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## WESTERN NEW ENGLAND UNIVERSITY

### Western New England University

#### **2015-2016 Catalogue**

1215 Wilbraham Road  
Springfield, Massachusetts 01119  
Telephone 413-782-3111 800-325-1122  
www.wne.edu

In its annual “America’s Best Colleges” edition, *U.S. News & World Report* ranks Western New England University in the top tier of the “Regional Universities—in the North” category of colleges and universities offering a full range of undergraduate and master’s programs.

In addition, the University is also featured in *Colleges of Distinction*, a college and university guide and website profiling institutions characterized as America’s best values in higher education.

The official 2015-2016 Western New England University Catalogue is online at [www.wne.edu/catalogue](http://www.wne.edu/catalogue).

The following sections can only be found online:

- Undergraduate course descriptions
- Graduate course descriptions
- Scholarship information
- Legal matters
- Directories

### Disclaimer

Western New England University retains the right to change and/or amend the academic requirements as set forth in this Catalogue as needs and circumstances require. Accommodations will be made for current students should they be adversely affected by amendments to or changes in the curricula or policies of the University.

### Nondiscrimination Policy

Western New England University is committed to the principle of equal opportunity in education and employment. The University does not discriminate on the basis of sex, race, color, creed, national origin, age, religion, sexual orientation, gender identity, gender expression, veteran status, genetics, or disability in admission to, access to, treatment in, or employment in its programs and activities. The following person has been designated to handle inquiries regarding the nondiscrimination policies:

Assistant Vice President and Director of Human Resources  
Western New England University  
1215 Wilbraham Road  
Springfield, MA 01119-2684

Inquiries concerning the application of nondiscrimination policies may also be referred to the

Regional Director  
Office for Civil Rights  
U. S. Department of Education  
J. W. McCormack P.O.C.H.  
Room 222  
Boston, MA 02109-4557

## A Message from the President

This publication conveys a rich and powerful portrait of a special institution that provides outstanding educational opportunities for all students. The Colleges of Arts and Sciences, Business, and Engineering offer dynamic undergraduate and graduate programs of study, with faculty who are experts in their fields and who are skilled teachers. The reputation of the Western New England University School of Law is firmly established. The College of Pharmacy graduated its first class in May 2015 and will significantly enhance the University's reputation in the years to come. Western New England University has prepared 43,700 students to enter the world of work as responsible citizens—adaptable, entrepreneurial, and creative.

Western New England University is about more than its educational offerings; it is as much about individuals at the University who help students grow and thrive in our special environment. In support of every program and each activity there are faculty, staff, and administrators who bring life and vitality to all that is undertaken here. Our strength resides in our faculty, staff, and students, and in our rich educational programs. We are unique because of our history, traditions, and values, and because of our commitment to students.

I extend a special greeting to all who peruse this publication wanting to learn more about Western New England University and to our students utilizing these pages in order to plan programs of study.

Anthony S. Caprio

## About the University

Western New England University is a private, comprehensive, coeducational institution located on a 215-acre campus in a suburban neighborhood four miles from downtown Springfield. Founded in 1919 as the Springfield Division of Northeastern University, it became established with its own charter and identity as Western New England College in 1951. Building of the current campus began in 1958. In 2011, the institution became Western New England University.

Western New England University values teaching excellence, mentorship, and research as it educates students committed to serving their communities. Through the integration of liberal and professional learning, the University promotes visionary thinking, leadership, and creativity to prepare its 3,965 students for the demands of a global society.

## Programs, Colleges, Faculty, and Students

Western New England University offers a wide range of undergraduate degree programs as well as graduate and doctoral programs in Arts and Sciences, Business, Engineering, Law, and Pharmacy. There are 231 full-time faculty members in the University's four Colleges and School of Law.

The University serves 3,965 students: 2,575 full-time undergraduates, 390 in full- and part-time JD and LLM programs in the School of Law, 295 Pharmacy students, and 705 in part-time undergraduate, graduate, and doctoral degree programs. The University attracts students from 40 states and territories and 26 foreign countries. There are 43,700 alumni of the University.

## Our Mission

The hallmark of the Western New England experience is an unwavering focus on and attention to each student's academic and personal development, including learning outside the classroom.

Faculty, dedicated to excellence in teaching and research, and often nationally recognized in their fields, teach in an environment of warmth and personal concern where small classes predominate. Administrative and support staff work collaboratively with faculty in attending to student development so that each student's academic and personal potential can be realized and appreciated. Western New England develops leaders and problem-solvers from among our students, whether in academics, intercollegiate athletics, extracurricular and cocurricular programs, collaborative research projects with faculty, or in partnership with the local community.

At Western New England, excellence in student learning goes hand in hand with the development of personal values such as integrity, accountability, and citizenship. Students acquire the tools to support lifelong learning and the skills to succeed in the global workforce. Equally important, all members of our community are committed to guiding students in their development to become informed and responsible leaders in their local and global communities by promoting a campus culture of respect, civility, tolerance, environmental awareness, and social responsibility. We are positioned well to accomplish these goals as a truly comprehensive institution whose faculty and staff have historically collaborated in offering an integrated program of liberal and professional learning in the diverse fields of arts and sciences, business, engineering, law, and pharmacy.

