship experience and related academic work to reach a better understanding of the complexities and dynamics of politics and the state or local level. Prerequisite: Sophomore standing and permission of the instructor.

279T and 280T. Washington, DC Internship Program. (Spring; Lobe) A 10-week spring term in Washington, DC wherein each student is an intern either on the Hill, with a Non-governmental

## 186 / Political Science

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) 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. Prerequisites: Sophomore standing and permission of the instructor. These courses may not be taken as pass/fail.

281. Issues in American Education. The analysis of current conflicts over education policy including the funding of education, the impact of charter schools and choice, bilingual education, religion and prayer, tenure laws and the role of teacher unions. Prerequisite: Sophomore standing and PS 111 or SOC 100 or ANT 110 or PSY 100.

282. Health Politics and Policy. [Same as WGS 287] Government as third party payer, regulator, capacity builder, and service deliverer plays a dominant role in the American health care industry. This course examines the formation and implementation of public policies toward health care including current efforts to reform the system by creating a national health insurance program.

283. Social and Political Movements. [Same as SOC 270]. The role of extra-governmental actors in the formation of public policy. The origins of political social movements and the differences and similarities found among these organizations. Other topics include the means by which such groups seek to influence policies and the outcome of such attempts.

284. Political Sociology [Same as SOC 240]. The social basis of political action. This course will ask why some groups are more likely to vote, engage in protest, join extreme movements and engage in violence against the political system. Prerequisite: Sophomore standing or PS 111 or SOC 100.

287. Law and Public Policy. The interrelationship of law and public policy, emphasizing selected contemporary issues particularly illustrative of the relationship between law and politics.

361. Political Psychology. [Same as PSY 336]. 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: PS 111 or PSY 100.

362. CIA and the Art of Intelligence (Winter; Lobe) 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.

366. Presidential Politics. (Winter; Brown) The role of the president in the modern American political system.

369. Seminar: U.S. Politics. (Fall; Weiner, Spring; Brown) Selected topics in U.S. politics. Content may vary from year to year. Preference to sophomore and junior political science majors. Prerequisites: PS 111, 112, or 113 and permission of the instructor.

371. Civil Rights and Civil Liberties. (Spring; Hays) 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.

385. Women and Politics. [Same as WGS 370]. 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. Prerequisites: Sophomore standing or PSC 111 or SOC 100.

Independent Research Courses

295H/296H Honors Independent Study in Political Science. (Fall, Winter, Spring). By application to the individual instructor and subject to confirmation by the department chair.

490-497 Independent Study in Political Science. (Fall, Winter, Spring). By application to the individual instructor and subject to confirmation by the department chair.

498-499. Senior Project in Political Science. (Fall, Winter, Spring). 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.

## Psychology

Professor Burns, Chair; Professors Benack, DeBono, Nydegger, Weisse; Associate Professors Romero, Stanhope; Assistant Professors Anderson-Hanley, Bizer (on leave Fall, Winter), Chablis; Visiting Assistant Professors Hart, Robbins; Visiting Instructor Cooper; Lecturer Donaldson.

Requirements for the Major:

(1). Psychology 100, 200, and 300 and nine other courses, one of which can be selected from a list of cognate courses from related disciplines. This list of courses is available from the department secretary or on the department web site ([www.union.edu/academic\\_depts/psychology](http://www.union.edu/academic_depts/psychology)). Majors should normally complete Psychology 200 and 300 by no later than the end of the junior year.

(2). At least one course from each of the following two content areas:

— Physiological Psychology: Psychology 210, 211, or 312

— Cognitive Psychology: Psychology 220 or 221

(3). At least one course from two of the following three content areas:

— Social Psychology: Psychology 230

— Developmental Psychology: Psychology 240

— Clinical/Personality Psychology: Psychology 250 or 251

(4). Two courses numbered 400 or higher. One of these courses must be a seminar (courses numbered 400-450), and only one course numbered 451-497 (independent study/research/internship) may count toward the major.

(5). Interdepartmental majors will normally take eight courses in psychology. The courses must include Psychology 100 (Introduction) and 200 (Statistics). Students wishing to do an interdepartmental senior thesis will also take Psychology 300 (Research methods). 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.

(6). A student who chooses to minor in psychology must take a total of six courses in psychology, including Psychology 100, Psychology 200, one course from the Physiological/Cognitive cluster, and one course from the Social/Developmental/Clinical cluster.

Note on Seminars: Some seminars (e.g., 420, 430, 440, 450) may offer different topics in different terms. These may be taken more than once for credit, with the permission of the instructor.

Application 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 200, 210, 211, 220, 221, 230, 240, 250, 251, 300, 312; (3) a two-term thesis with a grade of "A" or "A minus" and (4) an oral presentation of the student's work (usually at the Steinmetz Symposium). Interdepartmental majors who wish to get 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 Psychology 200 and 300 are prerequisites to registering for a thesis.

All proposals for honors theses must be submitted to the department chair no later than the ninth week of the spring term of the junior year. The proposal should be one-two typewritten pages describing the project and the student's preparation for the project (e.g., related course work). The proposal will be evaluated by a departmental committee, and the student will be advised about the acceptability of the proposal. Further information is available from the department secretary.

The Senior Writing Requirement in Psychology: 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 project.

GenEd Note: In the General Education Curriculum, all psychology courses count as if they are courses in the Division of the Social Sciences, except for Psychology 210, 211, 311, 312, 315, and 410, which can be counted toward the General Education science requirement.

Note: Psychology 100 or permission of the instructor is a prerequisite for all other psychology courses.

100. A First Course in Psychology (Fall, Winter, Spring; Staff). The activities and experiences of the human being. Personality and its development, motives, learning and intelligence, and behavior in conflict.

200. Statistical Methods in Psychology (Fall, Winter, Spring; Burns, Romero, Robbins, 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. Prerequisite: Psychology 100.

210. Introduction to Cognitive Neuroscience (Identical to Biology 210) (Fall, Winter, Spring; Chabris, Romero, Weisse). Basic concepts of brain functioning as they relate to psychological phenomena. Neuroanatomy, neurotransmission, and brain sites important in the mediation of consummatory behavior, emotions, pleasure, sleep, and memory. Weekly lab. Prerequisite: Psychology 100 or permission of the instructor. Gen Ed Science.

211. Sensation and Perception (Not Offered 2008-2009). The structural and functional aspects of the sensory system and sensory processes. Also theories and research in the field of perception and perceptual development. Weekly lab. Prerequisite: Psychology 100. Gen Ed Science.

215. Introduction to Health Psychology (Not offered 2008-09). Psychology's role in the etiology, prevention, progression and treatment of psychical disease states. Topics include mechanisms by which stress and health-related behaviors such as diet, exercise, smoking, and substance abuse contribute to physical illness, problems of medical compliance, cognitive/behavioral medical treatment techniques; and health promotion/ disease prevention strategies. Prerequisite: Psychology 100.

220. Psychology of Memory and Thinking (Fall, Winter, Spring; Cooper). How humans code, store, remember, and forget information. Related topics include attention, pattern recognition, concept learning, and reading. Weekly lab. Prerequisite: Psychology 100.

221. Psychology of Learning. (Not offered 2008-2009). A systematic examination of the principles and theories of learning. Classic works of Pavlov, Tolman, Hull, and Skinner will be considered as well as contemporary thinkers. Topics include classical and operant condition and biological constraints on learning. Critical evaluation of the research on humans and lower animals will form a major basis of the discussion. Weekly lab. Prerequisite: Psychology 100.

225. The Psychology of Language (Not offered 2008-09). Psycholinguistics, including speech perception, child's acquisition of language, animal "language," linguistic diversity, and recent research. Prerequisite: Psychology 100.

230. Social Psychology (Identical to Sociology 203) (Fall, Winter, Spring; DeBono, Hart, Robbins). Research methods, survey of research on attribution processes, person perception, stereotyping, attraction, persuasion and social influence, and effects of group membership on behavior. Prerequisite: Psychology 100.

235. Industrial-Organizational Psychology (Spring; Nydegger). 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. Prerequisites: Psychology 100; Psychology 230 preferred but not required.

240. Developmental Psychology (Fall, Winter, Spring; Stanhope). Child behavior and the processes influencing child development. Methods of study and theories. Prerequisites: Psychology 100.

245. Psychology of Sex Roles (Identical to Women's Studies 230) (Not offered 2008-2009). 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: Psychology 100.

246. Educational Psychology (Winter, Spring; Staff). Principles of psychology applied to teaching with emphasis on the cognitive abilities of students, classroom management procedures, and motivational techniques. Visits to a variety of local schools. Prerequisite: Psychology 100. (Note: This course or placement exam is required for admission to Union's MAT program.)

## 190 / Psychology

250. Abnormal Psychology (Fall, Winter, Spring; Anderson-Hanley, Donaldson, Nydegger). Models and theories of psychology, with description and analyses of forms of abnormality and its modification. Prerequisite: Psychology 100.

251. Personality (Fall; Donaldson). Classical and contemporary theories of personality, with an emphasis on current issues and research in the field. Prerequisite: Psychology 100.

255. Psychology of Addiction (Not offered 2008-09). 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: Psychology 100.

295H. Psychology Honors Independent Study

296H. Psychology Honors Independent Study 2

300. Research Methods in Psychology (Fall, Winter, Spring; Bizer, Burns). The basic research methods used in psychology, introducing the student to research design, data collection procedures, and scientific writing. Emphasis will be on the experimental method. Weekly lab. Prerequisite: Psychology 200.

305. History and Systems in Psychology (Not offered 2008-09). Assessment of historic development and current status of systemic paradigms in psychology. The influence of philosophy, social, and natural science will be studied. Prerequisite: Psychology 100.

311. Animal Behavior (Identical to Biology 325)

312. Introduction to Neurobiology (Identical to Biology 362)

315. Neural Circuits of Behavior (Identical to Biology 365)

320. Applied Cognitive Psychology (Not offered 2008-09). Explores the many ways in which the scientific knowledge attained from cognitive psychology has been applied to everyday problems in perception, remembering, and thinking. Topics include face and name recognition, mnemonic strategies, expert memory, errors in everyday decision making and human factors. Prerequisite: Psychology 220.

330. Attitudes and Social Behavior (Winter, DeBono). 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. Prerequisites: Psychology 100 and 230.

336. Political Psychology (Identical to Political Science 361).

350. Psychotherapy (Winter, Anderson-Hanley). 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 therapeutic approaches. Prerequisite: Psychology 100 and 250.

351. Practicum in Human Relations I (Fall; Anderson-Hanley). Explores interpersonal communication as it shapes and is shaped by human relationships. Psychological theories of interpersonal communication presented with a view to explicating the processes by which people come to describe, explain, or otherwise account for the world (including themselves) in which they live. Categories of "abnormal" behavior and approaches to psychotherapy revisited from the perspective of communications theory. Prerequisite: Psychology 100.

352. Psychological Assessment and Testing (Not offered 2008-09). 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: Psychology 100.

400. Seminar in Research Design and Analysis (Not offered 2008-09). Focus on advanced research methods and on several statistical techniques commonly used by psychologists. Topics include correlation, multiple regression, analysis of variance, and multivariate analysis of variance. Students also will be exposed to one or more computer packages for performing statistical analyses. Prerequisite: Psychology 300.

405. Honor's Topic Seminar (Not offered 2008-09). A one-credit course lasting either one term or 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 weekly 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.

410. Seminar in Brain and Behavior (Identical to Biology 410 (166)) (Spring; Romero). Advanced coverage of the mechanisms of action of psychotropic drugs and a discussion of the effects of certain transmitter systems on behavior. Prerequisite: Psychology 210. GenEd Science

411. Seminar in Clinical Neuropsychology (not offered 2008-09). 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: Psychology 210, 250, or 410.

415. Seminar in Health Psychology (Not offered 2008-09). Advanced coverage of the role of behavioral factors in health and illness. Selected topics could include AIDS prevention, psychoneuroimmunology, cancer, cardiovascular disease, and other stress-related behaviors and disorders. Prerequisite: Psychology 215.

420. Seminar in Learning and Memory (Not offered 2008-09). A selected topic in learning or cognitive psychology, such as language, reading, attention, memory, conditioning, and applications. Prerequisite: Psychology 220, 221, 225, or permission of instructor.

430. Seminar in Social Psychology (Winter; Robbins). A selected area of social psychology. Specific topic will be announced in advance by the instructor. Prerequisite: Psychology 230.

431. Seminar in Psychology of Religion (Identical to Religious Studies 400) (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. Prerequisites: Psychology 210, 220, 230, 240 or 251 or permission of the instructor.

440. Seminar in Human Development (Fall; Stanhope). A selected area of developmental psychology. Topic will be announced in advance by the instructor. Prerequisite: Psychology 240.

441. Seminar in Adolescence (Winter, Spring; 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: Psychology 251 or 240.

450. Seminar in Clinical Psychology. (Not offered 2008-09). A selected area of clinical psychology. Topic will be announced in advance by the instructor. Prerequisite: Psychology 250.

451. Practicum in Human Relations II (Winter, 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: Permission of the instructor.

487. Psychology 3-Term Thesis 1

488. Psychology 3-Term Thesis 2

489. Psychology 3-Term Thesis 3

490, 491, 492. One-Term Independent Study/Research (Fall, Winter, Spring; Staff)

493-494. Two-Term Independent Study/Research (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.

495. One-Term Senior Project (Fall, Winter, Spring; Staff).

496-497. Two-Term Senior Project (Fall, Winter, Spring; Staff).

498-499. Senior Thesis (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. Prerequisites: Psychology 200 and 300.

## 192 / Religious Studies

# Religious Studies

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 currently offers a minor consists of six courses carrying religious studies credit, one of which could be an independent study, and including at least two 200-level courses. Anyone wishing to minor in religious studies should consult with the program director.

Program Director: Prof. Bedford

Sample Courses with Religious Studies Credit  
(Consult Program Director for complete listing)

### Anthropology

- 150 Anthropology of Religion (REL101)
- 170 Myth, Ritual and Magic (REL170)
- 232 From Bombs to Buddhism
- 235 Fundamentalism around the Globe

### Classics

- 143 Classical Mythology
- 161 Survey of Ancient Epic
- 232 Religion in the Pagan World
- 244 Poetry and the Cosmos

### English

- 226 World of the Bible (REL200)
- 238 Jewish Women's Writers
- 248 Yiddish Literature in Translation
- 292 Milton

### History

- 157 Modern Jewish History
- 195 Early History of the Jews (REL100)
- 203 Judaism, Christianity, Islam: Comparative Perspectives (REL203)
- 240 The Crusades
- 241 Mystics, Magic and Witchcraft in Medieval and Early Modern Europe
- 302 Comparing Muslim Cultures
- 401 Islam in Africa

### Music

- 060 From Chant to Mozart
- 125 World Religions and Music

Modern Languages in Translation

## Religious Studies / Russia and Eastern Europe / 193

284 Popular Religion and Politics in Latin America

### Philosophy

166 Indian Philosophy

175 Jesus

240 Contemplative Social Justice Ethics(REL240)

245 Buddhist Ethics

261 Philosophy of Religion

338 Zen and Tibetan Buddhism

### Political Science

241 Religion and Politics

### Psychology

431 Seminar in Psychology and Religion

### Religious Studies

203 Judaism, Christianity, Islam: Comparative Perspectives (HST203)

240 Contemplative Social Justice Ethics (PHL240)

### Sociology

223 Sociology of Religion

### Spanish

377 Latin American Literature, Art, and Popular Religion

### Visual Arts (Art History)

203 Medieval Art and Architecture of Northern Europe

280 Buddhist Art

286 Art and Religion of the Silk Road

287 Tibetan Art

## Russia and Eastern Europe

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.

Requirements for the Major: Fourteen courses including REE 498-499 and one REE seminar; one course above Russian 102; three courses on the history or culture of the country in question; and four appropriate courses from political science and economics. Up to two additional upper-level language courses may be counted toward the total number of required courses. 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.

Director: Professor Berk

## Science, Medicine, and Technology in Culture (SMT)

Science, technology, and medicine all play important roles in modern society. Union College offers an interdepartmental major in science, medicine and technology in culture (SMT). Several different populations of students are targeted: (1) science or engineering majors who want to place their interests in a social context; (2) humanities or social sciences majors who want to include science, engineering, and their social consequences in their education; (3) students who want to study science and engineering at a meta-level (philosophy of science, sociology of science, history of science, etc.). The interdepartmental major will consist of eight courses: all students will take one of five introductory SMT courses, HST 193, HST 242, PHL 232, PHL 247, or SOC 228, as well as a two-term interdisciplinary senior thesis jointly directed by a faculty member from humanities or social sciences and one from engineering or science. If the other half of the interdepartmental major is in Center 2 (Science or Engineering), then these students will do a three course concentration in either history and political science, 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 Center 1 (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. Anyone wishing to minor or major in SMT must first consult with Prof. Mark Walker.

### Core Courses (1 course)

HST 193 Science, Medicine, and Technology in Culture  
HST 242 The Scientific Revolution  
PHL 232 Philosophy of Science  
PHL 247 Technology and Human Values  
SOC 228 Sociology of Medicine

### Capstone Course

SMT 498/499: Senior Thesis

### SMT Electives

Anthropology  
174 Human Evolution and Prehistory  
230 Medical Anthropology  
240 Technology, Culture and Society

### Astronomy

050 The Solar System

### Biology

050 Topics in Contemporary Biology  
051 Seeing the Light: Concepts of Vision  
064 Nature, Ecology, and Wilderness Management  
065 Food in the 21st Century  
089 Human Evolution and Prehistory  
275 The Biology of Homo sapiens  
283 Bioinformatics: Information Technology in the Life Sciences.

### Chemistry

050 Topics in Chemical Analysis – Forensic Chemistry  
060 Meals to Molecules

### Computer Science

080 History of Computing  
283 Bioinformatics: Information Technology in the Life Sciences

Economics 228 Environmental Economics

## Science, Medicine, and Technology in Culture / 195

230 The Mind of the Entrepreneur  
331 E-Commerce Economics  
375 Efficient Management of Technology

Electrical Engineering  
077 The Digital Evolution  
080 Electrical Engineering History,

Environmental Studies  
100 Introduction to Environmental Studies  
200 Energy  
201 Nuclear Technology in War and Peace: A Study of Issues and Choices  
250 Water Resources and the Environment  
251 Environmental Science and the Atmosphere

English  
251 Nature and Environmental Writing

Geology  
100 Introduction to Geology  
101 The Earth and Life Through Time  
102 Environmental Geology  
103 Great Moments in The History of Life  
104 Global Perspectives on Energy  
106 Restless Oceans  
107 Natural Disasters  
108 Earth Resources  
200 Mineral Science

History  
192 Construction for Humanity  
193 Science, Medicine, and Technology in Culture,  
242 The Scientific Revolution  
253 Physics and Politics  
254 Human Evolution and Prehistory  
353 Modern European Ideas

Mathematics  
051 Cryptology: The Mathematics of Secrecy  
057 Game Theory and its Applications in the Humanities and Social Sciences  
060 Topics in Mathematical Political Science,  
221 Mathematical Cryptology

Philosophy  
130 Cyberfeminism  
232 Philosophy of Science  
247 Technology and Human Values  
249 The Self in Cyberspace  
273 Environmental Ethics  
274 Environmental History and Literature  
375 Biomedical Ethics  
474 Advanced Biomedical Ethics

Physics

## 196 / Sociology

051 Seeing the Light: Concepts of Vision  
052 Science of Sound and Music  
053 Physics and Politics  
054 Laser Technology and Modern Optics

### Political Science

123 Topics in Mathematical Political Science  
272 The Environment, Energy, and U.S. Politics  
282 Health Politics and Policy

### Psychology

215 Introduction to Health Psychology

### Sociology

228 Sociology of Medicine  
265 Sociology of Human Rights  
270 Social Movements, the Environment and Society  
284 Sociology of Women & Health  
358T Marine Policy and the Maritime Environment  
359 Environmental Policy and Resource Management  
370 Public Health Care Policy and Society  
372 Comparative Health Care Systems  
374 Mental Health and Society.

## Sociology

Professor Kaplan, Chair and Joseph C. Driscoll Professor of Sociology and Marine Policy; Associate Professors Cotter and Goldner, Assistant Professor Hill Butler; Lecturer J. Grigsby; Visiting Assistant Professor Relyea; Adjunct Professors Tyson, Moffitt and Dillman Marks

Requirements for the Major: The Department of Sociology offers students a choice from six areas of concentration (“tracks”) within the full twelve-course major:

- Community, Environment and Policy
- Families and Society
- Health and Health Care
- Crime and the Legal System
- Diversity and Change
- General Sociology

Students who major in sociology are required to take Sociology 100, 300, 305, and complete a two-term senior thesis. Majors may include within their seven elective courses up to two cognates from political science, psychology, economics, history, philosophy, and/or anthropology with approval of the department advisor.

Requirements for the Interdepartmental Major: Sociology 100, 300 305, a senior project, and four sociology electives.

Requirements for the Minor: Sociology 100, 300, 305 and three sociology electives. Students are urged to make one of these electives an independent study or research project.

Requirements for Secondary School Certification in Social Studies: PSY-246 and EDS500A, EDS500B and EDS 500C. Students must also complete at least 12 courses in the department including Sociology 100 , Anthropology 110, Sociology 201, 300, 305 , and the senior thesis 498-499, and a minimum of seven courses in the Department of History. In addition, students must complete at least one course from both the Department of Economics and the Department of Political Science.

Interdepartmental Majors Seeking Secondary School Certification: Students must be

interdepartmental majors in sociology, anthropology, and history. In addition, students must take at least one course from each of the remaining social science departments (economics, political science) and an interdisciplinary social science topics course.

Requirements for Honors: 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.

Sociology Honor Society: 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.

Affiliated Programs: Health, Environmental Studies, Africana Studies, Women’s Studies. Many programs require sociology courses; students should consult with faculty advisors.

## Department-Sponsored Terms Abroad and Internships

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, 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.

Field Program in Marine Studies (Kaplan). An interdisciplinary term abroad held biennially in spring term. Students visit and compare fishing communities and marine life in Bermuda, New England, and Newfoundland. Participants enroll in Sociology 358T, Biology 256T, and Terms Abroad 355T.

Field Program in Kenya (Staff). An interdisciplinary term abroad held biennially in fall term. Students conduct research on African family patterns, women, literature, history, economic development, medical systems, and environmental issues.

## Courses

Note: Sociology 100, is a prerequisite for all sociology courses.

100. Introduction to Sociology (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.

201. Social Data Analysis (See Political Science 220). The analysis of social science data. Emphasis on testing substantive hypotheses by means of computer data processing and statistical techniques.

202. Social Problems and Social Policy (not offered 2008-09). Identification of the social roots of major social problems (e.g., poverty, discrimination, violence, AIDS, teen pregnancy, health care) and a critical examination of current and alternative social policies for dealing with them.

203. Social Psychology (See Psychology 230)

204. Social Construction of Deviance (Spring). 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.

205. Social Work and Human Services (Fall; Moffitt). 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.

206. Aging and Society (Winter; Relyea) (Same as Women’s Studies 221). The social, psychological, and economic consequences of aging, with an emphasis on successful aging. Social programs and policies for the aged are evaluated.

212. The American Family and Cross-Cultural Perspectives (Fall; Hill Butler) (Same as Women’s Studies 280). 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.

## 198 / Sociology

222. Schools and Societies (not offered 2008-09). Sociological analysis of education as an institution over time and across societies.

223. Sociology of Religion (Not offered 2008-09). 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.

224. Sociology of Community (Not offered 2008-2009). 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.

225. Sociology of Work, Occupations, and the Professions (Winter). Sociological analysis of work in a modern industrial society; emphasis on the professions in terms of role behavior, education, socialization, and division of labor.

228. Sociology of Medicine. (not offered 2008-09) 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.

230. African-Americans in Contemporary Society (Winter; Hill Butler). 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. GenEd: CDAA, LCC

231. Sex and Gender in American Society (Same as Women's Studies 284, Spring 2009). An examination of gender and the social context of the behavior of men and women in contemporary American Society.

233. Race, Class, and Gender in American Society (Same as Women's Studies 283;not offered 2008-09). 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. GenEd: CDAA, LCC

240. Political Sociology (See Political Science 284). 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.

245. Sociology of Developing Countries (Not offered 2008-2009). The patterns of economic, social, and political change in developing countries through case studies of different development strategies in Africa, Latin America, the Caribbean, and Asia. GenEd: CDAA, CDEA, CDLA, LCC

260. Demography: Population and Society (Fall; Grigsby) An introduction 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.

261. Crime and Justice in Society.(Spring; Dillman Marks) The social construction of crime and delinquency as social and legal categories; perspectives on causation and consequences of the societal reaction to crime.

265. Sociology of Human Rights (Winter; Staff). This course examines themes associated with the study of human rights and social justice. Issues involving hate crimes, sex slavery and ethnic and racial abuse are examined. GenEd: CDAA, LCC

270. Social Movements, the Environment, and Society (Fall; Goldner) (Same as Political Science 283). 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.

282. Sociology of the Disabled and Handicapped (Not offered 2008-2009). A sociological perspective on handicapping conditions, including the hearing impaired, visually impaired, orthodetically disabled, learning disabled, and mentally retarded.

284. Sociology of Women & Health (Fall; Grigsby) (Same as Women's Studies 219). 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.

285 Food, Nutrition and Society (Spring; Relyea). 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.

286. Women and Change in the Third World (Not offered 2008-2009) (Same as Women's Studies 223). An analysis of theories of societal change and development in terms of the contributions of Third World women in the development process. GenEd: CDLA, LCC

290. Personality, Media, and Society (Not offered 2008-2009). 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.

300. Quantitative Methods of Social Research (Fall; Cotter). Identifying sociopolitical questions and developing hypotheses; designing research instruments (questionnaires); basic statistics and introduction to social science computer analysis.

302. Qualitative Social Research Methods (Same as Political Science 222) 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.

305. History of Sociological Thought (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. GenEd: Eu-C;

320. Africa: Social and Demographic Trends (Not offered 2008-2009). The culture, economy, and politics of Africa, especially sub-Saharan. Topics include family life, religion, kinship systems, urbanization, health, and population growth. Compares traditional African societies by examining contemporary issues of change. GenEd: CDAA, LCC

326. Discrimination and Marginality (Not offered 2008-2009). An examination of discrimination and marginality in society. Topics include the social control of power and justice.

340. Inequality and Mobility: From Penthouse to Poorhouse. (not offered 2008-09) 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.

346. African American Women: Unheard Voices and Contemporary Lifestyles (Spring; Hill-Butler) (Same as Women's Studies 376). 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. Suggested prerequisites: Soc 230, Soc 233, WGS 100, GenEd: CDAA, LCC

358T. Marine Policy and the Maritime Environment (Spring; Kaplan) An examination of social life in maritime communities and the shaping of the national and international marine policies. To be taken in conjunction with Marine Studies Term Abroad.

359. Environmental Policy and Resource Management (Not offered 2008-2009). An examination of environmental issues and problems such as acid rain, ocean dumping, and nuclear wastes, and the social forces that shape environmental policies.

360. Domestic Violence (Winter; Relyea) (Same as Women's Studies 382). 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.

362. Family and Community Services (Same as Women's Studies 381). 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.

364. Sex and Motherhood (not offered 2008-09) (Same as Women's Studies 327). An analysis of

## 200 / Sociology

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.

370. Public Health Care Policy and Society (not offered 2008-09) 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.

372. Comparative Health Care Systems (Spring; Goldner). 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.

374. Mental Health and Society (not offered 2008-09). 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.

385. Internship in the Delivery of Human Services . (Winter; 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.

386. Eldercare Internship Seminar (not offered 2008-09). Designed to facilitate the integration of hands-on work experience with knowledge of practices and policies in long-term care for the elderly.

450. Environmental Seminar (Winter; Kaplan). The focus of this seminar is on the implementation of different environmental policies. Internships at the NYS Dept of Environmental Conservation and local environmental organizations are part of this course

### Independent Studies and Thesis

295H- 296H, Honors Independent Study

490-497. Independent Study (Fall, Winter, Spring; Staff). Prerequisite: Permission of the department chair.

498-499. Senior Thesis in Sociology (Fall, Winter, Spring; Staff). Special project for senior majors.

## Theater and Dance

Associate Professor Finlay, Chair; Professor Steckler; Artist in Residence Culbert; Costumer for the Yulman Theater Waiwaiole; Director of the Dance Program Moutillet; Office Assistant, Goodman; Administrative Program Assistant Herrington.

### Theater

Requirements for the Major: Twelve courses plus one theater practicum credit which must include experience in the Art of Stage Management. The theater major includes ATH 110, 112, 113, 120, 125, 151, 230, 231, 342, 497, one elective chosen in consultation with major advisor, and either EGL 223 or 224. Highly recommended are additional electives/practica in dance.

Requirements for the Interdepartmental Major: Eight courses plus one theater practicum credit which must include experience in the Art of Stage Management. The interdepartmental major includes ATH 110, 112, 113, 125, 151, 230, 231, 342. Highly recommended are additional electives/dance technique classes.

Requirements for the Minor: Six courses plus one Theater Practicum credit which must include experience in the art of Stage Management. The Theatre minor includes ATH110 (Theatre Production), ATH120 (History of Theatre) 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 Theatre and Dance chosen in consultation with the student's Minor advisor.

Departmental Honors (ATH498-499): Candidates must satisfy college qualifications for honors and receive a grade of at least "A minus".

ATH100 Speech Communication (Not offered 2008-2009). 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, and physical presentation techniques including personal style and the mastery of multimedia presentational technology.

ATH102. Introduction to Theater (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, 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.

ATH105. Special Topics in Theater-Stage Combat (Spring; Finlay). An exploration of the physical violence portrayed on stage from the Elizabethan period to the present. Students will be instructed in the safe use of both period and contemporary weaponry as well as the techniques of unarmed stage fighting. Prerequisite: ATH230 or permission of the instructor.

ATH106 Special Topics in Theater-Musical Theater Styles (Winter; Waiwaiole). An exploration of the lyrics and performance possibilities inherent in the American musical. Working with an in class accompanist, students will prepare and perform on a weekly basis throughout the term.

ATH107. Special Topics in Theater-Intermediate Film Production (Not offered 2008-2009).

ATH108. Special Topics in Theater-Stage Makeup. (Winter; Waiwaiole). This studio class in the design and application techniques of stage make-up will cover techniques in corrective make-up (including feature modifications), old age, period make-up (including an overview of period make-up styles and uses), fantasy, facial hair, 2-D and basic 3-D prosthetic techniques commonly used onstage.

ATH110. Theater Production (Fall; Steckler, Winter, Spring; Staff). The exploration of the technical and design aspects of a theatrical presentation. The course covers the basics of scenic construction, tools and machine use, painting, lighting, and sound systems. No previous experience necessary.

ATH112. Beginning Acting (Fall, Finlay, Spring; Culbert). Designed to engage the aspiring actor in developing performance power, technique, and discipline. 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.

ATH113. Introduction to Stage Design (Not offered 2008-2009). The development of the playhouse, scenic conventions, costumes, props, and effects, with emphasis on innovative practices of twentieth-

## 202 / Theater and Dance

century scenic design. Class projects include the design and construction of scale models. Site visits to area theaters and performances. Participation in the fabrication of sets and props for concurrent productions in the Yulman Theater.

ATH117. Fundamentals of Stage Lighting Design (Winter; Staff).

ATH120. History of Theater (Winter; Culbert). An investigation of the development of Western theater from its roots in Greek tragedy to the contemporary with special focus on the works of Aeschylus, the Commedia dell'arte, Moliere, Brecht, and present-day artists. This class concentrates on the nature of theater-in-performance including the physical development of theater spaces, staging concepts, and the artist-audience relationship. GenEd: Eu-C

ATH121. Puppet Theater Design and Performance (Winter; Steckler). 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. There will be a final public performance.

ATH122. Introduction to Costume Design (Spring; Waiwaiole). 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.

ATH125. Improvisation I (Not offered 2008-2009). This class is to allow the individual and the group to explore through intuitive creative ways a physical, emotional and spontaneous form of approaching theatre. 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. Theatre games and a variety of improvisation methodologies will be used in the practice of performance discipline, risk taking and collaboration on stage.

ATH140. American Musical Theater and Dance (Identical to ADA140) (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. No prerequisite. Gen.Ed Am-C

ATH150. Staging Exploration in Theater and Dance (Identical to ADA150) (Not offered 2008-2009). This course is based on the close examination of a particular period of theme of multi-disciplinary artistic production that will offer students an immersion into important developments in per formative 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 Theatre. No prerequisite.

ATH151. Directing (Winter; 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.

ATH226. Theater Production II (Fall; Steckler, Winter, Spring; Staff). Intermediate level course in the technical and design aspects of theatrical production. Students will assume a major responsibility in the technical implementation of sets, lights, sound, props or costumes for the concurrent departmental production. Prerequisite: ATH110 and permission of the instructor.

ATH230. Movement for Actors (Winter; Moutillet). Development of the actor's body as an expressive instrument. Yoga/centering exercises, strength and flexibility workouts will be pursued to achieve a flexible, strong and restfully alert body on stage. Focus on European, Japanese and American styles of physical expression to broaden theatrical actions. An in depth exploration of the gestural world combined with the choreographic use of props, the class will culminate in a collaborative creation produced and performed at the Yulman Theater. No prerequisite.

ATH231. Voice for the Stage (Fall; Culbert). A performance course in vocal technique for the stage based on the philosophy of Kristin Linklater. Extensive exercise work in breath control, resonance and articulation. Readings from contemporary poetry and Shakespearean sonnets. Weekly presentations

## Theater and Dance / 203

of scripted material. Prerequisite: ATH 112 or previous participation in a departmental production.

ATH 240. Theatre Criticism (Not offered 2008-2009). 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. Prerequisite: ATH110 or instructor's permission.

ATH320. Script to Performance (Not offered 2008-2009) Course focuses on the writing and development of your own script for the stage. Discovery of different styles and approaches will be explored according to individual needs. Class is structured as a workshop in which students will collaborate on each other's texts. Course will culminate in staged readings for the public of work created during the term.

ATH342. Acting II (Winter; Culbert). Students review skills learned in earlier acting classes with a higher degree of emphasis on performance. Focus on in-depth textual analysis - discovering in the inner workings of a play, of scenes, monologues and character choices. Understanding the work of a professional actor, and the discipline of the theatre business. Prerequisites: ATH112 or permission of the instructor.

ATH361. Advanced Directing (Not offered 2008-2009). 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: ATH151.

ATH366. Acting Styles. (Not offered 2008-2009). 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 theatre. The class will be an intensive session covering a varied range of acting styles across the history of theatre. Close analysis of specific theatre texts including Greek Theatre, 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 written critical analysis will be required to complete this class successfully. Prerequisite: ATH112 or permission of the instructor.

ATH295H-296H. Honors Independent Study 1 & 2

ATH490-494. Theatre Independent Study 1, 2, 3, 4 & 5

ATH497. Theatre One-Term Senior Project

ATH498-499. Theatre Two-Term Senior Project

### Theater Practica

ATH-010. Rehearsal and Production: Students are invited to participate in theater productions in a variety of capacities, both on-stage and off-stage. To gain transcript recognition for participation in these activities, students must register 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. 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.

### Dance

Requirements for the Minor: A total of 6 credits required to achieve a minor in dance. Students must take a choreography course (ADA050), one history class (ADA052, ADA053, or ADA140) and one

## 204 / Theater and Dance

elective chosen from (ADA 490-493). One credit from the theater program is also required chosen in consultation with the Director of Dance. Two full practicum credits also required in dance technique acquired over six terms of study.

ADA050. The Dance Experience (Spring; Moutillet). An experiential survey course introducing the many facets of dance in our contemporary world. Through lectures, performance attendances, and workshops students discover dance vocabulary, styles, and inner skills. Special emphasis on creative abilities, built on trust, and exploration. Studio classes include diverse technique dance forms, video viewing, improvisation, and creative process sessions. Each student will work as a choreographer in an individual or collective dance piece to be performed publicly. A weekly dance technique class is required.

ADA052. Dance in America (Not offered 2008-2009). 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. No prerequisite. GenEd: Am-C, CDA

ADA053. Histoire de la danse, Danse de l'histoire/History of Dance, Dance of History (Also FRN 421, MLT 211 and WSG211) (Not offered 2008-2009). 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). GenEd: Eu-CS

ADA140. American Musical Theater and Dance (Identical to ATH140) (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. No prerequisite. Gen.Ed: Am-C

ADA150. Staging Exploration in Theater and Dance . (Identical to ATH 150) (Not offered 2008-2009). This course is based on the close examination of a particular period of theme of multi-disciplinary 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 Theatre. No prerequisite.

ADA295H. Dance Honors Project 1

ADA296H. Dance Honors Project 2

ADA490-493. Dance Project 1, 2, 3 & 4. As an Independent Study, 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 also research the creation of workshops, dance classes or new dance techniques for engagement on campus or for outside venues. Students will present their research through a public lecture/demonstration. Prerequisite consists of one history course ADA052-Dance in America, ADA053-Danse de l'Histoire, or ADA140-Musical Theater and Dance.

Other Dance Projects will allow students to develop their own dance style, create a dance piece or restage the work of a famous choreographer. The student will act as Artistic Director, overseeing the creation and being responsible for collaborators such as musicians, actors, dancers, sculptors or any other inter-disciplinary artists. Prerequisite, ADA050-Dance Experience.

ATH Theater Courses.

As an inter-disciplinary credit, the dance minor will elect a course offered by the theater program. Depending on the students' interest and area of study, an appropriate course will be chosen in consultation with the Directors of Dance and Theater.

Dance Technique Classes

Dance Technique Classes: Ballet, modern, jazz, tap and African dance classes are offered in the

## Theater and Dance / 205

Dance Studio each term. 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. No more than two such graduation credits are available, whatever the discipline (music, theatre, or dance). Students are advised to select full practicum credits in whichever area best suits their academic program.

ADA010. Ballet I (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. No prerequisite.

ADA011. Ballet II (Fall, Winter, 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. (For trained dancers).

ADA012. Ballet III (Fall, Winter, Spring; Moutillet). This advanced ballet level emphasizes academic training as well as repertoire. Depending on student's ability and strength, pointe work will be added. Original or traditional ballets will be learned in class. Dancers who have a desire to perform are encouraged to attend. (For trained dancers).

ADA020. Jazz Dance I (Fall, Winter, Spring; 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. No prerequisite.

ADA021. Jazz Dance II (Fall, Winter, Spring; Rogers) An intermediate level designed for a trained dancer. Combination will include various jazz styles exploring the classical, funky, and the contemporary. (For trained dancers)

ADA030. Modern Dance I (Fall; Moutillet). Gain an in depth understanding of how the body moves, proper placement, alignment, and flexibility. For beginners welcoming the knowledge of a well trained and disciplined body. No prerequisite.

ADA031. Modern Dance II (Winter, Spring; Moutillet) 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. (For trained dancers).

ADA035. Dance and Fitness (Fall, Winter, Spring; Moutillet). Provides students with the study of a trained body in modern dance, yoga and fitness routines. Gain expertise on how to shape and train your body to its full potential. No prerequisite.

ADA040. Afro-Dance. 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. No prerequisite.

ADA045. Tap Dance I. For beginners who want to explore the world of tap dance. Students will learn basic footwork, and routines on exciting rhythms. No prerequisite.

ADA046. Tap Dance II. 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. For dancers, adding a tap class will give them the opportunity to learn about a new dance form. Students that have previous experience in tap will be able to expand their expertise. For the theater students the learning of tap can eventually be useful for musicals.

ADA060. Hip Hop I dance class. (Fall, Winter, and Spring; Domenico) The Hip Hop I dance class gives students the opportunity to learn the basic of this popular and important dance form. A style based on routines from street jazz, breaking, popping, and locking. This dance style welcomes students with no previous dance experience and is a dazzling way for students to gain confidence in their body to today's most celebrated pop music. No prerequisite

ADA061. Hip Hop II dance class. (Fall, Winter, and Spring; Domenico) The Hip Hop II

dance class provides trained dancers with a high energy class in an innovative dance style. Hip Hop is urban, it's diverse, and it's forever changing. The freestyle dance fusion gives students the opportunity to develop their own sense of style to the latest hit songs. For intermediate level

## Visual Arts: Art History and Studio Fine Arts

Associate Professor Ogawa, Chair; Professors Benjamin, Duncan, Hatke, Matthew; Assistant Professors Cox, Wang; Visiting Assistant Professor Orellana; Senior Lecturer & Artist in Residence Wimer; Slide Curator Thomas; Photography Lab Technician Rapant; Office Assistant Goodman; Administrative Program Assistant; Herrington.

[www.union.edu/academic\\_depts/visual\\_arts](http://www.union.edu/academic_depts/visual_arts)

### Art History

Requirements for the Major: Twelve courses including two of the three Western art history survey courses and one of the Asian art history survey courses, five other art history courses (which must cover at least three historical periods, cultures, or geographic regions), a minimum of one studio arts course, and three additional advanced art history courses. One of these advanced courses must be AAH 400, a seminar on methodology, which should be taken the winter term of a student's junior year. Majors concentrating in art history are encouraged to continue the study of at least one foreign language at Union. Seniors should fulfill the WS requirement in an art history seminar or through the senior thesis.

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-level courses are required in at least two studio art disciplines (AVA 210-262 or 345). Two advanced courses are required in a single discipline (300 or above). For honors requirements, see below.

In art history: Students take two of the three Western art history survey courses and one of the Asian art history survey courses. Additionally, students must take four additional courses that cover at least three historical periods or geographic regions; three of these four must be advanced courses. The WS requirement for combined dual concentration must be fulfilled by an art history seminar taken in the senior year. For honors requirements see below.

Requirements for the Interdepartmental Major: A minimum of eight courses in the Visual Arts Department, of which seven must be in art history (and include three art history surveys divided between Asian and Western and one in studio art). All proposals for interdepartmental majors including art history must be approved by the art history faculty.

Requirements for the Minor: Six courses including at least two terms of the introductory art history survey. Three of the remaining art history courses should be in areas related culturally or chronologically.

Requirements for Senior Thesis and Departmental Honors: To pursue a senior thesis, art history concentrators or interdepartmental 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 art history course with the approval of the faculty advisor, and have completed AAH 400. The senior thesis topic must be approved by the faculty advisor in the third term of the junior year. All of these criteria must be met by the end of the junior year.

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;

## Visual Arts / 207

(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.

Requirements for Departmental Honors for 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.

AAH101. Introduction to Art History, Part I (Fall; Matthew). Major works of art and artistic traditions from prehistory through the 10th century in western Europe; Islamic art also is considered. The vocabulary and techniques of painting, sculpture, the decorative arts, and architecture. Emphasis on the institutions of art and historical context as well. Visual analysis, verbal and written interpretation of art. GenEd: An-CS; LCC

AAH102. Introduction to Art History, Part II (Winter; Matthew). Major works of art and artistic traditions from the Romanesque to the end of the 16th century in western Europe. The vocabulary and techniques of painting, sculpture, architecture, the decorative arts, and printmaking. Emphasis on the institutions of art and historical context as well. Visual analysis, verbal and written interpretation of art. GenEd: Eu-CS; LCC

AAH103. Introduction to Art History, Part III (Spring; Matthew). Major works of art and artistic traditions from the 17th century to the end of the 20th century, 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. GenEd: Eu-CS; LCC

AAH104. Arts of China (Winter; Wang). 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. GenEd: CD-EA; LCC

AAH105. Arts of Japan (Spring; Wang). 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. GenEd: CD-EA; LCC

AAH200. Classical Art and Architecture (Identical to Classics 134) (Not offered 2008-2009). 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. GenEd: An-CS; LCC

## 208 / Visual Arts

AAH203. Medieval Art and Architecture of Northern Europe (Not offered 2008-2009). 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. GenEd: Eu-C; LCC

AAH206. Introduction to History of Architecture: The Renaissance Tradition, 15th-18th Centuries (Not offered 2008-2009). 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. GenEd: Eu-CS; LCC

AAH207. Artists, Art and Entrepreneurship in Western Europe, 1300-1700 (Spring; Matthew). This course examines the artist as entrepreneur in Western Europe during a crucial period of change, from the Middle Ages to the Early Modern era. We will investigate workshop practices and the production of art, artists' education and training, markets and the emergence of art dealers and auctions, new techniques and technologies, and artists' relationships with their customers and patrons. This is an interdisciplinary course that surveys the intersections between art history, economic and social history, and the history of technology. We will also have the opportunity to examine similarities and differences between two different sectors of the arts: the visual and the musical. No previous experience in art history is required.

AAH209. The Art of the Book (Not offered 2008-2009). The evolution of the book as an object and a historical phenomenon beginning with the printed book and the invention of printing in the early modern period. The course will examine the subsequent development of printing technologies, the revival of craft traditions, and the creation of "artist's books" in the 20th and 21st centuries. Themes will include the social and religious functions of books, literacy, censorship, book collectors and collecting, and the relationship of texts and images. Students will make use of the extensive collection of rare and artists' books in Special Collections at Schaffer Library. GenEd: Eu-C; LCC

AAH212. The Way of St. James: An Interdisciplinary Study (Identical to MLT270) (Not offered 2008-2009). Prerequisite to the course "Hiking the Trail in Spain." Teaches the history, literature, art, and architecture of the route to Santiago de Compostela in northern Spain. Readings include selections from Berceo, the Songs of Mary, and various texts on Romanesque history, art and architecture. GenEd: Eu-C; LCC

AAH213T. Hiking the Trail in Spain (Identical to MLT271T) (Not offered 2008-2009). Students who take this "mini-term" abroad must have taken AAH 212 on campus. The course takes place in Spain, where students will walk a portion of the actual route to Santiago de Compostela. GenEd: LCC

AAH220. History of Photography I (Not offered 2008-2009). An introductory survey of the history of Photography from its pre-history to the early 20th century, with a concentration on European photography. We will study the technical history of the medium in order to understand the fundamental principles of traditional photographic techniques, explore the evolution of photographic expression of the period, and focus on the relationship between photography and fine art, particularly such modern art movements as Realism, Impressionism, and early Abstraction. Additionally, we will spend time studying rare vintage photographs housed in Special Collections at Schaffer Library. GenEd: Eu-CS

AAH221. History of Photography II. (Not offered 2008-2009). An introductory survey of the history of photography from the early 20th century to the present day, with a concentration on American photography. We will study the technical history of the medium from the hand camera to digital in order to understand how photographic techniques have changed. We will also 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. GenEd: Am-CS

AAH223. The Nude (Identical to WGS227) (Not offered 2008-2009). 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. GenEd: LCC

AAH250T. The Architecture of the Federal Capital. The architecture and symbolism of the federal capital. Open to political science students enrolled in the program in Washington, D.C. Contact the Political Science Department for more information. GenEd: Am-C

AAH 260. Art of the United States (Winter; Cox). 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. GenEd: AM-CS

AAH263. Latin American & Caribbean Art: A Cultural Survey of the Modern Era (Winter; Cox). 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. GenEd: CD-LA; LCC

AAH280. Buddhist Art (Not offered 2008-2009). This survey covers major monuments of Buddhist art, from its Indic roots to its representational forms under the teachings of Theravada. Figural and narrative imagery in architecture, sculpture, painting, as well as ritual implements in bronze, wood, textiles, and other ephemeral materials will be studied in the context of Buddhist doctrine, state ideology, and popular culture. Course readings include select Buddhist texts (e.g., sutras, philosophical treatises, poems) in translation. GenEd: CD-EA; LCC

AAH283. Ceramic Traditions of East Asia (Not offered 2008-2009). In East Asia, ceramic production achieves the status of high art, transcending its Eurocentric designation as a “decorative” or “applied” art. This course explores the interplay of form, glaze, and design among pottery traditions – from rustic earthenware to high-fired porcelain – in China, Korea, Japan, and Vietnam. Lectures and visits to museum collections will also consider the historical role of ceramics in cross-cultural exchanges within Asia and beyond, to the Mediterranean, the Middle East, Western Europe, and the Americas. GenEd: CD-EA; LCC

AAH286. Art and Religion of the Silk Road (Not offered 2008-2009). 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. GenEd: CD-EA; LCC

AAH287. Tibetan Art. (Fall; Wang). This course is intended as a comprehensive survey of Tibetan art. It will analyze representative works from major periods in Tibetan history, including architecture, painting, and sculpture. In addition to the styles and iconographies employed in their creation, an emphasis will be placed on understanding the cultural, political, and religious significance of the works. The course will begin with an introduction of a variety of fanciful and subjective “representations” of Tibet and its art in the West. It will then familiarize students—following the historical chronology—with scholarly achievements of the last two decades in Tibetan studies, which have radically changed our understanding of Tibetan art. GenEd: CD-EA; LCC

AAH290. Chinese Painting (Not offered 2008-2009). The development of painting in China from its Neolithic origins through the 21st century. Major trends and major masters of each period will be studied in historical context, along with an exploration of Chinese ways of looking and connoisseurship. All Chinese texts will be read in translation, with no prior knowledge of Chinese art history expected. GenEd: CD-EA; LCC

AAH293. Monuments and Monumentality in China (Not offered 2008-2009). A thematic map of monuments in China, this course covers not only self-evident monuments, e.g., the tomb complex of the first emperor and the Forbidden City, but also objects and sites of a more conceptual monumentality from varied perspectives of technology, aesthetics, labor, religion, ethnicity, and politics. Why and

## 210 / Visual Arts

how were these monuments made? How have the function and perception of these monuments evolved over time? And, more fundamentally, how does the idea of monumentality take form in the arts of China? The monuments discussed range from portable objects such as sculpture, scrolls, and ceramics, to immovable objects such as architecture, rock cliffs, and even large tracts of geographical terrain. Comparisons will be made to relevant monuments in Japan, India, Eurasia, and the Americas. GenEd: CD-EA; LCC

AAH294. Visual Culture of Communist China, 1919 to Present (Fall; Wang). 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. GenEd: CD-EA; LCC

AAH300. Italian Art and Architecture of the Late Middle Ages (Not offered 2008-2009). 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 AAH206 and AAH305. Prerequisite: One art history course or permission of the instructor.

AAH303. Renaissance Art in Italy: The 15th Century (Winter; Matthew). A study of the visual arts that emphasizes painting, prints, sculpture, and the decorative arts. The origins of the Renaissance in the Middle Ages, the role of patronage, the education of the artist, and the functions of works of art will be important themes. The importance of the materials and techniques of art will be stressed. Prerequisite: One art history course or permission of the instructor.

AAH304. Renaissance Art in Italy: The 16th Century (Not offered 2008-2009). 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: One art history course or permission of the instructor.

AAH305. Venetian Painting in the Italian Renaissance (Not offered 2008-2009). Examines painting in Venice and its sphere of influence from the origins of a distinct tradition in the fourteenth century until the end of its "Golden Age" in the late 16th century. Prerequisite: One art history course or permission of the instructor.

AAH306. Color, Pigments, and Paintings (Fall; Matthew). This course examines the materials and techniques used by Western European painters during the period ca. 1200 to ca. 1600. We will also examine theories concerning color and light as articulated by intellectuals and practitioners of the period. This course is also intended to provide an introduction to the role of scientific examination, analysis, and treatment of paintings, and what these process do (or do not) tell us about materials, techniques, and the taste for colors and coloristic effects in the periods we are covering.

AAH309. The History of Gardens and Landscape Architecture (Not offered 2008-2009). European gardens and landscape architecture from the 15th-18th centuries. Persian and Islamic traditions will be considered, but the main emphasis will be on Italy, France, Holland and Britain. The focus of the course is interdisciplinary, and will include consideration of literature, politics, commerce, and social practices in addition to issues of architectural design and theory. Prerequisites: One of the following — AAH101, 102, 206, or permission of the instructor. GenEd:Eu-C; LCC

AAH320. 17th- and 18th-Century European Art (Not offered 2008-2009). 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. Not open to students with credit for AAH 321.

AAH322. 19th-Century European Art (Not offered 2008-2009). An advanced course examining major artistic movements and developments from David to Seurat (1784-1886). The relationship

between the visual arts and arts institutions will be an organizing theme. Prerequisite: AAH102 or permission of the instructor. GenEd: Eu-C

AAH340. European Modern Art, 1880-1940 (Not offered 2008-2009). 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 Seurat’s Neo-Impressionism to Mondrian’s “Neo-Plasticism.” 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. Prerequisites: One of the following — AAH102, 103, 322, 366, or permission of the instructor.

AAH363 Early American Modernism, 1900-1945 (Not offered 2008-2009). 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. Prerequisite AAH102, 103 or permission of the instructor. GenEd: AM-C

AAH366. Contemporary Art and Theory (Not offered 2008-2009). 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. Prerequisite: AAH 103, 340, 363 or permission of the instructor. GenEd: Am-C; LCC

AAH380. The Floating World: Edo Prints and Printmaking (Identical to AVA 380) (Not offered 2008-2009). Students will produce a portfolio of woodblock prints based on an exploration of the history of Japanese prints during the Edo period (1603-1867). Ukiyô-e, or “floating-world pictures,” depicted to the urban pleasures offered in the imperial capital Edo (modern-day Tokyo). The themes and individual artistic styles, first studied, then interpreted by the students in their prints, include: cityscapes and landscapes; representations of beautiful men and women in *bijiga*; the exotic encounter with the west; and explicit erotic imagery. GenEd: CD-EA; LCC

AAH390. The Art Museum: History, Theory, and Practice (Fall; Ogawa). 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 TAB336T: Three Weeks in the Louvre.

AAH400. Seminar: The Methods of Art History (Winter; Wang). The methodology and historiography of art history. A discussion-oriented course that entails extensive reading and written work. Prerequisite: At least one upper-level art history course or permission of the instructor. Required for all art history majors.

AAH430. Seminar: The Institutions of Art (Not offered 2008-2009). The principal institutions of visual arts (the art school, the museum, the exhibition, and the art dealer) from the late 18th century to the present in Europe and America. Consideration of a broad range of topics, among them the notion of a “public”; how patronage and the art market affects the form, function, and reception of art; the emergence of the “professional” art critic. Prerequisite: At least one upper-level art history course or permission of the instructor.

AAH440. Seminar: Special Topics in Art History (Not offered 2008-2009). A seminar focusing primarily on a major artistic movement, artist, patron, or site to allow for an in-depth investigation of an art historical issue or problem. Topics in the past have included: the nude, Leonardo, the French Revolution, Manet and Impressionism, and Gender and Race in Contemporary Visual Culture. Prerequisite: At least one upper-level art history course or permission of the instructor.

AAH460. Seminar: Visual Culture, Race & Gender. (Identical to WGS460) (Not offered 2008-2009). 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

## 212 / Visual Arts

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. GenEd: CD-AA

AAH480. Seminar: Asian Garden Design (Not offered 2008-2009). This seminar explores the history and theory of public and private garden design in China and Japan, as well as the reception and reimagining of Asian gardens in the Euro-American context. In addition to reading and writing assignments, the course involves the communal construction of an Asian garden over the ten-week period. Enrollment is limited to 10, with instructor's permission only. There are no prerequisites, though some knowledge of or background in one or more of the following is desirable: architecture, art history, carpentry/woodworking, computer-aided design, engineering, project management, studio/applied arts. GenEd: CD-EA; LCC

Internships, Independent Studies & Thesis:

AAH295H-296H. Honors Independent Study Courses

AAH490-493. Independent Study Courses

AAH495-496. Museum Internship. 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.

AAH498-499. Senior Thesis. Two term credits when completed.

### Studio Fine Arts

Requirements for the Major: At least twelve courses in the department. Five introductory level courses (AVA 100-160 or 345), one from each of the following areas: design fundamentals or drawing (AVA 100, AVA 110 or 345); photography (AVA 120); sculpture or three-dimensional design (AVA 130, AVA 140); printmaking (AVA 150, AVA 151); digital arts (AVA 160). Two intermediate studio courses (AVA 210-262, or 345); two advanced studio courses (AVA 300 or above); one art history course; and two other visual arts studio courses chosen in consultation with a visual arts faculty advisor.

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-level courses are required in at least two studio art disciplines (AVA 210-262 or 345). Two advanced courses are required in a single discipline (300 or above). For honors requirements, see below.

In art history: Students take two of the three Western art history survey courses and one of the Asian art history survey courses. Additionally, students must take four additional courses that cover at least three historical periods or geographic regions; three of these four must be advanced courses. The WS requirement for combined dual concentration must be fulfilled by an art history seminar taken in the senior year.

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 (AVA100-160 or 345); no more than two intermediate courses (AVA200-262 or 345); at least two advanced level courses (AVA300 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 Duncan, Professor Orellana or Professor Barr for specific details.

Requirements for the Minor: Seven courses, including three introductory (AVA 100-160 or 345); two intermediate (AVA 200-262 or 345); and one advanced course (AVA 300 or above). One art history course is required.

Requirement for Senior Thesis, Senior Honors Project (AVA498-499): Most majors will do either a two-term senior honors project or a one-term independent senior studio project. These comprise in-depth study in a studio discipline in the senior year, leading to a solo exhibition during spring term.

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, usually during winter and spring terms (first term, 498, pass/fail; second term, 499, with an overall grade for both terms). Candidates must meet College qualifications for honors and secure approval from a visual arts faculty sponsor for the two-term project with culminating exhibit. 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.

WS Requirement (Senior Writing Experience): 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. 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 a journal and final paper.

Requirements for Departmental Honors for 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 Steinmetz 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 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 of the project (slide or digital), 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.

Architecture Track: Union offers a studio fine arts concentration with a recommended sequence of courses for students wanting graduate school preparation 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 visual arts 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, Hatke, Orellana; Senior Lecturer Wimer

Note: Due to demand and limited enrollments, Visual Arts majors and minors are given priority in registration for all studio visual arts, unless otherwise noted in the winter and spring course listing schedule. Most fall introductory courses reserve some openings for first-year students.

AVA100. Design Fundamentals I (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.

AVA101. Engineering Graphics (Identical to MER101). 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.

AVA110. Drawing I (Fall; Hatke). 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.

AVA120. Photography I (Fall, Winter; Benjamin). An introduction to photographic techniques with some history. Individual development through projects along with the study of fundamental art ideas. A 35mm film camera with a light meter and adjustable focus is required. Limited enrollment, by permission of instructor.

AVA130. Sculpture I (Fall; Cafritz, Winter; Duncan). A beginning course that introduces basic sculptural vocabularies and techniques, with an emphasis on the individual student's development.

## 214 / Visual Arts

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.

AVA140. Three Dimensional Design I (Spring; Duncan). An introduction to the essential elements of form, space, structure and materials, with an emphasis on individual creative solutions. Class discussions involve the nature and design of useful or functional objects. Projects for each student include constructing a chair of found materials, 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.

AVA150. Printmaking: Relief (Winter; Wimer). Introductory course in relief printing (linocut, collograph, monotype, and woodcut). Introduction to materials and process of printmaking. Outside work required and critiques.

AVA151. Printmaking: Etching (Spring; Wimer). Introduction to intaglio printing. Includes dry point, etching with hard and soft grounds, aquatint, lift ground, white ground. Outside work required, critiques.

AVA160. Digital Art (Winter; 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 graphics/imaging and internet art. Class lectures and hands-on studio will incorporate 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. No previous experience necessary. Outside work required.

AVA200. Design Fundamentals II (Not offered 2008-2009). A continuation of two-dimensional design investigation with a focus on color. Weekly assignments, problem-solving exercises, studio projects; slide talks; critiques. Prerequisite: AVA100 or AVA 110 (recommended), or portfolio review and permission of the instructor.

AVA210. Drawing II (Winter; Wimer). Drawing problems involving both representational methods and alternatives, with a focus on drawing as a flexible structure. Projects include architectural, figure, and abstract work. Further exploration of drawing media, including charcoal, pencil, ink, and collage. Work in class and significant outside work. Prerequisite: Drawing I (recommended), any other studio art course, or permission of the instructor.

AVA220. Photography II (Winter; Benjamin). Intermediate photography, with an emphasis on refinement of technique and development of personal imagery. Lectures, studio practice, presentation of works, and critiques provide a basis for creative evaluation and understanding of tradition in photography. Prerequisite: Photography I. Limited enrollment, by permission of the instructor.

AVA230. Sculpture II (Fall; Cafritz, 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: AVA130, AVA140, or permission of the instructor.

AVA240. Three-Dimensional Design II (Offered as independent study 2008-09). 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 AVA 130 or 140, or permission of the instructor.

AVA260. Painting: Oil (Fall, Spring; Hatke). An introduction to oil painting technique, color, and pictorial composition. Initial development of an individual visual vocabulary. Prerequisite: A college-level introductory studio art course, two-dimensional or three-dimensional media, or portfolio review and permission of the instructor

AVA261. Painting: Watercolor (Winter; Hatke). Painting that explores aqueous painting media, emphasizing watercolor techniques. Discussions centering on issues of composition, content, and expression. Prerequisite: Same as AVA 260. Recommended: AVA 100 or 110. Outside work is required.

AVA262. Real and Recorded Time: (Spring; Orellana). An introduction to the basic concepts of time-based artwork, using a variety of processes and media. Students explore concepts of sequence,

performance, interactivity, motion, process and documentation through video, audio and installation-oriented projects. Outside work is required. Prerequisites: AVA 160 or permission of instructor.

AVA270. The Processed Pixel (Identical to CSC070) (Winter; Orellana). Utilizing basic aspects of computer programming, this course will explore how artists can use computer code to communicate a variety of idea and content. By means of the programming environment Processing, students will investigate issues in animation, computational design, data visualization, interactivity, and other relevant topics. Outside work required. Prerequisite: AVA 160 or permission of instructor.

AVA280. Web Aesthetics (Fall; Orellana). This course will focus on multimedia arts within the realm of the world wide web. Students will explore the internet as a medium for art while utilizing the artistic and design possibilities of Dreamweaver, Photoshop, and Flash. Outside work required. Prerequisite: AVA 160 or permission of instructor.

AVA320. Photography III (Fall, Spring; Benjamin). Advanced photography, with an emphasis on the attainment of individual style. The creation of a cohesive body of work, along with research of the history and art of photography. Students work in digital color photography. Prerequisite: Photography II or permission of instructor. Limited enrollment. Digital camera required.

AVA330. (Sculpture III (Fall; Cafritz, Spring; Duncan). Advanced exploration of techniques, materials, and concepts of sculpture. Emphasis on development of individual student's work. Prerequisite: AVA230 (Sculpture II), AVA240 (Three-Dimensional Design II), or permission of the instructor.

AVA345. The Illustrated Organism (Identical to Biology 345) (Spring; Hatke/Tobiessen). Descriptive graphic and written analysis of plants and animals; direct observation in field, studio and laboratory integrating biology and visual arts. Culminates with annotated portfolios illustrating organisms studied. Taught jointly by visual arts and biological sciences faculty using combined facilities. Apply through either participating department. Credits visual arts and biology majors. GenEd: SCLB

AVA350. Advanced Printmaking (Winter, Spring; Wimer). Continuation of Relief Printmaking during winter term, and Intaglio Printmaking during spring term. Exploration of advanced technique in both intaglio and relief printmaking including multiple plate and color printing process. Outside work required, critiques. Prerequisite: AVA 150-151 or permission of instructor.

AVA360. Advanced Painting (Fall, Winter, Spring; Hatke). Emphasis on refining individual direction with respect to ideas of composition, content, and media. Stylistic development is stressed. Outside work required, critiques. Prerequisites: AVA260, AVA261; Recommended: AVA210 and AVA130 or AVA 140.

AVA363. 3D Computer Modeling (Fall; Orellana) 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, rapid prototyping, and animation. Software covered: Cinema 4D and Adobe After Effects. Outside work required. Prerequisite: AVA 160 or permission of instructor.

AVA370. Physical Computing (Spring; Orellana). Through the application of basic electronic techniques and a programmable micro-controller called the Basic Stamp II, this course will explore and control interactive artworks, kinetic sculpture, robotic art, sound works, light art, and performance environments. Outside work required. Prerequisite: AVA 160 or AVA 130 or permission of instructor.

AVA380. The Floating World: Edo Prints and Printmaking (Identical to AAH 380) (Not offered 2008-2009). Students will produce a portfolio of woodblock prints based on an exploration of the history of Japanese prints during the Edo period (1603-1867). Ukiyô-e, or "floating-world pictures," depicted the urban pleasures offered in the imperial capital Edo (modern-day Tokyo). The themes and individual artistic styles, first studied, then interpreted by the students in their prints, include: cityscapes and landscapes; representations beautiful men and women in bijinga; the exotic encounter with the west; and explicit erotic imagery. GenEd: CD-EA

Internships, Independent Studies & Thesis:

AVA295H-296H. Sophomore Honors Independent Study Courses

AVA410-419. Drawing Independent Study

## 216 / Visual Arts

AVA420-429. Photography Independent Study. (Spring; Benjamin) A student who has demonstrated they can work independently and who proposes 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. A student needs to submit a written proposal well in advance of pre-registration to be considered. By permission of instructor only.

AVA430-439. Sculpture Independent Study

AVA450-459. Printmaking Independent Study

AVA460-469. Painting Independent Study

AVA470-471. (Studio Internship 1 & 2. 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.

AVA480. Digital Art Independent Study

AVA497. Senior Studio Project . 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.

AVA498-499. Senior Thesis 1 & 2. A two-term studio project requiring faculty sponsorship. (See preceding information on Departmental Honors and WS requirement.)

### Visual Arts Practicum

The Visual Arts Department offers a practicum in ceramics. Students who receive three terms of practicum credit in ceramics can receive a single course credit towards graduation. Please bear in mind that college-wide, no more than two course credits received for practica can be counted towards graduation. Permission of the Visual Arts chair is required if you wish to count course credits gained in ceramics practica towards the major. Requests to register for transcript recognition after the drop/add period will not be honored.

Ceramics Practicum. Clay as a medium for pottery and sculpture. Materials fee \$50.

AVA010 Ceramics I (Fall, Winter, Spring; Niefield). An introduction to clay, including hand-building, wheel-throwing, glazing and firing techniques. The studio is available for practice and completion of assignments.

AVA020. Ceramics II (Fall, Winter, Spring; Niefield). Students will learn more advanced forming and decorating techniques. Besides studio assignments, a short research presentation will be required.

AVA030. Ceramics III (Fall, Winter, Spring; Niefield). In addition to classroom assignments students will learn kiln firing and glaze preparation.

## Women's and Gender Studies

Women's and Gender Studies is an interdisciplinary program that includes more than 50 courses offered in art and humanities, social sciences, and sciences. Offering a critical perspective that places gender at the center of analysis, Women's and Gender Studies reexamines traditional beliefs, supports new kinds of research, explores feminist theory, and enables students to better understand the societal positions and global processes affecting both women and men throughout the world. Women's and Gender Studies courses probe the way cultures construct concepts of gender, introducing students to differences of class, race, ethnic, and sexual orientation 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.

**Requirements for the Major:** Twelve courses, including an interdisciplinary team-taught course, Introduction to Women's and Gender Studies (WGS 100), The Capstone Course, often taught as Feminist Film (WGS 495), and a two-term senior thesis. The remaining eight courses must be selected from a listing of more than 50 WGS courses offered in a number of departments and crossing at least two of the College's four divisions. A one-term internship at a designated locale in the Capital District is 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.

**Note:** Complete course lists are available in the Women's and Gender Studies office in the Reamer Campus Center (Room 302) or on the program webpage, [www.union.edu/academic\\_depts/womens\\_studies](http://www.union.edu/academic_depts/womens_studies).

**Requirements for the Minor:** Six courses, including Introduction to Women's and Gender Studies (WGS 100), Capstone Course on Feminist Film (WGS 495), and four remaining courses with WGS designation from at least two divisions (in consultation with the director).

**Requirements for the Interdepartmental Major:** Eight courses, including Introduction to Women's and Gender Studies (WGS 100), Capstone Course on Feminist Film (WGS 495), four remaining courses with WGS designation from at least two divisions, and a senior thesis on a subject that examines gender, women, and/or feminism. One term of the senior thesis counts towards the WGS major. One-term internship is recommended (see major requirements above). Students should confer with the program director in designing and fulfilling their requirements.

**Honors:** Candidates for honors must meet College requirements, have a cumulative grade point average of 3.3 in Women's and Gender Studies, at least three "A" or "A-minus" grades in Women's and Gender Studies courses, and have earned an "A" or "A-minus" on the senior thesis. Departmental honors is formally awarded at the discretion of the director of Women's and Gender Studies in consultation with the faculty executive committee.

**WGS 100. Introduction to Women's and Gender Studies.** A team-taught course serving as an interdisciplinary introduction to the findings of feminist scholarship on gender and women. The course is broad in scope and covers topics in feminist theory, the social construction of gender, and issues affecting women's and men's lives throughout the world.

**WGS 495. Capstone Course on Women and Gender Theory.** A required interdisciplinary course designed as the culmination of the major, currently taught as Feminist Film. Students will be expected to bring their knowledge of Women's and Gender Studies to critically examine a series of feminist films. This course reinforces and provides a coherent perspective on the major issues in the discipline and affords an opportunity to reflect upon the importance of the chosen major and/or minor focus in light of these issues. Prerequisite WGS 100.

**WGS 498, 499. Senior Thesis.** A student directed two term project culminating in a thesis representing the depth and breadth of knowledge attained in Women's and Gender Studies interdisciplinary course work. Student theses in WGS are usually advised by the current director, but can be advised by any faculty member in WGS in consultation with the director.

**WGS 479. Internship in Women's and Gender Studies.** An internship experience in local agencies,

## 218 / School of Education of Union Graduate College

social services, law and media centers, women's advocacy groups, childcare centers, gay and lesbian organizations, with healthcare providers, and others. The goal is to develop students' knowledge of and ability to analyze organizations that deal with gender and women's issues and communities. Prerequisite, sophomore standing and permission of the director.

Program Director: Lori Marso (Political Science)

Advisory Board: Batson (Modern Languages), Barr (Computer Science), Chilcoat (Modern Languages), Donaldson (Psychology), Feffer (History), Foroughi (History), S. Gmelch (Anthropology), Golderman (Schaffer Library), Hill-Butler (Sociology), Jain (English), Matsue (Music), Meade (History), Ogawa (Visual Arts), Oxley (Political Science), Raucci (Classics)

## School of Education of Union Graduate College

Patrick Allen, Dean

Students at Union College can become certified to teach at the secondary school level through a five-year, combined degree graduate program in cooperation with The School of Education of Union Graduate College. Students can be certified to teach grades 7-12 in the following academic areas: English, languages (French, German, Greek, Latin, and Spanish), mathematics, science (biology, chemistry, earth science, physics, and general science), and social studies.

### Admission to the MAT Program

Students should declare their interest in applying to this program by completing an application to the degree program listed below.

(1). Combined Degree Program graduate degree option: This option is for Union College undergraduates who have an overall GPA of 3.3 or above who wish to obtain Initial NYS certification, grades 7-12 in English, foreign language, mathematics, science, or social studies. These students are permitted to have two upper division undergraduate courses count as part of the sixteen course M.A.T. program as well as for their bachelor's degree. Students should complete a graduate application form obtained from either the Graduate Studies office or the School of Education office in Lamont House. Applicants should complete their application no later than the beginning of the winter term of their senior year.

(2). Five Year Certification: This option is for Union College undergraduates who have a GPA below 3.25. Students can apply to the M.A.T. program and, if accepted, complete the work for Initial NYS certification, grades 7-12 in English, foreign language, mathematics, science, or social studies.

(2). Undergraduate Certification: Given certification requirements that became effective on Feb. 2, 2004, the School of Education strongly recommends that any Union undergraduate seek certification through either the combined degree program listed above or by pursuing a Master's degree in the M.A.T. program at Union Graduate College subsequent to completing their undergraduate degree at Union College. In our professional estimation, since all New York State teachers must attain a master's degree within five years of receiving initial certification, there is little time for most teachers working full-time to also complete a master's degree.

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:

— Educational Psychology (Psychology 146) (In order to take PSY 146, Union undergraduates must take the pre-requisite PSY 100);

— Structured Field Experiences (EDS 500A and EDS 500B, each a non-credit course) before graduating from the undergraduate college. Students spend five consecutive school days on each of two site visits observing classes and meeting with secondary school teachers in the discipline for which

## School of Education of Union Graduate College / 219

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 and junior years, but must be completed prior to enrollment in the summer term's Psychology of Teaching and Curriculum and Methods courses. EDS 500C is completed during the first two weeks of the student's internship in the fall term. Students must pick up packets of information and arrangement forms at the School of Education Office prior to arrangement of these experiences.

— At least three terms of one foreign language or its equivalent is required of all teachers seeking NYS certification.

Course Strongly Recommended but Not Required:

Issues in American Education (Political Science 281) (Routinely offered fall term only). Sociological, philosophical, and historical analyses of contemporary educational systems: the nature and purpose of education, the organization of schools, the social psychological process of education, the relation of schools to community and society, the current conflicts and trends in education. Includes weekly visits to local school districts.

### Grades 7-12 Certification

To be considered for a recommendation for certification, students must submit a final portfolio as part of the M.A.T. program that describes how they have met each of the certification criteria listed below.

— a concentration of coursework in the area appropriate to their teaching certificate (specific requirements for each major are listed under each academic department):

— at least one year of college-level study in a language other than English;

— a practicum at both the middle level (7-9) and high school grades (10-12). (Not to be confused with structured field experiences).

— an edited videotape illustrating teaching effectiveness.

— a two-hour SAVE workshop on preventing school violence;

— an official fingerprint application for clearance to work in a school.

Students must also provide evidence that they can:

— create a productive learning environment;

— demonstrate mastery of subject matter and the ability to communicate it effectively to students;

— plan and execute effective instructional activities;

— teach effectively using multiple methods of instruction;

— monitor and design effective formal and informal assessments of student learning;

— manage student behavior effectively;

— establish a classroom culture of mutual respect;

— recognize students as individuals;

— encourage discussion as a learning tool;

— address the special developmental and educational needs of middle level and high school students;

— work effectively with students from minority cultures;

— work effectively with students from homes where English is not spoken;

— work effectively with students with handicapping conditions;

— work effectively with gifted and talented students;

— work cooperatively and effectively with other faculty and staff members;

— work effectively with parents and community members to enhance the education of students;

— communicate clearly and accurately with students, administrators, parents, and the public;

— integrate technology in the service of effective learning;

— strive continuously for improvement by seeking advice from mentors, supervisors, and faculty while implementing that advice effectively.

### Five-Year Combined Degree Program

Students may choose to remain at Union for an additional year and complete a Master of Arts in Teaching (M.A.T.) degree from The School of Education of Union Graduate College. The cost of the

## 220 / School of Education of Union Graduate College

fifth year is significantly lower than the cost of each year in the undergraduate school.

**Undergraduate Component:** Students complete the traditional undergraduate major, Educational Psychology (Psychology 146), three terms of a foreign language, and the structured field experiences (EDS 500A and EDS 500B).

**Graduate Component:** In the summer between their senior and graduate year, students will complete Psychology of Teaching (EDS 540), Curriculum and Methods (EDS 511 - 516), a Micro teaching Lab (EDS 540L), and EDS 541 Literacy for Secondary Teachers. In the fall, term students will complete the Special Needs Seminar (550A) and begin a year-long teaching internship (551-553). In the winter and spring terms, students will complete the teaching internship, and the Seminars in Instruction and Evaluation (EDS 550B and 550C), and a second course in literacy (EDS 544). Those who complete the two-term Master's Research and Thesis also complete one additional course in their core area. Those who undertake a one-term M.A.T. Project (EDS 580) must complete two additional courses in their core area. (See the Graduate Studies catalogue of Union Graduate College for further description of the Master of Arts in Teaching M.A.T.). Students must also take a minimum of three graduate courses in their area of certification.

**Criteria for Admission to the Fifth Year:** To be eligible for graduate study, students must meet the criteria outlined for the M.A.T. degree. To be eligible for an internship, students must obtain favorable recommendations from:

- school personnel who have worked with them in prerequisite field experiences,
- UGC faculty teaching the summer professional coursework, and
- from college faculty in the student's major area of concentration. Entrance into the internship portion of the program is contingent upon completion of Psychology of Teaching, Literacy for the Secondary Teacher, and the appropriate Curriculum and Methods course with a minimum grade of B. Students should apply for the fifth-year program no later than the winter of their senior year.

Applications and additional information about the MAT program may be obtained from the School of Education office in Lamont House.

### 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 Union Graduate College 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:

- LAST (Liberal Arts and Sciences), the Assessment of Teaching Skills-Written (ATS-W), and the Content Specialty Test (CST);
- satisfactorily complete a supervised internship.

Applicants for a professional certificate are required to satisfy all requirements for initial certification and also:

- (1). Have a master's degree functionally related to the field of teaching;
- (2). Have two years of full-time teaching experience.

UGC's M.A.T. degree provides graduates with the master's degree functionally related to their field of teaching.

School of Management of Union Graduate College / 221  
**School of Management of the Union Graduate College**

Mel Chudzik, Dean

Union College undergraduates are able to take selected undergraduate and graduate courses through the School of Management of the Union Graduate College.

### Accelerated M.B.A. and M.B.A. Healthcare Management Programs

This program combines the strengths of the undergraduate curriculum at Union College with the M.B.A. taken through the School of Management of the Union Graduate College. Students are expected to complete all of the requirements for an undergraduate major in one of the social sciences, sciences, humanities, or engineering. The combined degree is typically awarded at the end of the fifth year of study. Students may earn an M.B.A. or an M.B.A. in Healthcare Management.

Requirements: Students should consult their advisor during their sophomore year and apply for graduate admission to the Union Graduate College in their sophomore, junior, or the first term of their senior year. Generally, an undergraduate grade point average of 3.0 is required for the application to be considered. The GMAT is required of all School of Management combined degree program applicants with a grade point average of less than 3.4. Scores must be sent to the School of Management before applicants can be considered for admission. The student must submit three letters of recommendation and must present a written statement explaining her/his motivation for accelerated education and interest in the field. Mathematics 10 and 12 are recommended during the freshman, sophomore, or junior years. Applicants are required to have a personal interview with the combined program advisor as part of the application process.

Students are required to take 20 graduate courses, three of which will count toward the bachelor's degree. Undergraduate students who are considering the accelerated program should be aware that no more than three School of Management courses can double-count for both graduate and undergraduate degrees. Union Graduate College will waive the MBA Calculus and Statistics requirements for students who achieve a B- or better in these courses at Union College. (See the Graduate College Waiver Policy, available through Rhonda Sheehan, Lamont House, 518-388-6238). 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.

The following course, taught by School of Management faculty, is a Union College course taught regularly for all undergraduates. This course does not substitute for MBA 510, a graduate level Accounting course.

ACC 100. Survey of Accounting. 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.

### School of Management Courses Open to Undergraduates

Undergraduates who are not in the accelerated M.B.A. program are allowed to take only two graduate courses. For a complete description of these and other School of Management courses, see the Catalog of the Union Graduate College.

MBA 500. Managing Ethically in a Global Environment  
MBA 510. Financial Accounting  
MBA 512. Financial Analysis and Decision Making  
MBA 551. Managing People and Teams in Organizations  
HCM 500. Introduction to Health Systems

## About Union College

### A Brief History

Union College can trace 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," or "We all become brothers 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. The group celebrated the 35<sup>th</sup> anniversary of their graduation at ReUnion 2007. Today, roughly half of Union's students are women. More recently, the College has added programs in Bioengineering, East Asian Studies, Nanotechnology, and Neuroscience.

Perhaps the most dramatic change in student life began in 2004 with the Minervas, created 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 General Education Curriculum 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.

### 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 court, flanked on three sides by buildings and open to the west, with a round pantheon as the focus of the court.

The distinctive Ramée style, with its arches and pilasters in white, remains the dominant motif in Union College architecture. Recent additions to the campus include the Science-Engineering Center; Achilles Rink; Frank Bailey Field, an all-weather athletic field; the Morton and Helen Yulman Theater; and the F.W. Olin Center, a high-technology classroom and laboratory building. 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. The College recently dedicated 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 Breazzano House, one of the seven Minervas.

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.

Also near the center of campus is Schaffer Library, which houses more than 600,000 volumes, 1,600 current periodical subscriptions, together with a periodicals reading room, faculty studies, and more than 500 individual study spaces. It operates on the open stack plan and offers bibliographic instruction, interlibrary loan, online bibliographic retrieval services, electronic document delivery, and Internet workstations for access to indexes, abstracts, and full-text journals online. Automated circulation of books and other library materials as well as the online catalog are in place. The library has been a depository for federal government documents since 1901. Professional reference service is offered during most of the hours that the library is open. Within the library are 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 original Ramée drawings for the campus; the Trianon editions of William Blake's works; the first books bought for the library in 1795; and the original College charter.

Flanking the library and connected to it by a curved colonnade are the Humanities and Social Sciences Buildings. The Humanities Building is the home for the Departments of Classics, English, Modern Languages, and Philosophy. In the Social Sciences Building are the Departments of Anthropology, Economics, History, Political Science, and Sociology. 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 focal point of the Murray and Ruth Reamer Campus Center is a commons area, part of

## 222 / General Information

a multi-level atrium looking out over Jackson's Garden. The building also houses an auditorium, a dining hall and a restaurant, a two-level bookstore, and a variety of office and activity rooms for student organizations such as Concoridiensis, 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 recently added the 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.

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

The largest of Union's buildings, the Science and Engineering Center, is the home of the Departments of Biological Sciences, Chemistry, Computer Science, Electrical and Computer Engineering, Mathematics, Mechanical Engineering, Physics and Psychology. Located here, 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 Arts Building is located in North Collonade in the former Philosophical Hall, which held the first analytical chemistry laboratory specifically opened for college students. West of the Arts Building is the new Taylor Music Center, completed in 2007. It 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 College's student residences include South College, built in 1814 and renovated in 1936. Its counterpart on the other side of Library Field is North College. Other residence halls are Davidson and Fox Houses; West College, home for many freshmen; Richmond House; Raymond House; Potter House; College Park Hall; and apartments along Seward Place to the west of campus.

### General Information

**Union's Faculty:** The student-faculty ratio at Union is 10:1; excluding the library staff, some of whom hold faculty rank; 95 percent of the teaching faculty holds the doctorate or terminal degree.

**Union's Students:** More than 4,300 applicants seek freshman class positions. Exact statistics vary from year to year, but about half 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 75 percent from New York and New England; 40 states and several other countries also are represented. More than half receive financial aid from the College, and about one-third of each graduating class continues directly to graduate or professional school. About 84 percent of each class completes the degree requirements within five years. In recent freshman classes, less than five percent of those who entered were dropped for poor grades.

**Enrollment:** Union College enrolls approximately 2,100 full-time undergraduates.

**The Board of Trustees:** The governing body of the College is the Board of Trustees, which 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.

**Accreditation:** Union College is fully accredited by the Middle States Association of Colleges and

Secondary Schools, 3624 Market St., Philadelphia, PA 19104, 215-662-5606. The programs in chemistry are certified by the American Chemical Society. The computer, electrical, and mechanical engineering programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

**Student Activities:** Union believes that a student's life outside the classroom is an important part of his or her total education. 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.

**Student clubs** (groups recognized by the Student Forum and funded by Student Activity fees): African and Latino Alliance of Students; American Society of Mechanical Engineers; Asian Student Union; Baja Club; Ballroom Dancing Club; Baseball Club; Best Buddies; Bhangra Big Brothers/Big Sisters; Biology Club; Black Student Union; Campus Action; CELA; Cheer and Spirit Squad; Chemistry Club; Chet's; Classics Club; Cocoa House; College Against Cancer; Concert; Concordiensis; Cycling; Dance Team; Debate; Dutch Oven

Also, Economics Club (*Ceteris Paribus*); Entrepreneurship Club; Environmental; Fashion Show; Fencing Club; Film Committee; French Club; Garnet Yearbook; Geology Club; German Club; Golf Club; Gordie Foundation; Gospel Ensemble/Heavenly Voices; Idol; Institute of Electrical and Electronics Engineers; Karate Club; Kendo; MECCA; Men's Hockey Club; Men's Rugby Club; Mountebanks; Network Gaming Association; The National Society of Black Engineers.

Also, Outing Club; Philosophy; Photography Club; Physics; Pre-Health Club; Pre-Law; Roteract; Safe Space; Shakti; Ski Club; Social Committee/U-Program; Society of Hispanic Professional Engineers; Society of Women Engineers; Spanish Club; Speakers Forum; Spectrum; Springfest; Student Forum; TVUC; Ultimate Ultimate Club; UMED; Virtual U; Women's Rugby Club; Womyn's Union; and WRUC.

**Organizations** (recognized by the Student Forum but not funded from Student Activity fees): Catholic Student Association; Delphics; Dutch Pipers; Eliphalets; Ephemeris; Etta Kappa Nu; Garnet Minstrelles; Interfraternity Council; Hillel; Multicultural Greek Council; Muslim Student Union; Newman Club; Panhellenic Council; Philomathean; Protestant Campus Ministry; Psi Chi; Tau Beta Pi; Theme House Consortium; Union College Choir; Union College Christian Fellowship; Union Community Action Reaching Everyone (UCARE); Union College Democrats; Union College Republicans;

**Lectures and Concerts:** Union makes available to all students a general cultural program of concerts, lectures, and movies. Speakers visit the campus for periods of up to several days, making formal appearances at lectures and less formal visits to classes and other small groups.

**Residential Life:** The College's student residences include seven halls including traditional, suite-style, and apartment housing. The newest facility, College Park Hall, opened in the fall of 2004. Other residence halls are Davidson and Fox Houses; West College (first-year); College Park Apartments; Richmond House (first-year); and Webster House (focused study). Focused-Study Housing, incorporating a 24-hour quiet consideration is available to all students. Students also are eligible to live in Minerva Houses, Greek Housing or Theme Houses.

**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. community service, 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 house members are able to take advantage of house gathering space and activities even though they may 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 and five national sororities 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).

## 226 / General Information

The others formed at the College are Psi Upsilon (1833), Chi Psi (1841), and Theta Delta Chi (1847). The fraternities also include Alpha Delta Phi, Alpha Epsilon Pi, Alpha Phi Alpha, Delta Kappa Epsilon, Iota Phi Theta, Phi Delta Theta, Phi Iota Alpha, and Sigma Chi. The sororities are Delta Delta Delta, Gamma Phi Beta, Lambda Pi Chi, Omega Phi Beta, and Sigma Delta Tau.

**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 the Cultural Unity Center, dedicated to furthering multicultural understanding among all students. Culinary House promoting expertise in culinary arts and healthy dining options. Dickens House celebrates the literary mind and holds events focused on literature. Global Experience House seeks to connect knowledge of international trends with the education of domestic students. Iris House focuses on creating a supportive environment and educational events for queer issues on campus. Wells House seeks to strengthen the relationship between Union and the local community through volunteer service. Ozone House is an environmentally-focused community designed to reduce waste and promote living options that are better support our ecosystem. Thurston House promotes enhanced social and intellectual life with a focus on Asian cultures. Language House A & B provide opportunities for improved foreign language skills and cultural knowledge. Music Culture House promotes events that connect the impact music has on popular culture. The Symposium seeks to heighten intellectual discourse outside the classroom.

**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. Each individual 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 several wellness programs. The College insists that athletics be kept in harmony with the essential educational purpose of Union. Its 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 25 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, 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 (ECAC), the Liberty League and the ECAC Hockey League (ECACHL). 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 clubs are baseball, bowling, fencing, golf, ice hockey, karate, rugby, skiing, and volleyball. 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 for football, lacrosse, field hockey and ice hockey); Viniar Athletic Center, a state-of-the-art hardwood floor venue completed in the fall of 2004 (men's and women's basketball, 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, men's and women's lacrosse, soccer, and field hockey); Breazzano Fitness Center at Alumni Gymnasium (fitness center, swimming, racquetball, squash, and coaches' offices); Garis Field (men's and women's soccer); the turf at College Park, a multipurpose, all-weather, lighted field (intramurals, men's and women's soccer); College Boathouse (men's and women's crew); Memorial Field House (intramurals, recreation, indoor track, volleyball, and tennis); Alexander Field (softball) and seven outdoor tennis courts and an outdoor basketball/street hockey court, all used for intercollegiate competition, intramurals, clubs and open recreation.

## Student Services

Union College provides a variety of services for full-time students. These include:

**Campus Safety:** 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: 388-6911

Escort Service: 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
- 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.

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.

Access to crime data reported to the U.S. Department of Education may be found through this link: [http://www.union.edu/Safety/Campus\\_Safety/community\\_report.php](http://www.union.edu/Safety/Campus_Safety/community_report.php)

**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 students.

**Health Services:** We are staffed with Nurse Practitioners, Registered Professional Nurses, a secretary and a collaborating physician. Our hours are Monday through Thursday from 9 a.m. to 8 p.m., and Fridays from 9 a.m. to 5:30 p.m. Medical appointments with a Nurse Practitioner until 5pm. Please call for an appointment. Walk-in patients are seen for urgent concerns. Sunday hours are from 9 a.m. to 3 p.m. – nurse managed. Local hospitals are available for emergencies after hours.

Health Services will cooperate fully with family physicians in supervising treatment of chronic diseases. In general, however, students should consult their family physicians about long-standing, non-emergency health problems. Health Services does not take responsibility for recommending a particular physician, clinic, or hospital. A list of local physician specialists and health agencies can be viewed on our web site:

[www.union.edu/healthservices](http://www.union.edu/healthservices)

There is no charge to be seen by any of our staff. Charges for medications, x-rays, laboratory procedures, hospitals, 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

## 228 / Student Services

request a written prescription and have it filled at a local pharmacy. Lange's Pharmacy delivers to Health Services once a day, Monday through Friday. If you would like to have your prescription card registered with Lange's call 518-374-3324.

If you have a concern about school health insurance, please contact Human Resources at 518-388-6108.

Please be sure to have your insurance (medical and prescription) card available for Health Services to verify if needed.

Students requesting religious exemptions should submit a letter according to the Dept. of Health regulation 10 NYCRR, Section 66 1.3 (d) along with their completed Health Form.

Information Technology Services: Housed in the Stanley G. Peschel Center for Computer Science and Information Systems, Union's Office of Information Technology Services (ITS) manages the College's distributed network and the many computing and technology resources on the network. There are more than 1,600 College-owned computers and workstations on campus, with over 500 available for student use. 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. Union has been on the Internet since 1989, and there is a dedicated Internet network connection for each student in every College-owned residence hall room. Wireless network access is available in most buildings (including the public areas of the residence halls) and several outdoor locations. More than 45 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 three computer laboratories that are available 24 hours a day; one is fully equipped for the development of multimedia projects. The ITS home page is at <http://www.union.edu/ITS>

Stanley R. Becker Career Center: Just as a liberal arts education provides students with a foundation for life, Becker Career Center provides students with a foundation for a life of meaningful work. Students are encouraged to take advantage of the Center during all four college years. A recommended first step is to engage in all aspects of college life including academics, student organizations, activities, and events. Reflecting on these and other life experiences, students' interests, values and skills serve as a foundation for developing career plans. Students can use career assessment tools such as the Strong Interest Inventory, Myers Briggs Type Indicator, and SkillScan card sort to further assess their interests, skills and abilities. Students are encouraged to use Becker Career Center staff and resources to explore potential career fields, conduct informational interviews with professionals in their career field(s), and locate internships and jobs of interest.

Becker Career Center Staff help students develop career decision making abilities, and master four core career competencies: resume writing, cover letter writing, interviewing, and networking. By mastering these competencies and engaging in the career development process of self-assessment and exploration, students equip themselves with the lifetime ability to find and secure positions for which they are well suited. Becker Career Center programs are designed around facilitating student growth in these areas, and preparing students to find and connect with opportunities consistent with their interests.

The Becker Career Center houses a number of online career research tools that allow students to research potential career fields, locate employers by industry/geographic area, and find/apply to internship and job postings. E-Recruiting, the Becker Career Center's web based job/internship database, allows students to access and apply to internship and job postings, view and register for upcoming Career Center events, and connect with alumni working in their targeted career fields.

For more information on Becker Career Center, visit the Career Center website [www.union.edu/BeckerCareerCenter](http://www.union.edu/BeckerCareerCenter), or call at (518) 388-6176.

### Union Graduate College

In cooperation with the Union Graduate College (affiliated with Union University), Union undergraduate students have the opportunity to take selected graduate courses offered by the

Graduate College for undergraduate credit. Union College and the Union Graduate College also jointly administer several combined degree programs. See the section titled “Undergraduate Programs” for more information.

## Alumni

The College’s 22,000 alumni center their activities around the Alumni Council, which is incorporated under the laws of the State of New York. The council has two representatives from each class, 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. The basic unit of the alumni program is the class, and 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.

## Prizes, Honors, and Scholarships

### Prizes

William F. Allen (1895) Essay Prizes. To a senior in any department for a non-fiction essay.

Alpha of New York Phi Beta Kappa Prize. To a freshman for outstanding achievement in general education.

Alumni Council Scholarship Award. From the alumni to the fraternity that shows the greatest improvement in scholarship during the academic year.

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 in humanities with the highest scholastic standing.

Frank Bailey (1885) Prize. To the senior who has rendered the greatest service to the College in any field.

Wendy Bernstein (1980) Memorial Award. To a sophomore for superior service to the College. Given by the student government. Recipients are selected by the Student Forum.

Arnold I. Bittleman Memorial Prize. Established to honor Prof. Arnold I. Bittleman, an artist and teacher whose accomplishments in drawing commanded international admiration. To a student whose work, in the judgment of the arts faculty in collaboration with an outside juror, is outstanding.

William H. Bloom (1945), M.D., Poetry Prize. For the best poems or series of poems by an undergraduate.

David Brind (1982) Memorial Prize in English. To one or more outstanding senior students in English. Established by the English Department in memory of David Brind.

Stephen P. Brown Memorial Trophy. To the fraternity that has the best record in scholarship, intramural athletics, and extracurricular activities.

George H. Catlin (1867) Prize. To the graduating senior in liberal arts with the highest scholastic record and deemed most promising for graduate study and for eventual service in the field of college teaching.

Alan Lake Chidsey (1925) Citizenship Award. To a senior for distinctive contribution to the advancement of responsible government in student affairs. Established by his mother.

Class of 2001 Prize. To the junior, selected by the Student Activities staff, on the basis of academic, personal and social achievement and on his or her contributions to Union in all of these areas.

Josephine Daggett Prize. To a senior for conduct and character, without respect to scholarship.

Delphic Honor Society Awards. To juniors and seniors for exemplary contribution to the Union College community.

Division of Analytical Chemistry of the American Chemical Society Award.

Joseph D. Doty Prize. To the junior or senior who, in the judgment of the Department of History, has done work of outstanding merit. Established by Jack C. Tway, Class of 1948.

Eastern College Athletic Conference Medal of Merit. To an athlete who has combined excellence on the fields of competition with excellence in the classroom, or outstanding service to the College.

Samuel S. Feuer (1925) Prize. To the senior in the premedical course (whose primary interest is in dentistry) who has maintained the highest scholastic average over four years. Established in the will of Samuel S. Feuer, Class of 1925.

Frankel Prize. Created by Samuel H. Frankel, Class of 1915, in honor of his parents, Mr. and Mrs. Mark Frankel.

Robert M. Fuller (1863) Prizes. Awarded, one to the sophomore, the other to the senior, whose work in chemistry has been most outstanding.

Bruce M. Garber (1971) Prize. To the premedical or pre dental student who best exemplifies the qualities of personal integrity and humane concern for the future practice of medicine or dentistry. Established in his memory by classmates and friends.

General Electric Power Generation Steinmetz Award. To a senior in the Mechanical Engineering Department who completes the best senior project. Created by designation to Union College by Dr. L. Berkley Davis, Jr., who received the General Electric Steinmetz Award from the corporation.

Lisa S. Gerhan (1994) Memorial Award. For academic excellence, a commitment to the field of psychology, and the potential for future contributions to the field.

Ashraf M. Ghaly Geotechnical Prize. Created by Prof. Ashraf M. Ghaly in gratitude to the students

## Prizes, Honors, and Scholarships / 231

who nominated him for the Stillman Prize for Excellence in Teaching, and to commemorate his winning of that prize in 1997.

Celia Glaubach Prize for Religious Studies. Awarded by her son, Dr. Jacob D. Glaubach, Class of 1925, in her memory to the student who has demonstrated outstanding scholarship in the area of Religious Studies.

Shankar Gokhale Prize. To the senior in engineering, preferably in the five-year program with the second major in economics, judged by the faculty to have the greatest potential for community service in the area of mathematical approaches to economic problems. Established by his son, Madhu S. Gokhale, Class of 1927.

Outstanding Greek Woman. To the member of a sorority who has made an outstanding contribution to the sorority system at Union.

John S. Hadala (1928) Endowed Book Prize. Created from the gifts of Paul F. Hadala, Class of 1959. Awarded to a senior majoring in Mechanical Engineering.

Hans Hainebach Memorial Prize in German Literature. To a sophomore or junior who has demonstrated promise as a student of German literature. Created by Hedda Hainebach in memory of her husband, Hans Hainebach, professor of German and French from 1948-1966.

Hans Hainebach Memorial Prize in Judaica. To a student who has offered the best performance in the field of Judaica. Created by Hedda Hainebach in memory of her husband, Hans Hainebach, professor of German and French from 1948-1966.

Hedda Hainebach Memorial Prize in Music and Theater. This prize will be awarded between music and theater in alternate years. To the best performer of classical music as a soloist, with accompanist or outstanding member of a group. To a student who has written the best short play or to the best actor or actress in a play.

Edward Everett Hale, Jr. Prize. For the best essay written by a sophomore or junior.

Joel A. Halpern (1961) Prize. To recognize outstanding community service by a student or students. Established in memory of Joel A. Halpern by his family.

Frederick B. Hawley, Jr., Memorial Cup. To a senior fraternity man who has made outstanding contributions in the areas of scholarship and activities.

Oswald Heck (1924)-Irwin Steingut Prize. To the student majoring in the Division of Social Sciences who has consistently done the best work in political science. Funded by a gift from Dr. Herman Mark and the Madison Club.

Eugene W. Hellmich (1923) Memorial Prize. Established by the bequest of Eugene W. Hellmich, Class of 1923.

Victor Herbert Prize. Established by The Victor Herbert Foundation, Inc., for the student who shows the most promise of making a contribution to American music.

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.

Maureen C. Hsia (2007) Prize for Excellence in Middle Eastern Studies. To a student who has excelled in and contributed to the field of Middle Eastern Studies at Union College.

Roger H. Hull Community Service Award. Created by the Trustees of Union College in honor of President Roger H. Hull's service to Union from 1990-2005. Awarded to a senior who has rendered the greatest sustained service to the Greater Schenectady Community.

Charles B. Hurd Prize. To a student of physical chemistry. Established by former students of Prof. Charles B. Hurd.

Albert C. Ingham (1847) Prize. To the student in the Division of Social Sciences judged to have done the most outstanding piece of scholarly work.

Ingvar V. Ingvarsson Prize. To a senior in electrical engineering chosen by the department faculty for high scholarship. Established by his friends.

John Iwanik Prize. To an outstanding Russian language student. Established by Mrs. Olga Iwanik in memory of her husband, Prof. John Iwanik.

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. Established by a gift from William B. Jaffe, Class of 1926.

William B. Jaffe (1926) Medal. To the member of the graduating class voted by the Athletic Department to be the outstanding athlete of the year, taking into account the character and motivation of

## 232 / Prizes, Honors, and Scholarships

the individual in addition to athletic excellence. Established by a gift from William B. Jaffe, Class of 1926.

Thomas J. Judson (1966) Memorial Book Prize. To a sophomore who, in the opinion of the Department of Modern Languages, has shown academic excellence as well as sincere interest in the study of modern languages. Established by Phi Epsilon Pi, now Zeta Beta Tau, fraternity in memory of Thomas J. Judson.

David S. Kaplan (1982) Prize. To a student applying to participate in a term abroad chosen by the Political Science and Modern Languages Departments. Preference to students majoring in political science. Established by Mr. and Mrs. Marvin Golding and family in memory of their nephew.

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 at Union College, 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. Established by William R. Adams, Class of 1928.

William E. Lasnik (1968) Prize. To a junior or senior premedical student on the basis of scholarship and character. Established by Phi Epsilon Pi, now Zeta Beta Tau, fraternity.

Anthony C. LaVecchia (1998) Memorial Award. Established by family, friends and members of the Union community. Awarded to a student who demonstrates a keen interest and passion in Journalism, especially with a focus on Political Journalism.

Stephen F. Leo (1884), M.D., Prize. To the premedical student on scholarship who attains the highest grades in the graduating class and who has been accepted in medical school. Created by a bequest from the estate of Mary Leo Eaton in memory of her father.

Alice P. and Donald C. Loughry (1952) Prize Fund. To students completing the best senior projects in computer science, computer engineering, or electrical engineering.

Terri Lynch-Jackie Haverkamp Cuttita Memorial Award. To the freshman female athlete who has shown desire, dedication, sportsmanship, and inspirational leadership on the field of competition as well as in her daily life.

Edith Emilee MacCoy Prize. To the student who excels in botany. Established by Charles W. Clowe, Class of 1896.

John Lewis March Prize. To a senior who has shown increased interest and ability in psychology during the final two years of college. Established by his sister, Mildred March.

Meritorious Service Awards. To seniors for service in any field, above and beyond the normal requirements of duty, based on criteria established by the student government and voted by the Student Affairs Council.

Minerva Prize. Awarded by the Women's Studies Program to the woman 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. Awarded through the Roger Thayer Stone, Class of 1928 Endowed Chair in Sociology and Anthropology.

R. E. Morgan Memorial Award. To a senior computer engineering major, selected by the department, who has demonstrated outstanding scholarship. Established by his friends and colleagues to further his dedication to creative engineering.

Harold and Ellen Nagorsky Memorial Prize. Awarded to a premedical junior student who contributes the most to the Union College community through extracurricular activities. Established by Dr. Matthew J. Nagorsky, Class of 1979.

Alvin F. Nitchman (1924) Prize. To the most promising senior who plans to attend law school. Established by Mrs. Alvin F. Nitchman in memory of her husband, Class of 1924.

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. Awarded each year to the A.B. candidate with the highest standing in classics.

Hans Pasch Memorial Prize. Awarded for the best essay written about the Holocaust. Established by Maria Pasch, mother of Lisa, Class of 2000, and Derek Pasch in memory of her husband, Hans.

Elias Peissner Prize. To an economics major who, in the judgment of the Department of Economics,

## Prizes, Honors, and Scholarships / 233

has done work of outstanding merit.

William A. Pike Memorial (1960) Trophy. To a junior for attitude, ability, participation, and achievement in intercollegiate sports.

Ronald F. Plumb (1980) Memorial Prize. To the senior member of the varsity football team who best exemplifies the qualities and characteristics of Ronald F. Plumb, Class of 1980.

President's Commission on the Status of Women at Union College Prizes. Three, 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.

Psi Chi Service Award. To a student majoring in psychology who has contributed to the goals and aims of Psi Chi, the national psychology honorary society.

Daniel F. Pullman Prizes. Two, one to a senior of high scholastic standing in humanities, the other to a similar student in engineering. Preference given to members of the Methodist Church.

Martin Terry Resch Prize. To the senior who shows the greatest promise for advanced study in pure or applied mathematics.

Resident Advisor Award. To one or more resident assistants for outstanding service in the development of the residential community at Union.

Mrs. Edwin L. Rich Prize. Awarded each year to a student majoring in English who has demonstrated outstanding scholarship.

Charles Alexander Richmond Prizes. Two, one for excellence in the fine arts, the other for excellence in the appreciation of music.

Robert B. Ridings Award. To a senior for her attitude, ability, participation, and achievement in intercollegiate sports.

Paul Rieschick (1974) Prize. Established in 1984 by the Athletic Department in appreciation of the time and effort he devoted to the basketball program and individual players.

Mark Rosenthal '76 Memorial Annual Senior Prize. Established by Steve Loren '77, Sue Loren '78 and Linda Rosenthal, wife of the late Mark Rosenthal '76. Awarded 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 in the judgment of the Political Science Department shows the greatest promise and interest in an area of international relations. Preference to a student from Schenectady County.

Robert L. Royal (1938) Award. Created from the bequest of Robert L. Royal, Class of 1938, to a financially deserving student each year 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. Given by the American Society of Mechanical Engineers.

Calvin G. Schmidt (1951) Prize. To the member of the junior class who, in the opinion of the Student Forum, has contributed most to the betterment of student life on campus. Created by the Student Council, Inc., in honor of Calvin G. Schmidt, Class of 1951, who retired in 1984 after thirty years with Union, the last twenty as registrar.

J. Richard Shanebrook Prize. Created from the gifts of Professor J. Richard Shanebrook in honor of his parents, John A. and Lois L. Shanebrook and awarded to the student of any religious tradition who has contributed the most to the betterment of religious life on campus.

Daniel Shocket (1972) Memorial Creative Writing Award. 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.

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. Created from gifts of Julie and Barry Simon, their family, and friends in memory of Aime Simon.

Edward S.C. Smith Geology Prize. To a senior, majoring in geology, who demonstrates high professional potential.

Freling H. Smith (1865) Prize. To seniors in the Department of History who have competed by writing a thesis.

Dr. Reuben Sorkin (1933) Award for Proficiency in Premedical Studies. To a senior demonstrating

## 234 / Prizes, Honors, and Scholarships

proficiency in undergraduate studies with an outstanding aptitude for continuing work leading to a degree in medicine.

Ralph W. Stearns (1907) Prize. To the junior selected by the electrical engineering faculty for ability to design and complete a new piece of teaching equipment.

Milton Hymes Sternfeld (1916) Prize. For the best original essay in philosophy by a member of the senior class. Established by his mother.

Stillman Prize. To a faculty member to encourage outstanding teaching. Created by gifts from David I. Stillman, Class of 1972, Abbott L. Stillman, Class of 1969, and Allan Stillman in honor of Abraham Stillman, father and grandfather.

Tau Beta Pi Awards. To juniors and seniors who have achieved outstanding records in engineering studies and have demonstrated excellence of character.

Roger Thayer Stone (1928) Prize. To the sociology major who produces the best senior thesis. Awarded through the Roger Thayer Stone Endowed Chair in Sociology and Anthropology.

Frances Travis Award. To a student who is working his or her way through college and who has demonstrated unusual responsibility and self-reliance. Established by her friends.

James Henry Turnbull (1929) Prize. To the outstanding student in the sophomore class 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 the freshman excelling in English composition.

David Wagenseil (1978) Memorial Award. To a senior fraternity man for outstanding participation and leadership in intramural sports. Presented by the brothers of Delta Phi. Recipient's name is placed on a plaque in Alumni Gymnasium.

Horatio G. Warner (1826) Prize. To the senior student in the A.B. curriculum with the highest scholastic standing while sustaining a high personal character.

Mildred Wilder Prize. To the senior majoring in political science who, in the opinion of the political science faculty, has written the best piece of scholarly work pertaining to the subject of women and politics. Created by Marcy Wilder, Class of 1985, and her family to honor her grandmother, Mildred Wilder.

George H. Williams Prize. Awarded annually to a graduating senior for excellence in Computer Science. Established by friends and colleagues of Professor George H. Williams.

Lee and William Wrubel Memorial Prize. To a senior preparing for dentistry or medicine, based upon both academic achievement and character. Established by their sons, graduates of Union College.

Eugene I. Yudis (1955) Prize. To the student in any class who has produced the best piece of prose fiction. Established by his friends.

### Special Awards

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.

The 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.

### Endowed Scholarships

The scholarships listed below are available to qualified students in any course of study unless there is a notation to the contrary.

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

## Prizes, Honors, and Scholarships / 235

scholarship to encourage academic excellence in classical studies.

Carlos Alvarez (1982) Memorial Scholarship. Created from the gifts of the Kappa Sigma brothers and friends.

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.

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.

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.

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 (NY) 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 (NY) High School.

Thomas Armstrong (1871) Scholarship. The gift of Thomas Armstrong of Plattsburgh, NY. Restricted to residents of Clinton County.

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., (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.

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

## 236 / Prizes, Honors, and Scholarships

memory of his son, Thomas, Class of 1987.

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.

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.

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.

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.

Alfred F.H. Bischoff (1935) Scholarship. Established by Alfred F.H. Bischoff, Class of 1935. Preference is given to students majoring in electrical engineering.

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.

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 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.

Stephen P. Brown '53 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 Petersboro, 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, NY.

Joseph and Antoinette Bucci Memorial Scholarship. Created from the gifts of Cesare A. Bucci, Class of 1951.

Gary R. Burch (1962), M.D., 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.

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.

## Prizes, Honors, and Scholarships / 237

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 freshman. 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.

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.

Carroll Scholarships. 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 freshman who is a graduate of Johnstown High School, Johnstown, NY.

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 (1965), M.D., 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.

Travis J. & Shanna Putnam Clark 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 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 '34 and Lee H. Huntley Memorial Scholarship. Gifts from members of the Class of 1952.

Class of 1956 John A. Davidson '56 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 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 1969 25th ReUnion Memorial Scholarship. Created by the Class of 1969 on the occasion of their 25th ReUnion to honor their departed classmates.

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.

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.

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, NY.

Cooke Family Scholarship. Created from the gifts of Estelle Cooke-Sampson, Class of 1974, Lawrence E. Cooke, Class of 1977, and Gerald Cooke, Class of 1973.

## 238 / Prizes, Honors, and Scholarships

Harris Lee Cooke Scholarship. Established by Lucy E. Williams, in memory of Harris Lee Cooke, her brother. Mr. Cooke practiced law in Cooperstown, NY, 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, NY.

Oscar and Elva Dahlquist Memorial Scholarship. Established by Donna E.D. Phillips, Class of 1979, in memory of her parents.

The 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.

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 (NY) Senior High School.

William Thompson Dewar Scholarship. The gift of William Thompson Dewar for a scholarship in his name.

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.

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.

The 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

## Prizes, Honors, and Scholarships / 239

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 freshman 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.

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.

Marion C. and James E. Enright Scholarship. Created from the gifts of James E. Enright, Class of 1949.

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.

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.

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.

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.

## 240 / Prizes, Honors, and Scholarships

John H. Fisher, Jr. '52 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.

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.

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, NY, 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. Gelsleichter Memorial Scholarship. Established by his brother, F.D. Gelsleichter, Class of 1933, and supported by gifts from the Gelsleichter family.

The 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.

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.

Girling 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.

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)

## Prizes, Honors, and Scholarships / 241

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 '19 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.

J. Potter Hallenbeck (1910) Scholarship. Established by the gifts of the Hallenbeck family in memory of J. Potter Hallenbeck, Class of 1910.

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 freshman 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, NY.

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 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, NY, 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.

The Reuben D. Head (1925) Scholarship. Established by Mr. Head, Class of 1925, with the. Preference to graduates of Greenville (NY) 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.

## 242 / Prizes, Honors, and Scholarships

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.

David L. Henle Merit Scholarship. Created by David L. Henle, Class of 1975.

The 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 '49 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.

The 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, NY.

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.

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.

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

## Prizes, Honors, and Scholarships / 243

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.

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.

Indigent Students Scholarship. Established by proceeds of lotteries authorized by the State of New York in 1805.

IBM Scholarship. Funded by a grant from the International Business Machines Corporation to establish an endowed scholarship for women and minority engineering students.

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.

Harry A. (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 athlete 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.

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

## 244 / Prizes, Honors, and Scholarships

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, NY, 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.

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.

The 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, NY, or Fullerton, CA.

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.

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.

Karges Lauterbach (1927) Scholarship. A gift from the estate of Karges Lauterbach, Class of 1927, for the benefit of students studying engineering.

Joseph L. Lawrence (1939), D.D.S., 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.

John J. Leonard (1949) Scholarship. A gift from the estate of John J. Leonard, Class of 1949, for

## Prizes, Honors, and Scholarships / 245

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.

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 thirty freshmen 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.

Thomas B. Lockwood Scholarship. Established by Thomas B. Lockwood in memory of his father, Daniel Lockwood (1865). Available to students from Buffalo, NY.

The Guy Christopher Logan Scholarship. Established by Pamela and Guy T. Logan, Class of 1990, in memory of their son.

Eunice E. Lord Scholarship. Created by Frank E. Lord, Class of 1951, in memory of his mother, Eunice E. Lord.

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.

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.

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.

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.

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.

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.

## 246 / Prizes, Honors, and Scholarships

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, NY, and from Rensselaer County, NY, in the order 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, NY.

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.

Dr. David B. Miller (1939) Scholarship. Created from the gifts of David B. Miller, Class of 1939.

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 Scholarship. 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.

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 freshman 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.

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

David Murray (1852) Scholarship. Established by the gift of Mrs. Martha Nelson Murray in memory of her husband, Class of 1852.

## Prizes, Honors, and Scholarships / 247

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).

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 '90 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.

Ronald Matthew Obenzinger (1961) Memorial Premedical Scholarship. Created by his parents, Nathan and Romana Obenzinger.

G. Stuart O'Hara Memorial Scholarship. Established by Robert P. O'Hara, Class of 1979, in memory of his father.

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.

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.

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, NY.

Levi Parsons Scholarship. Established by the gift of Levi Parsons of Gloversville, NY. 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, NY, 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.

Lisa Novak Peretz (1979) and Gregg Peretz Memorial Scholarship. Created from the gifts of family and friends in memory of Lisa Novak Peretz, Class of 1979 and Gregg Peretz.

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

## 248 / Prizes, Honors, and Scholarships

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.

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, NY, 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, NY or Catholic Central High School, Troy, NY 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, NY.

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.

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.

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.

Gertrude Robinson-Bianchi Scholarship. Created from the gifts of Gertrude Robinson Bianchi.

Sam and Roslyn Zimmerman Roden 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 '74 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.

Robert J. Sallick (1959) Scholarship. Established by Robert J. Sallick, Class of 1959.

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.

## Prizes, Honors, and Scholarships / 249

Schenectady Alumni 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.

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, NY.

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.

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.

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.

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.

## 250 / Prizes, Honors, and Scholarships

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.

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.

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.

The 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.

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 interested in an "applied" field, e.g. industrial, social clinical, counseling or organizational psychology.

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.

Charles D. Stewart (1952) Scholarship. Established by Charles D. Stewart, Class of 1952. Preference to students majoring in 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.

Hyacinthia Stromillo Scholarship. Created from the gifts of Hyacinthia Stromillo, a friend of Union College.

Twitty J. Styles 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, NY.

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.

Monroe M. Sweetland (1885) Scholarship. Established by the gift of Monroe M. Sweetland, Class

## Prizes, Honors, and Scholarships / 251

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, NY.

The 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.

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.

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, NY, 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 '41 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.

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.

John Vanneck Scholarship. Established by Paul Rieschick, Class of 1974, in memory of John Vanneck, a benefactor to Paul Rieschick and others.

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.

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.

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 freshman year to a member of the freshman 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.

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.

## 252 / Prizes, Honors, and Scholarships

Samuel Sherwood Wakeman (1864) Scholarship. Established under the will of Samuel Sherwood Wakeman, Class of 1864. Available to residents of Saratoga County, NY, 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.

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 full-time students pursuing courses in chemistry, with preference to students who plan a career in the field of chemistry.

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.

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.

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, NY.

Robert H. Wiese (1944), M.D., Scholarship. Created by Joyce M. Wiese in memory of her husband.

Harriet and Roscoe L. Williams (1930) Scholarship. Established by the gifts of their family. Support to a student enrolled in the MAT program and who intends to become a public school administrator

## Prizes, Honors, and Scholarships / 253

in New York State.

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) Chemistry Scholarships. 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. Four scholarships awarded each year to students planning to major in chemistry and living in Schenectady County, or surrounding counties, or in Warren County. Selection will be made in conjunction with Schenectady International, Inc.

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.

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

Annual Business Campaign Scholarship. Sustained by annual gifts from Annual Business Campaign 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.

David J. Breazzano (1978) Scholarship. Sustained by the annual gift of David J. Breazzano, Class of 1978.

Louis Calder Foundation Scholarship. A grant from the Louis Calder Foundation of New York City to provide scholarships for students from the New York metropolitan area. The initial contribution

## 254 / Prizes, Honors, and Scholarships

was given by the late Louis Calder.

Class of 1963 Scholarship. Established by the Class of 1963 in honor of their 45th ReUnion.

Dreyfus Foundation Scholarship. Gift of the Dreyfus Foundation for National Merit scholars who are beginning their sophomore year and who plan a career in chemistry or related sciences.

Herman Goldman Foundation Scholarship. Established by the Herman Goldman Foundation. Preference shall be given to Union College minority students.

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.

Alice P. and Donald C. Loughry (1952) Annual Scholarship. Created by Alice P. and Donald C. Loughry, Class of 1952.

Gerald and Anna O'Loughlin Scholarship. Established by Arthur D. O'Loughlin, Class of 1960, in memory of his parents. Preference shall be given to engineering or science students who demonstrate leadership in student activities.

Alfred H. McKinlay (1951) Scholarship. Established by Mark A. McKinlay, PhD, Class of 1973, in honor of his father, Alfred H. McKinlay, Class of 1951. Preference shall be given to students who have demonstrated outstanding humanitarian concern and a willingness to help others.

Dr. Joseph '36 and Betty Milano Scholarship. Created by gifts of family and friends in memory of Dr. Joseph Milano, Class of 1936.

Richard E. Roberts '50, Esq. and Dr. John S. Morris Schenectady Foundation Scholarship. An annual scholarship created from gifts of The Schenectady Foundation in honor of Richard E. Roberts '50, Esq. and Dr. John S. Morris, President, Union College 1979-1990. Preference given to students who are Schenectady County residents and active in Schenectady community volunteer activities.

Lothrop (1956) and Janice D. Smith Scholarship. Created by Janice D and Lothrop Smith, Class of 1956.

Professor James E. Underwood Scholarship. Created by Richard A. Ferguson, Class of 1967, in honor of Professor James E. Underwood.

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.

### Endowed Fellowships

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. Awarded annually to a student who performs research in the basic sciences: chemistry, biology, geology, physics.

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.

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.

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 thirty years of service.

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.

Hopengarten Research Fund. Established by Dr. Betty Herr and Fred Hopengarten, Esq. for award

## Prizes, Honors, and Scholarships / 255

to a student conducting research.

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.

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.

Laudise Summer Research Fellowship in Chemistry. Created by Robert A. Laudise, Class of 1952, in memory of his father, Anthony T. Laudise.

Kenneth N. Mathes (1935) Fund. Created by Kenneth N. Mathes, Class of 1935, for engineering students on terms abroad.

Merck Summer Undergraduate Research Scholarship. Established by the Merck Co. Foundation to support summer research in chemistry.

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.

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.

Stephen J. Potter Research Fellowship. Established in 1969 by the Stephen J. Potter Memorial Foundation, Inc. Mr. Potter was a native of Ticonderoga, NY, and in 1913 organized the Defiance Corp., engaged primarily in the manufacture, application, and sale of bituminous paving products. Granted to a graduate or undergraduate student doing research in the area of discovering new and better uses for bituminous materials for the construction of public highways in furtherance of the better use and safety of such highways.

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.

Surdna Summer Science Research Fellowships. Established by the Surdna Foundation. Awarded to students enrolled in the sciences.

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.

Edward Villella (L.H.D. 1991) Fellowship. Created from the gifts of Charles D. Lothridge, Class of 1944, to honor Edward Villella, internationally acclaimed as a premier dancer with the New York City Ballet and founder of the Miami City Ballet in 1985.



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## 258 / Officers of the College

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(Date is year chair was established.)

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 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) — Walter J. Hatke  
 John Bigelow Professor of History (1916) — Mark W. Walker  
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 – Therese A. McCarty  
 Dwane W. Crichton Professor of Philosophy (2006) — Raymond F. Martin  
 Horace E. Dodge III Professorship of Electrical and Computer Engineering (1997) — Michael Rudko  
 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  
 R. Gordon Gould '41 Professorship in Physics (1995) — Jay E. Newman  
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 Doris Zemurray Stone Professor in Modern Literary and Historical Studies (1976) — Brenda Wineapple  
 Carl B. Jansen Professor of Engineering (1992) — Thomas K. Jewell  
 Thomas B. Lamont Professor of Literature (1948) — Ruth Stevenson  
 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) — Kenneth C. Aslakson and Erika M. Nelson  
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 Florence B. Sherwood Professor of Life Sciences (1994) — Robert Olberg  
 Florence B. Sherwood Professor of Physical Sciences (1994) — Janet S. Anderson  
 Roger Thayer Stone Professor of Anthropology (1989) — George Gmelch  
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 William D. Williams Professor of Classics (2006) — Hans-Friedrich O. Mueller  
 William D. Williams Professor of Mathematics (2006) — William S. Zwicker  
 William D. Williams Professor of Philosophy (2006) — Robert B. Baker  
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 Chauncey H. Winters Professor of Comparative Social Analysis (1996) — Terry S. Weiner  
 Chauncey H. Winters Research Professor of Political Science (1996) — Robert S. Sharlet  
 Chauncey H. Winters Research Professor of Political Science (1996) — James E. Underwood  
 John and Jane Wold Professor of Geology (1988) — George H. Shaw  
 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

## Faculty and Administration Emeriti

William C. Aubrey, Professor of Mechanical Engineering Emeritus (1955-1989). B.M.E. 1950, Rensselaer Polytechnic Institute; M.S. in Engineering 1958, Union College; P.E.

Robert T. Balmer, Dean of Engineering Emeritus (1998-2005). BSE 1961, MSE 1963; SCD 1968, University of Virginia

Theodore A. Bick, Professor of Mathematics Emeritus (1966-1998). B.S. 1958, Union College; M.S. 1960, Ph.D. 1964, University of Rochester

Helena Birecka, Professor of Biological Sciences Emerita (1970-1991). M.Sci. 1944, Agricultural University, Perm.; Ph.D. 1948, Timiriazev Agricultural Academy

Cynthia M. Bouck, Assistant Director of Financial Aid-Financial Aid and Family Financing Emerita (1977-2008)

George Butterstein, Florence B. Sherwood Professor of Biology Emeritus (1971-2006). B.A. 1965, M.A. 1968, State University of New York at Buffalo; Ph.D. 1971, Rutgers University

Mary E. Cahill, Associate Librarian Emerita (1985-2008). B.A. 1969, Edgecliff College, Xavier University; M.L.S. 1980, State University of New York at Albany

Frank Calabria, Associate Professor of Psychology Emeritus (1966-1989). B.S.S. 1951, M.A. 1952, City College of New York; Ph.D. 1956 New York University

Patricia Colgan, Assistant to the President and Director of Institutional Studies Emerita (1977-2005)

Edward J. Craig, Dean of Engineering Emeritus and Professor of Electrical Engineering Emeritus (1948-1949, 1956-1992). B.S. 1948, Union College; Sc.D. 1954, Massachusetts Institute of Technology; P.E.

Dianne Crozier, Director of Admissions Emerita (1980-2007). B.A. 1961, Syracuse University

W. Edgar Curtis, Professor of Music Emeritus (1956-1979). B. Mus. 1935, M.A. 1936, Edinburgh University

Thomas D'Andrea, Professor of Psychology Emeritus (1980-1996). B.A. 1957, Ph.D. 1964, University of Minnesota

Thomas H. Dowling, Associate Professor of Psychology Emeritus and Associate Director of the Counseling Service Emeritus (1972-2007). B.A. 1963, University of Rochester; Ed.M. 1965, Ph.D. 1971, State University of New York at Buffalo

William W. Fairchild, Professor of Mathematics Emeritus (1970-2003). B.A. 1960, Swarthmore College; M.A. 1963, University of Pennsylvania; Ph.D. 1967, University of Illinois

Vuc M. Fatic, Professor of Electrical and Computer Engineering Emeritus (1985-2008). Dipl. Ing. 1960, Belgrade University; M.Sc. 1973, Ph.D. 1976, Virginia Polytechnic Institute and State University

Armen G. Fisher, Associate Professor of Management Emeritus (1966-1996). B.A. 1952, Cornell University; B.S., B.B.A., M.S. 1955, University of Wisconsin; Ph.D. 1966, Rutgers University

Frank Gado, Professor of English Emeritus (1963-1999). A.B. 1958, Dartmouth College; M.A. 1961, Ph.D. 1968, Duke University

Jagdish T. Gajjar, Professor of Electrical and Computer Engineering Emeritus (1970-2003). B.E. in Elec. 1960, B.E. in Mech. 1961, Bombay University; M.E.E. 1963, University of Oklahoma; Ph.D. 1970, University of Houston

Charles Gati, Professor of Political Science Emeritus (1963-68, 1969-1994). A.B. 1961, A.M. 1961, Ph.D. 1965, Indiana University

Carl J.W. George, Professor of Biological Sciences Emeritus (1967-1997). B.S. 1956, University of Michigan; Ph.D. 1960, Harvard University

Edwin F. Gillette, Professor of Mathematics Emeritus (1946-47, 1955-1981). A.B. 1937, Hamilton College; M.A. 1949, Ph.D. 1955, Syracuse University

Seth N. Greenberg, Gilbert R. Livingston Professor of Psychology Emeritus (1979-2007). B.A. 1968, Queens College; M.A. 1970, Ph.D. 1972, Ohio State University

Erik Hansen, Professor of History Emeritus (1964-2006). B.A. 1958, University of Oregon; M.A. 1960, Ph.D. 1968, Cornell University

H. Gilbert Harlow, Professor of Civil Engineering Emeritus (1940-1984). B.S. in C.E. 1937, Tufts University; M.S. in C.E. 1940, Harvard University; P.E.

## Faculty and Administration Emeriti / 261

Lawrence J. Hollander, Dean of Engineering Emeritus (1986-1993). B.E.E, 1951, M.S.E.E, 1954 New York University; P.E.

Donald S. Holmes, Professor of Management Emeritus and Director of the Industrial and Social Science Research Center Emeritus (1966-1990). B.A. 1947, Juniata College; M.S. 1950, Purdue University  
Leslie A. Hull, Professor of Chemistry Emeritus (1972-2006). B.S. 1965, University of Rochester; M.S. 1967, Ph.D. 1971, Harvard University

Roger H. Hull, President Emeritus (1990-2005). A.B. 1964, Dartmouth College; LL.B. 1967, Yale Law School; LL.M. 1972, S.J.D. 1974, University of Virginia

Manfred Jonas, John Bigelow Professor of History Emeritus (1963-1996). B.S. 1949, City College of New York; A.M. 1950, Ph.D. 1959, Harvard University

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 B. Lamont Professor of Ancient and Modern Literature Emerita (1977-2003). B.A. 1967, M.A. 1969, University of California; Ph.D. 1978, State University of New York 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

Frederick A. Klemm, Professor of German Emeritus (1947-1978). A.B. 1933, Dickinson College; M.A. 1935, Duke University; Ph.D. 1939, University of Pennsylvania

Sylvia E. Lapidus, Associate Registrar Emerita. B.A. 1938, Hunter College

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)

William B. Martin, Jr., Professor of Chemistry Emeritus (1953-1989). A.B. 1948, M.A. 1949, Clark University; Ph.D. 1953, Yale University

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

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

William M. Murphy, Thomas Lamont Research Professor of Ancient and Modern Literature (1946-1983). A.B. 1938, M.A. 1941, Ph.D. 1947, Harvard University

H. Alan Nelson, Professor of English Emeritus (1954-1989). B.A. 1946, Union College; M.A. 1948, Ph.D. 1958, Northwestern 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

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

Judith A. Peck, Associate Registrar Emerita (1975-2005)

Sven R. Peterson, Professor of Philosophy and of Administration and Management Emeritus (1952-1983). B.S. 1943, Harvard University; M.A. 1946, Ph.D. 1954, Columbia University

V. Ennis Pilcher, Professor of Physics Emeritus (1956-1986). A.B. 1948, M.S. 1949, Emory University; Ph.D. 1955, North Carolina State University

Peter A. Prosper, Jr., Professor of Economics Emeritus (1964-1999). B.S. 1958, Pennsylvania State University; Ph.D. 1970, Cornell University

Raymond Rappaport, Professor of Developmental Biology Emeritus (1952-1987). B.S. 1948, Bethany College; M.S. 1948 University of Michigan; Ph.D. 1952, Yale University

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.

## 262 / Faculty and Administration Emeriti

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, Ohio State 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

Josef Schmee, Kenneth B. Sharpe Professor of Management Emeritus (1972-2006). Magister 1968, University of Vienna; M.S. 1970, Ph.D. 1974, Union College

Calvin Schmidt, Registrar Emeritus (1954-1984). B.A. 1951, Union College; M.A. 1959, Teachers' College, Columbia University

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

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 Research Professor of Political Science Emeritus (1967-2003). B.A. 1960, Brandeis University; M.A. 1962, Ph.D. 1968, Indiana University

Jeanne A. Sinnenberg, Assistant Registrar Emerita (1967-2003)

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

Phillip D. Snow, Professor of Civil Engineering Emeritus (1974-2004). B.S. 1965, Marietta College; M.S. 1968, Syracuse University; M.S. Envir. Engr. 1972, Ph.D. 1976, University of Massachusetts

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  
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

Charles D. Swartz, Frank and Marie Louise Bailey Professor of Physics Emeritus (1956-1979). A.B. 1938, Ph.D. 1943, Johns Hopkins University

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

Samson O.A. Ullmann, Professor of English Emeritus (1957-1992). A.B. 1943, Harvard University; M.A. 1947, Stanford University; A.M. 1949, Ph.D. 1954, Harvard University

James E. Underwood, Chauncey H. Winters Research 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

W. Loretta Walker, Head of Information Services at Schaffer Library, Associate Professor Emerita (1968-1981). B.S. 1949, Howard University; M.L.S. 1968, State University of New York at Albany; M.A. 1977, College of St. 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

Thomas C. Werner, Florence B. Sherwood Professor of Chemistry Emeritus (1971-2008). B.S.

## Faculty and Administration Emeriti / 263

1964, Juniata College; Ph.D. 1969, Massachusetts Institute of Technology

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

Hugh Allen Wilson, Professor of Performing Arts Emeritus (Music) (1962-1996). A.B. 1946, Yale University

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

## The Faculty

The date that appears after each faculty member's title refers to the start of service to the College.

James C. Adrian, Jr, Professor of Chemistry (1994). B.S. 1980, University of Maryland; Ph.D. 1992, University of Pittsburgh (On Leave, Fall, Spring)

Linda G. Almstead, Senior Lecturer in Computer Science (1985). B.A. 1970, Rensselaer Polytechnic Institute; M.S. 1985, Union College

Samuel Amanuel, Assistant Professor of Physics and Astronomy (2006). B.Sc. 1992, Addis Ababa University; M.S. 1997, Ph.D. 2004, Southern Illinois University

Ann M. Anderson, Agnes S. Macdonald Professor of Mechanical Engineering (1992). B.S. 1984, Tufts University; M.S. 1985, Ph.D. 1990, Stanford University

Janet S. Anderson, Florence B. Sherwood Professor of Physical Science and Professor of Chemistry (1978). B.S. 1972, College of William and Mary; Ph.D. 1976, University of Wisconsin

Cay M. Anderson-Hanley, Assistant 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, Associate Professor of Political Science (2000). B.A. 1992, Washington University; M.P.A. 1995, Ph.D. 2000, Princeton University

Kenneth Aslakson, John D. MacArthur Assistant 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

Julius B. Barbanel, Professor of Mathematics (1979-81, 1982). B.S. 1973, Case Institute of Technology; M.S. 1976, Ph.D. 1979, State University of New York at Buffalo (On Leave, Winter, Spring)

Valerie B. Barr, Professor of Computer Science and Chair of the Department (2004). B.A. 1977, Mount Holyoke College; M.S. 1979, New York University; Ph.D. 1996, Rutgers University

Charles R. Batson, Associate Professor of French and Chair of the Department of Modern Languages (1998). B.A. 1987, Furman University; M.A. 1989, University of Virginia; Ph.D. 1997, University of Illinois

Peter R. Bedford, John and Jane Wold Professor of Religious Studies and Director of Religious Studies (2007). B.A. 1981, University of Sydney; B.D. 1982, University of London; M.A. 1985, Ph.D. 1992, University of Chicago

Suzanne Benack, Professor of Psychology (1981). B.A. 1975, Swarthmore College; Ph.D. 1981, Harvard University

Martin Benjamin, 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 and Interim Dean of Studies. (2001). B.A. 1991, Beloit College; M.A. 1995, Ph.D. 2000, Ohio State University

George Y. Bizer, Assistant Professor of Psychology (2005). B.A. 1995, Indiana University; M.A. 1997, Ph.D. 2001, Ohio State University (On Leave, Fall, Winter)

Kelly J. Black, Associate Professor of Mathematics (2004). B.S. 1987, Rose-Hulman Institute of Technology; M.S. 1989, Ph.D. 1992, Brown University

Barbara C. Boyer, Professor of Biological Sciences (1973). A.B. 1963, University of Rochester; M.S. 1964, Ph.D. 1969, University of Michigan

John F. Boyer, Professor of Biological Sciences (1973). B.A. 1964, Amherst College; Ph.D. 1971, University of Chicago

Claire Bracken, Visiting Assistant Professor of English (2007). B.A. 2001, University College Dublin; M.A. 2002, University College Cork

Denis Brennan, Visiting Assistant Professor of History (2006). B.A. 1990, M.A. 1992, Ph.D. 2003, State University of New York at Albany

Karen Brison, Professor of Anthropology and Chair of the Department (1993). B.A. 1981, McGill University; M.A. 1983, Ph.D. 1988, University of California at San Diego

- Clifford W. Brown, Jr., Robert Porter Patterson Professor of Government (1978). A.B. 1964, A.M. 1970, Ph.D. 1970, Harvard University
- Bradford A. Bruno, Associate Professor of Mechanical Engineering (2001). B.S. 1990, The Pennsylvania State University at University Park; M.S. 1992, University of Michigan at Ann Arbor; Ph.D. 2000, The Pennsylvania State University at University Park (On Leave, Winter, Spring)
- Ronald Bucinell, Associate Professor of Mechanical Engineering (1993). B.S. 1981, Rochester Institute of Technology; M.S. 1983, Ph.D. 1987, Drexel University (On Leave, Winter, Spring)
- Brendan Burns, Assistant Professor of Computer Science (2006). B.A. 1992, Williams College; M.S. 2003, Ph.D. 2006, University of Massachusetts-Amherst (On Leave 2008/09)
- Daniel J. Burns, Gilbert R. Livingston Professor of Psychology and Chair of the Department (1993). B.S. 1981, State University of New York at Oswego; M.A. 1984, Ph.D. 1986, State University of New York at Binghamton
- Donna L. Burton, Reference Librarian/Government Documents, Associate Professor (1985). B.A. 1974, M.L.S. 1975, State University of New York at Albany
- Deidre H. Butler, Assistant Professor of Sociology (2001). B.A. 1991, Oberlin College; M.A. 1994; Ph.D. 2001, Clark University
- Mary K. Carroll, Professor of Chemistry and Chair of the Department (1992). B.S. 1986, Union College; Ph.D. 1991, Indiana University
- Aaron G. Cass, Assistant Professor of Computer Science (2003). B.S. 1993, M.C.S. 1996, University of Virginia; Ph.D. 2005, University of Massachusetts at Amherst
- Palma E. Catravas, Assistant Professor of Electrical and Computer Engineering (2002). B.M., B.S. 1991, University of Maryland at College Park; S.M. 1994, Ph.D. 1998, Massachusetts Institute of Technology
- Davide P. Cervone, Associate Professor of Mathematics and Chair of the Department (1996). B.A. 1984, Williams College; Ph.D. 1993, Brown University
- Christopher F. Chabris, Assistant Professor of Psychology (2007). A.B. 1988, A.M. 1997, Ph.D. 1999, Harvard University
- Yu Chang, Professor of Electrical and Computer Engineering (1974). B.S. 1961, Cheng Kung University; M.S. 1971, University of Wisconsin; Ph.D. 1974, Syracuse University
- A. Michelle Chilcoat, Associate Professor of French and Co-Director of Film Studies (1999). B.A. 1998, University of Georgia; M.A. 1991, Ph.D. 1998, University of Michigan
- Quynh Chu-LaGraff, Associate Professor of Biological Sciences (1999). A.B. 1989, Cornell University; Ph.D. 1996, University of Illinois
- Jaclyn Cockburn, Visiting Instructor of Geology (2007). B.ScH. 2000, M.Sc. 2003, Queen's University, Kingston, Ontario
- Brian D. Cohen, Lecturer in Biological Sciences (2003). B.S. 1993, Muhlenburg College; Ph.D. 1998, Albany Medical College
- Bruce Connolly, Head of Public Services, Reference, and Instruction, Professor (1978). B.A. 1973, State University College at Buffalo; M.L.S. 1977, State University of New York at Albany
- Linda E. Cool, Professor of Anthropology (1994). B.A. 1971, Bryn Mawr College; Ph.D. 1977, Duke University
- Megan M. Cooper, Visiting Instructor of Psychology (2005). B.A. 1996, University of Massachusetts
- Jeffrey D. Corbin, Assistant Professor of Biological Sciences (2006). B.A. 1991, University of California at Santa Cruz; Ph.D. 1998, University of North Carolina at Chapel Hill
- Rebecca Cortez, Assistant Professor of Mechanical Engineering (2007). B.S. 1988, Washington University; Ph.D. 1992, Northwestern University
- David A. Cotter, Associate Professor of Sociology (1995). B.A. 1988, The College of Wooster; M.A. 1992, Ph.D. 1996, The University of Maryland at College Park
- Shane F. Cotter, Assistant Professor of Electrical and Computer Engineering (2005). B.S. 1994, University College Dublin; M.S. 1998, Ph.D. 2001, University of California at San Diego (On Leave, Winter, Spring)
- Lorraine Morales Cox, Associate Professor of Visual Arts (2001). B.F.A. 1992 Virginia Commonwealth University; M.A. 1996, Ph.D. 2001, University of Illinois at Urbana-Champaign (On Leave, Fall, Spring)
- John R. Cramsie, Associate Professor of History (2000). B.A. 1987, University of Minnesota; Ph.D.

## 266 / Faculty

1997, University of St. Andrews

Patricia Culbert, Artist-in-Residence in Theatre (1998). B.A. 1977, Tufts University; M.F.A. 1983, Boston University

Jennifer A. Currey, Visiting Assistant Professor of Mechanical Engineering (2007). B.S. 2000, M.S. 2003, Ph.D. 2006, Rensselaer Polytechnic Institute

Barbara A. Danowski, Associate Professor of Biological Sciences and Chair of the Department (1992). B.A. 1977, University of Connecticut; Ph.D. 1989, University of North Carolina, Chapel Hill

Felmon John Davis, Associate Professor of Philosophy (1980-90, 1991). B.A. 1970, Haverford College; Ph.D. 1986, Princeton University (On Leave, Fall)

Lewis S. Davis, Assistant Professor of Economics (2006). B.S. 1988, Davidson College; Ph.D. 1999, University of North Carolina at Chapel Hill (On Leave, Winter, Spring)

Kenneth G. DeBono, Gilbert R. Livingston Professor of Behavioral Sciences (1986). B.A. 1980, Grinnell College; Ph.D. 1985, University of Minnesota

Alicia Ory DeNicola, Visiting Assistant Professor of Anthropology (2008). B.A. 1989, Lewis and Clark College; M.A. 1998, Brandeis University; Ph.D. 2004, Syracuse University

Gail Donaldson, Lecturer in Psychology (1997). B.S. 1985, Edinburgh University; M.A. 1990, New School for Social Research

Kara A. Doyle, Associate Professor of English (2000). A.B. 1991, Georgetown University; M.A. 1998, Ph.D. 2000, Cornell University

Chris N. Duncan, Professor of Visual Arts (1988). B.A. 1975, Colby College (On Leave, Fall)

Tomas Dvorak, Associate Professor of Economics (2002). B.A. 1994, Prague School of Economics; M.A. 1995, Central European University; Ph.D. 2000, University of Maryland at College Park

Andrew Feffer, Associate Professor of History and Co-Director of Film Studies (1989). B.A. 1977, Swarthmore College; M.A. 1984, Ph.D. 1987, University of Pennsylvania

Chris S.T. Fernandes, Associate Professor of Computer Science (2001). B.A. 1991, M.S. 1993, Ph.D. 2000, Northwestern University

Megan M. Ferry, Associate Professor of Chinese and Director of East Asian Studies (1999). B.A. 1989, Mount Holyoke College; M.A. 1993, Ph.D. 1998, Washington University

William A. Finlay, Associate Professor of Theater, Director of the Morton and Helen Yulman Theater and Chair of the Theatre and Dance Department (1994). B.A. 1974, Rhode Island College; M.F.A. 1980, University of Connecticut

Ellen H. Fladger, Librarian/Head of Special Collections (1979). A.B. 1970, Mount Holyoke College; M.A. 1982, New York State University College at Oneonta, Cooperstown Graduate Program

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 (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

Kristin Fox, Associate Professor of Chemistry and Director of Undergraduate Research (1995). B.S. 1988, Lafayette College; Ph.D. 1994, Cornell University

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 (On Leave, Winter)

Paul D. Friedman, Senior Lecturer in Mathematics (2001). A.B. 1989, Dartmouth College; Ph.D. 1997, State University of New York at Stony Brook

Holli M. Frey, Assistant Professor of Geology (2007). B.A. 1999, Franklin & Marshall College; Ph.D. 2005, University of Michigan

David A. Fuller, Associate Librarian (1999). B.A. 1982, State University College at Oswego; M.A. 1988, New York University; M.L.S. 1989, State University of New York at Albany

Ari E. Gandsman, Visiting Assistant Professor of Anthropology (2007). B.A. 1997 University of Michigan; M.A. 2001, McGill University

William Garcia, Associate Professor of Spanish (1991). B.A. 1986, University of Puerto Rico; M.A. 1988, Ph.D. 1995, Rutgers University

John I. Garver, Professor of Geology and Chair of the Department (1989). B.A. 1984, Middlebury

College; M.S. 1985, Ph.D. 1989, University of Washington

David R. Gerhan, Reference and Instructional Librarian, Professor (1972). A.B. 1967, Brown University; M.L. 1972, State University of New York at Albany; M.A. 1977, Union College

Ashraf Ghaly, Professor of Engineering (1993). B.Sc. 1982, M.Sc. 1986, Alexandria University, Alexandria, Egypt; Ph.D. 1990, Concordia University, Montreal, Canada

George Gmelch, Roger Thayer Stone Professor of Anthropology (1982). B.A. 1968, Stanford University; M.A. 1970, Ph.D. 1975, University of California, Santa Barbara (On Leave 2008/09)

Sharon B. Gmelch, Professor of Anthropology (1981). B.A. 1969, M.A. 1971, Ph.D. 1974, University of California, Santa Barbara (On Leave 2008/09)

Gail Golderman, Librarian/Electronic Media (1992). B.A. 1978, State University College at New Paltz; M.L.S. 1992, Nelson A. Rockefeller College of Public Affairs and Policy

Melinda A. Goldner, Associate Professor of Sociology (1998). B.A. 1990, Tufts University; M.A. 1993, Washington State University; Ph.D. 1998, Ohio State University

Alex Gottesman, Visiting Assistant Professor of Classics (2008). B.A. 1997, Hunter College; M.A. 2003, Ph.D. 2006, University of Chicago

Janet P. Grigsby, Lecturer of Sociology (2000). B.A. 1969, Oberlin College; M.Phil. 1976, Ph.D. 1983, Yale University

Michael E. Hagerman, Associate Professor of Chemistry (1997). B.S. 1991, North Central College; M.S. 1992, Ph.D. 1995, Northwestern University

David G. Hannay, Professor of Computer Science (1978). B.S. 1966, Wheaton College; M.A. 1967, State University of New York at Stony Brook; M.S. 1970, State University of New York at Albany; Ph.D. 1973, Rensselaer Polytechnic Institute

Helen M. Hanson, Assistant Professor of Electrical and Computer Engineering (2007). B.S. 1983, Union College; M.S. 1986, Simmons College; S.M. 1990, Ph.D. 1995, Harvard University

Joshua Hart, Visiting Assistant Professor of Psychology (2007). B.A. 2001, Skidmore College; M.A. 2004, Ph.D. 2006, University of California-Davis

Ekram I. Hassib, Professor of Electrical and Computer Engineering (1980). B.Sc. 1964, University of Cairo; M.Sc. 1968, Al-Azhar; Ph.D. 1971, Warsaw Politechnics

Walter J. Hatke, NA, Walter C. & May I. Baker Professor of Visual Arts (1986). B.A. 1971, DePauw University, M.A. 1981, M.F.A. 1982, University of Iowa

David M. Hayes, Professor of Chemistry and Dean of Academic Departments (1976). B.S. 1966, Massachusetts Institute of Technology; Ph.D. 1970, Cornell University

Bradley Hays, Assistant Professor of Political Science (2008). B.S. 1997, Northeastern University; Ph.D. 2005, University of Maryland at College Park

James N. Hedrick, Lecturer in Electrical and Computer Engineering (2001). B.S. 1992, M.S. 1996, Union College

Peter D. Heinegg, Professor of English (1976). B.A. 1965, Fordham University; Ph.D. 1971, Harvard University

David Hemmendinger, Professor of Computer Science (1989). B.A. 1962, Harvard University; M.S. 1963, Stanford University; M.A. 1966, Ph.D. 1973, Yale University, M.S. 1982, Wright State University

Christine Henseler, Associate Professor of Spanish and Director of Latin American and Caribbean Studies (2001). B.S. 1993, B.A. 1993, M.A. 1995, University of Kansas; Ph.D. 1999, Cornell University

Robert Hislope, Associate Professor of Political Science (1999). B.S. 1985, Bradley University; M.A. 1990, Ph.D. 1995, Ohio State University

David Hodgson, Instructor of Mechanical Engineering (2005). B.S. 1994, Rensselaer Polytechnic Institute; M.S. 2005, Colorado State University

Kurt Thomas Hollocher, Professor of Geology (1985). B.S. 1978, Antioch College; M.S. 1981, Ph.D. 1985, University of Massachusetts

John Stephen Horton, Associate Professor of Biological Sciences (1993). B.Sc. 1981, Ph.D. 1990, University of Toronto

Yuwen Hsiung, Visiting Instructor of Chinese (2006). B.A. 1996, National Chen-Chi University; M.A. 1999, Michigan State University

anupama jain, Assistant Professor of English (2002). B.A. 1994, Bryn Mawr College; M.A. 1995, Ph.D. 2001, University of Wisconsin at Madison

Hugh Jenkins, Associate Professor of English (1992). B.A. 1981, Carleton College; M.A. 1988,

## 268 / Faculty

Ph.D. 1991, Cornell University

Thomas K. Jewell, Carl B. Jansen Professor of Engineering (1978). B.S. 1968, U.S. Military Academy; M.S. Envir. Engr. 1974, Ph.D. C.E. 1980, University of Massachusetts; P.E.

Brenda Johnson, Professor of Mathematics (1991). B.A. 1985, Grinnell College; Sc.M. 1987, Ph.D. 1991, Brown University

Ilene M. Kaplan, Joseph C. Driscoll Professor of Sociology and Marine Policy and Chair of the Department of Sociology (1978). B.S. 1973, Cornell University; M.A. 1976, Ph.D. 1980, Princeton University (On Leave, Fall)

William D. Keat, Thomas J. Watson, Sr. and Emma Watson Day Associate Professor of Mechanical Engineering and Chair of the Department (1996). B.S. 1976, M.S. 1983, Worcester Polytechnic Institute; Ph.D. 1989, Massachusetts Institute of Technology

Joanne D. Kehlbeck, Associate Professor of Chemistry (2002). B.S. 1992, Duquesne University; Ph.D. 1999, Carnegie Mellon University

Rebecca F. Kennedy, Visiting Assistant Professor of Classics (2008). B.A. 1997, University of California at San Diego; M.A. 1999, Ph.D. 2003, The Ohio State University

James M. Kenney, Professor of Economics (1972). B.A. 1967, Wesleyan University; Ph.D. 1972, Stanford University

Scott D. Kirkton, Assistant Professor of Biological Sciences (2006). B.S. 1997, Denison University; Ph.D. 2004, Arizona State University

J. Douglass Klein, Professor of Economics, Dean of Interdisciplinary Studies and Special Programs (1979). B.A. 1970, Grinnell College; M.A. 1972, Ph.D. 1975, University of Wisconsin

Victor A. Klimash, Director of Performance in Music (2002). Bachelor of Music, 1966, Master of Music 1968, Eastman School of Music; Doctor of Music, 1975, Florida State University

Susan Kohler, Lecturer in Chemistry (2007). B.S. 1970, Mount Holyoke College; Ph.D. 1975, University of California-Berkeley

Rebecca A. Koopmann, Associate Professor of Physics and Astronomy (1998). B.S. 1989, Union College; M.S. 1992, Ph.D. 1997, Yale University

Bernhard H. Kuhn, Associate Professor of English (2000). B.A. 1991, Brown University; Ph.D. 2001, Princeton University

Scott M. LaBrake, Senior Lecturer in Physics and Astronomy and Accelerator Manager and Chair of the Department for Spring Term (2001). B.S. 1995, Siena College; M.S. 1997, Ph.D. 2003, The State University of New York at Albany

Robert J. Lauzon, Associate Professor of Biological Sciences (1996). B.S. 1982 McGill University; Ph.D. 1987, Queen's University

Melinda A. Lawson, Lecturer in History and Assistant Director of Advising (2000). B.A. 1985, State University of New York at Albany; M.A. 1987, Ph.D. 1998, Columbia University

Stephen C. Leavitt, Associate 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

Annette M. LeClair, Librarian (1990). B.A. 1974, University of Minnesota; M.A. 1976, University of Virginia; M.S.L.S. 1980, University of North Carolina, Chapel Hill

Kathryn Lesh, Professor of Mathematics (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 (On Leave, Fall)

Thomas Lobe, 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, Associate Professor of Biological Sciences (2002). B.S. 1981, Boston College; M.S. 1995, Ph.D. 2000 Rutgers University (On Leave, Spring)

Laura J. Loth, Visiting Assistant Professor of French (2005). B.A. 1994, College of William and Mary; M.A. 1996, Ph.D. 2005, University of Minnesota, Minneapolis

Karen A. Lou, Senior Lecturer in Chemistry (1993). B.A. 1979, Williams College; Ph.D. 1985, Massachusetts Institute of Technology

- Katherine R. Lynes, Assistant Professor of English (2006). B.A. 1991, M.A. 1994, Portland State University, Ph.D. 2004, Rutgers University
- Laura A. MacManus-Spencer, Assistant Professor of Chemistry (2006). B.S. 2000, College of St. Benedict; Ph.D. 2005, University of Minnesota
- Joyce Madancy, Associate Professor of History (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 (1985). B.S. 1977, Sharif University of Technology; M.S. 1980, Ph.D. 1985, Pennsylvania State University; P.E.
- Seyfollah Maleki, Associate Professor of Physics and Astronomy (1983). B.S. 1974, University of New Orleans; M.S. 1978, Ph.D. 1981, Rensselaer Polytechnic Institute (On Leave, Winter, Spring)
- Jonathan M. Marr, Visiting Associate Professor 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, Professor of Political Science and Director of Women's and Gender Studies (1997). B.S. 1985, University of South Dakota; M.S. 1986, London School of Economics; Ph.D. 1994, New York University
- Harry Marten, Edward E. Hale Jr. Professor of English (1976). B.A. 1965, Harpur College; M.A. 1967, Ph.D. 1970, University of California, Santa Barbara (On Leave, Spring)
- Raymond F. Martin, Dwane W. Crichton Professor of Philosophy and Chair of the Department (2002). B.A. 1962, M.A. 1964, Ohio State University; Ph.D. 1968, University of Rochester
- Victoria J. Martinez, Associate Professor of Spanish (1991). B.A. 1971, M.A. 1986, University of Kentucky; Ph.D. 1992, Arizona State University
- Jennifer M. Matsue, Assistant Professor of Music and East Asian Studies (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
- Therese A. McCarty, Professor of Economics, Stephen J. and Diane K. Ciesinski Dean of the Faculty and Vice President for Academic Affairs (1987). A.B. 1979, Bryn Mawr College; A.M. 1981, Ph.D. 1987, University of Michigan
- James D. McCord, Professor of English (1977). B.A. 1968, M.A. 1971, Ph.D. 1976, University of California at Santa Barbara
- Thomas McFadden, College Librarian. B.A. 1968, College of Idaho; M.A. 1973, Brown University; M.L.S. 1977, University of Pittsburgh
- Dianne McMullen, Associate 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 (On Leave, Fall, Spring)
- Teresa A. Meade, Florence B. Sherwood Professor of History and Culture and Chair of the Department of History (1987). B.A. 1972, University of Wisconsin; M.A. 1975, Ph.D. 1984, Rutgers University
- Steven Michalek, Visiting Assistant Professor of Theater and Dance (2008). B.A. 2003, SUNY Albany; M.F.A. 2007, University of Connecticut
- K. Amanda Misner, Visiting Assistant Professor of Chemistry (2007). B.S. 1999, Harvey Mudd College; M.S. 2000, Ph.D. 2005, University of Massachusetts-Amherst
- Laura Moffitt, Visiting Assistant Professor of Sociology (2008). B.S. 1989, State University of New York at Empire State College; M.S.W. 1991, State University of New York at Buffalo
- Cara Molyneaux, Associate Librarian/Head of Access Services (1987). B.A. 1965, Douglass College, Rutgers; M.L.S. 1986, State University of New York at Albany
- Andrew J.F. Morris, Assistant Professor of History (2003). A.B. 1991, Brown University; M.A. 1996, Ph.D. 2003, University of Virginia
- 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, Associate Professor of Economics (1984). B.Sc. 1970, M.Sc. 1971, University of London; M.A. 1979, Ph.D. 1989, Johns Hopkins University
- Miryam Moutillet, Senior Artist-in-Residence in Dance and Director of the Dance Program (1996). B.S. Skidmore College
- Pilar Moyano, Professor of Spanish (1986). B.A. 1976, M.A. 1978, Ph.D. 1985, State University of New York at Albany (On Leave, Fall)

## 270 / Faculty

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- Stephen G. Romero, Associate Professor of Psychology (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 (On Leave, Fall, Spring)
- Michael Rudko, Horace E. Dodge III Professor of Electrical and Computer Engineering (1984). B.S.E.E. 1965, M.S.E.E. 1969, Ph.D. 1974, Syracuse University
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- 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 (On Leave, Fall, Winter)
- Shelton S. Schmidt, Professor of Economics (1974). B.A. 1969, Ph.D. 1977, University of Virginia (On Leave, Winter, Spring)
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- Guillermina Seri, Assistant Professor of Political Science (2007). B.A. 1986, Catholic University of Córdoba, Argentina; M.A. 1998 FLACSO, Buenos Aires; Ph.D. 2005, University of Florida
- Courtney S. Seymour, Assistant Librarian I, Collection Development Librarian (2005). B.S. 1998, Union College; M.L.S. 2000, M.A. 2001, State University of New York at Albany
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- John M. Spinelli, Associate Professor of Electrical and Computer Engineering and Computer Science and Chair of the Department of Electrical and Computer Engineering (1989). B.E. 1983, The Cooper Union; S.M. 1985; Ph.D. 1989, Massachusetts Institute of Technology
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- Charles N. Steckler, Professor of Theater (1971). B.S. 1968, Queens College; M.F.A. 1971, Yale University
- Ruth M. Stevenson, Thomas B. Lamont Professor of Literature (1972). A.B. 1961, Smith College; M.A. 1962, University of Richmond; Ph.D. 1972, Duke University
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## 272 / Faculty

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William W. Thomas, Professor of French and Director of International Programs (1969). A.B. 1962, Hamilton College; Ph.D. 1970, State University of New York at Buffalo

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Frank E. Wicks, Associate Professor of Mechanical Engineering (1988). B.S. 1961, State University of New York Maritime College; M.S. 1966, Union College; Ph.D. 1976, Rensselaer Polytechnic University; P.E.

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Richard D. Wilk, Professor of Mechanical Engineering (1989). B.S. 1980, M.S. 1982, Ph.D. 1986, Drexel University

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Brenda Wineapple, Doris Zemurray Stone Professor in Modern Literary and Historical Studies (1976). B.A. 1970, Brandeis University; M.A. 1972, Ph.D. 1976, University of Wisconsin

Jeffrey Witsoe, Visiting Assistant 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

Zhang Wu, Instructor of Political Science (2006). B.A. 1992, Peking University; M.A. 2001 Cornell University

Mark E. Wunderlich, Visiting Assistant Professor of Philosophy (2008). B.A. 1995, Harvard College; Ph.D. 2001, University of Arizona

Suthathip Yaisawarng, 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

Yudong Wang, Instructor of Visual Arts (2007). B.A. 1991, M.A. 1994, Beijing University; M.A. 1999, Indiana University; M.A. 2000, University of Chicago

Zhen Zhang, Visiting Assistant 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

Karl Zimmermann, Professor of Mathematics (1981). B.S. 1974, Tufts University; M.S. 1976, University of New Hampshire; Ph.D. 1985, Brown University

William S. Zwicker, William D. Williams Professor of Mathematics (1975). A.B. 1971, Harvard University; Ph.D. 1975, Massachusetts Institute of Technology

#### Departmental Assistants

Margaret S. Angie, Biological Sciences (2002). A.A.S. 1983, B.S. 1984, Alfred University

Gene E. Davison, Electrical Engineering (1980)

Stanley J. Gorski, Mechanical Engineering (1997). A.A.S. 1975, A.A.S. 1976, Hudson Valley Community College

Mark Hooker, Bioengineering Technician (2006)

James J. Howard, Engineering (1994)

Amy M. Kelley, Biological Sciences (2000)

William Neubeck, Geology (1990). B.S. 1976, State University of New York at Oneonta; M.A. 1980, State University of New York at Binghamton

Roland Pierson, Engineering (1985)

Kathleen M. Ryan, Chemistry (1989). A.S. 1989, Schenectady County Community College

John T. Sheehan, Physics (1997)

Ann M. Thomas, Visual Arts (1979). A.B. 1962, Manhattanville College

Paul Tompkins, Engineering (2006)

#### Research Professors

Charles Bishop, Research Professor of Anthropology (1997). B.A. 1961, M.A. 1963, University of Toronto; Ph.D. 1969, State University of New York at Buffalo

Reginald Byron, Research Professor of Anthropology (1997). B.A. 1970, University of Southern California; Ph.D. 1974, University of London, England

Robert M. Finks, Research Professor of Geology (2003). B.S. 1947, Queens College; M.A. 1954, Ph.D. 1959, Columbia University

Robert L. Fleischer, Research Professor of Geology (1997). A.B. 1952, A.M. 1953, Ph.D. 1957,

## 274 / Faculty

### Harvard University

Adrian Frazier, Research Professor of English (1982). B.A. 1971, Pomona College; Diploma in Anglo-Irish Literature 1973, Trinity College, Dublin; M.A. 1976, Ph.D. 1979, Washington University

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A.G. Davis Philip, Research Professor of Physics (1976). B.S. 1951, Union College; M.S. 1959 State University of New Mexico; Ph.D. 1964 Case Institute of Technology

J. Gregory Reid, Research Professor of Chemistry (2008). B.S. 1979, University of Michigan; Ph.D. 1983, University of Wisconsin at Madison

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Martin A. Strosberg, Research Professor of Political Science (1984). B.A. 1968, Union College; M.A. 1969, M.P.H. 1971, University of California at Berkeley; Ph.D. 1977, Syracuse University

## The Administration

### Office of the President

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Dorothy Pratico, Secretary to the President  
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### Office of Academic Affairs

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### Academic Deans

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## 276 / Administration

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Brian K. Speck, Head Women's Soccer and Assistant Softball Coach. B.A. 1988, State University of New York at Albany

Paul Wehrum, Head Men's Lacrosse Coach. B.S. 1972, M.S. 1973, State University of New York at Cortland.

Thomas M. White, Head Crew Coach. B.S. 1987, Northeastern University

Information Technology Services

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Rebecca Fiveland, Computer Information analyst. B.S. 2002, Gordon College

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#### Athletics

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Rick Bennett, Associate Head Coach of Men's Ice Hockey. B.A. 1990, Providence College

Alison Boe, Assistant Women's Hockey Coach. B.A. Harvard University

Adam M. Brinker, Managing Director of Messa Rink at Achilles Center. B.S. 1987, M.A. 1993, Kent State

Peter W. Brown, Head Softball and Assistant Football Coach. B.A. 1983, Union College

Mark Buddle, Head Men's and Women's Tennis Coach. B.A. 1988, M.A. State University of New York at Cortland; M.S. State University of New York at Albany

Mary Ellen Burt, Head Women's Basketball Coach. B.S. 1982; University of Southern California; M.A. 1989, St. John Fisher College

Ervin Chambliss, Assistant Men's Lacrosse Coach and Assistant Football Coach. B.A. 1976, University of Rochester; M.S. 1981, State University of New York at Albany

Emily Clinkhammer, Diving Coach. B.A. 2006, Hamilton College

Sandra Collins, Assistant Athletic Director and Head Volleyball Coach. B.S. 1986, Russell Sage College; M.S. 1997, Springfield College

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Lacey L. French, Head Field Hockey Coach and Assistant Women's Lacrosse Coach. B.S. 2001, Skidmore College

Jeffrey Gorski, Assistant Men's Basketball Coach. B.A. 2003, Utica College of Syracuse University

Jeffrey D. Guinn, Head Men's Soccer and Assistant Track Coach. B.A. 1987, North Carolina State University

John Knapp, Assistant Football Coach. B.S. 2001, Plymouth State College

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Robert J. Montana, Head Men's Basketball Coach. B.S. 1972, State University of New York College at Brockport

Kathleen Natole, Athletics Business Manager

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## 278 / Administration

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## 280 / Administration

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## 282 / Administration

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Degree Program	Degrees	HEGIS
American Studies	B.A.	0313
Anthropology	B.A.	2202
Arts	B.A.	1001
Astronomy	B.A.	1911
Biochemistry	B.S.	0414
Biology	B.S.	0401
Chemistry	B.S.	1905
Classics	B.A.	1504
Computer Science	B.S.	0701
Computer Engineering	B.S.	0909
Economics	B.A.	2204
Electrical Engineering	B.S.	0909
English	B.A.	1501
Geology	B.S.	1914
History	B.A.	2205
Humanities	B.A.	4903
Interdepartmental Program	B.A., B.S.	4901
Mathematics	B.S.	1701
Mechanical Engineering	B.S.	0910
Modern Languages	B.A.	1101
Neuroscience	B.S.	0425
Philosophy	B.A.	1509
Physics	B.S.	1902
Political Science	B.A.	2207
Psychology	B.S.	2001
Science	B.S.	4902
Science, Medicine and Technology in Culture	B.A.	4902
Social Science	B.A.	2201
Sociology	B.A.	2208
Women's and Gender Studies	B.A.	4903

### Joint Programs in Conjunction with Other Institutions

Eight-Year Leadership in Medicine -Health Management or -Health Systems Administration (with Albany Medical College and Union Graduate College)	B.S.	0499
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## Index

- About Union College, 222
- Absence from final examination, 29
- Absences, classroom, 29
- Academic calendar, iv, v
- Academic honesty, iii, 29
- Academic honor societies, 32
- Academic good standing, 31
- Accelerated graduation, 4
- Accelerated joint degree programs, 9
- Accreditation, 225
- Academic Opportunity Program, 15
- Academic ratings, 30
- Academic recognition, 31
- Academic requirements and honors, 28
- Academic standing, 30
- Academic standing and financial aid, 23
- Academic warning, 32
- Administration listed, 264
- Admissions, 12
- Admission timetable, inside front cover ???
- Admission and security deposit, 20
- Advanced placement, 11
- Africana Studies courses and requirements, 41
- Albany Law School, joint program with, 9, 130
- Albany Medical College, joint program with, 10, 130
- Alpha Kappa Delta, 32
- Alumni activities, 229
- American Studies courses and requirements, 43
- Anthropology Department courses and requirements, 44
- Application fees, 12, 20
- Application procedures, 12
- Art history courses and requirements, 206
- Astronomy (see Physics and Astronomy), 174
- Athletics, 226
- Attendance, 29
  
- Barbados exchange, 8
- Becker Career Center, 228
- Billing and student accounts, 17
- Biochemistry courses and requirements, 50
- Bioengineering courses and requirements, 51
- Biological Sciences courses and requirements, 52
- Board of Trustees, 222, 257
- Bookstore charges, 18
  
- Calendar, academic, iv
- Changes in major program, 7
- Chemistry courses and requirements, 58
- Chinese courses and requirements, 147

- Classics courses and requirements, 61
  - Coeducation, 222
  - Collection fee, 20
  - College entrance examination, 13
  - College grounds, 208
  - Combined degree programs (Five-year programs), 9, 220
  - Comprehensive fee, 17
  - Computer Science courses and requirements, 64
  - Consortium courses, 10
  - Converging technologies, 5
  - Costs, 17
  - Counseling Center, 227
  - Course listings, 38
  - Courses of instruction, 34
  - Courses, choice of, 28
  - Courses, enrollment in, 28
  - Courses, incomplete, 29
  - Courses, withdrawing from, 29
  - Czech exchange, 8
- 
- Dance courses and requirements, 201
  - Dean's List, 31
  - Declining balance system, 17, 18
  - Degree requirements, 3
  - Degrees offered, 283
  - Departmental honors, 31
  - Distinction, graduation with, 31
  - Dual degree programs, 6
- 
- Early admission, 13
  - Early decision, 13
  - East Asian Studies courses and requirements, 71
  - Economics courses and requirements, 73
  - Educational Studies program, 9, 218
  - Electrical and Computer Engineering courses and requirements, 78
  - Endowed chairs, 255
  - Engineering Division, 85
  - English courses and requirements, 87
  - Enrollment, 224
  - Enrollment in courses, 28
  - Environmental Science and Policy courses and requirements, 102
  - Eta Kappa Nu, 33
  - Examinations, absence from, 29
  - Exchange programs, 8
  - Extrdepartmental Programs, 40
- 
- Faculty and administration emeriti, 260
  - Faculty listed, 264
  - Fees, 20
  - Film Studies Minor, 105

## 286/ Index

- Financial aid, 22
- First-Year Preceptorial, 34
- Five-year programs (Combined Degree), 8, 218
- Food services, 17
- Fourth courses, 28
- Fraternities, 226
- French courses and requirements, 147
  
- General Education curriculum, 4, 36
- General financial obligations, 19
- Geology courses and requirements, 107
- German courses and requirements, 150
- Graduate College of Union University (see Union Graduate College, 40, 218)
- Graduation requirements, 3
- Graduation with distinction, 31
- Group programs abroad fee, 20
  
- Health insurance, 18
- Health professions program, 38
- Health service, 227
- Hebrew courses and requirements, 152
- History courses and requirements, 112
- Honors, departmental, 31
- Housing, 18, 20
- Hudson-Mohawk consortium, 10
  
- Incomplete course work, 29
- Independent study, 8
- India exchange, 8
- Infinite (see Loop)
- Information Technology Services (ITS), 228
- Interdepartmental programs, 6
- Interdisciplinary studies, 5
- International baccalaureate, 15
- International programs, 8, 123
- International students, 14
- Italian courses, 152
  
- Jackson's Garden, 223
- Japan exchange, 8
- Japanese courses and requirements, 152
  
- Korean exchange, 8
  
- Late fees, 20
- Latin American and Caribbean Studies courses and requirements, 127
- Law and Public Policy program, 9, 130
- Leadership in Medicine/Health Systems program, 9, 130
- Leave of absence, 30
  
- Major, 5

- Major programs, change in, 7
- Mathematics courses and requirements, 132
- Mechanical Engineering courses and requirements, 136
- Minerva House System, 222
- Minor, 7
- Mission and Visions statements , 1
- Modern Languages and Literatures courses and requirements, 140
- Music courses and requirements, 159
  
- Nanotechnology Minor, 163
- Neuroscience courses and requirements, 164
- Nott Memorial, 223
  
- Officers of the College, 257
- Olin Center, 224
- Omicron Delta Epsilon, 33
- Organizing Theme major, 6, 166
  
- Part-time undergraduate study, 15
- Pass/Fail grading, 30
- Peschel Computer Center (see Information Technology Services, 228)
- Performing Arts (see Music, 159; and Theater and Dance, 201)
- Phi Alpha Theta, 33
- Phi Beta Kappa, 33
- Philosophy courses and requirements, 167
- Physics and Astronomy courses and requirements, 174
- Pi Sigma Alpha, 33
- Pi Tau Sigma, 33
- Political Science courses and requirements, 179
- Portuguese courses and requirements, 153
- Prizes listed, 230
- Proficiency examinations, 11
- Psi Chi, 33
- Psychology courses and requirements, 188
  
- Readmission, 30
- Reamer Campus Center, 222
- Repeat course policy, 29
- Refunds, 19, 23
- Registration, 28
- Religious Studies courses and requirements, 192
- Residence life, 225
- Residence requirements, 18
- ROTC, 10
- Russia and Eastern Europe courses and requirements, 193
- Russian courses and requirements, 153
  
- Schaffer Library, 223
- Scholarships listed, 235
- Science and Engineering Center, 223

## 288/ Index

- School of Education of Union Graduate College, 218
- School of Management of Union Graduate College, 221
- Science, Medicine, and Technology in Culture courses and requirements, 194
- Seward Interdisciplinary Fellows, 7
- Sigma Delta Pi, 33
- Sigma Pi Sigma, 33
- Sigma Xi, 33
- Sociology courses and requirements, 196
- Sororities, 226
- Spanish courses and requirements, 154
- Special support services, 38
- Student activities, 225
- Student activity fee, 20
- Student right-to-know act, 33
- Student rights and confidentiality, 32
- Studio fine arts courses and requirements, 212
- Study abroad, 8
- Summer school, 11
- Summer study, 27
- Swansea exchange, 8
  
- Tau Beta Pi, 33
- Terms Abroad, 8
- Theater and Dance courses and requirements, 201
- Theme housing, 226
- Transfer students, 14
  
- Undergraduate program, 4
- Undergraduate research, 8
- Union Graduate College, 40, 218
- Union Scholars program, 7
  
- Visiting students, 16
- Visual Arts courses and requirements, 206
  
- Warning, academic, 32
- Withdrawal deadlines, 19
- Withdrawal from courses, college, 30
- Women's and Gender Studies courses and requirements, 217
- Writing across the curriculum, 37
- Writing Center, 37



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