## Our Core Values

- Excellence in Teaching, Research, and Scholarship
- Student-centered Learning
- A Sense of Community
- Cultivation of a Pluralistic Society
- Innovative Integrated Liberal and Professional Education
- Commitment to Academic, Professional, and Community Service
- Stewardship of our Campus

## Our Vision for Approaching Our Second Century

In 2019 Western New England will celebrate its Centennial as an institution of higher education. Our focus will continue to be on the whole student, but in a 21st century context highlighting the demands of a diverse and global society, the accelerating pace of technology, and the necessity of attention to environmental sustainability. Our next decade will be marked by a continued dedication to excellence, visionary thinking, flexibility, and entrepreneurial spirit. We must continue to develop as a comprehensive institution offering an integrated program of liberal and professional undergraduate and graduate education while establishing ourselves in a position of regional leadership and national recognition.

## A Brief History

The Springfield Division of Northeastern College, known as Springfield-Northeastern, was established in 1919. Evening classes, held in the YMCA building on Chestnut Street in Springfield for students studying part-time, were offered in law, business, and accounting. The first 13 graduates were recognized in 1922 with the degree of Bachelor of Commercial Science. In 1923, the first seven law graduates were recognized.

On July 17, 1951, the Springfield Division of Northeastern University was chartered and became Western New England College.

On April 26, 1956, 34 acres for the current Wilbraham Road campus were purchased. The first building, originally known as East Building, and later renamed Emerson Hall in recognition of the University's first trustee chairman, Robert R. Emerson, opened in 1959.

The School of Arts and Sciences was established in 1967, and Western New England received accreditation as a general purpose institution in 1972.

The University flourished on its new campus. The decades of the Sixties, Seventies, Eighties, and Nineties saw Western New England's academic programs expanding, its student body growing, and the addition of a number of buildings including the D'Amour Library, the Blake Law Center, the St. Germain Campus Center, the Alumni Healthful Living Center, and the LaRiviere Living and Learning Center. In 2001, the Evergreen Village townhouses opened for seniors. In 2002, the Kevin S. Delbridge Welcome Center opened, housing the admissions offices. Commonwealth Hall was added in 2003 along with the Golden Bear Stadium. The George Trelease Memorial Baseball Park was completed in 2004. A \$1.9 million addition to the D'Amour Library was completed in 2005 and a \$5.5 million addition and renovation of the Blake Law Center in 2008.

In 2008, Western New England launched its first Ph.D. program in Behavior Analysis. The following year, the institution opened Southwood Hall, a new eco-friendly residence hall for upper-classmen. The \$40 million Center for the Sciences and Pharmacy, opened in 2011.

On July 1, 2011, the institution officially became a university. The Schools of Arts and Sciences, Business, and Engineering became known as "Colleges," while the School of Law retained its name.

In 2011, the Western New England University College of Pharmacy welcomed its first class to the PharmD program. The College of Engineering added the University's second doctoral program: the Ph.D. in Engineering Management in 2012.

The period of 2012-2014 has seen a major renovation to Arts and Sciences Herman Hall, and modernization and expansion to Engineering's Sleith Hall designed to elevate our classroom and laboratory environments.

The University enrolls approximately 3,965 students and has 43,700 alumni around the world.

## Educational Opportunities

The University provides students with an impressive range of educational options. Each program is unique in its integration of liberal arts and professional education, theory, and practice. Some programs prepare students for successful careers in business, industry, and for continued study in graduate school. In others, students receive hands-on, experiential learning through internships, work with faculty on their own research, and interact with organizations in the community. There is an emphasis on the integration of technology in all programs, and students are provided with an increased international perspective to prepare for work in today's global economy.

The faculty and staff are dedicated to personal interaction with students and to fostering an open environment conducive to personal growth. In addition to a wide range of academic programs, Western New England University also provides academic and other support services for students needing assistance in their studies and for those with disabilities.

The University provides opportunities for semester long and short seminar study abroad opportunities in England, China, France, Italy,

South Africa, and many other countries. Furthermore, the University is located in an urban community with rich educational and cultural resources, and it participates in the Cooperating Colleges of Greater Springfield (CCGS), a consortium of colleges in which educational opportunities are enhanced through the sharing of resources.

## Campus and Facilities

The campus is located in a residential section of Springfield at 1215 Wilbraham Road, about four miles east of downtown Springfield.

The campus contains 26 major buildings and numerous athletic and recreational fields

The St. Germain Campus Center serves as a focal point for student activities and services. Included within the center are the dining hall, a food court, Starbucks, student lounges, convenience store, conference and student organization rooms, activity areas, and a bookstore. Law students enjoy eating and socializing in the Court Café in the Blake Law Center.

The University maintains 10 residence halls and apartment complexes that accommodate students in varied housing styles.

Facilities for intramural and intercollegiate athletics are available on the campus. Included are tennis courts, softball and baseball diamonds, and soccer fields. The University's multipurpose turf stadium serves varsity sports including football, field hockey, and lacrosse. The George E. Trelease Memorial Baseball Park provides an outstanding facility for the Golden Bears. A variety of athletic, recreational, and health-related activities are conducted in the Alumni Healthful Living Center, which serves the entire University community. The Golden Bear Pavilion, opened in 2015, includes training and equipment rooms, a concession stand, and a public restroom.

### D'Amour Library

The D'Amour Library, which opened in 1983 and was expanded in 2005, offers users an inviting atmosphere for research and group and individual study. The library houses a collection of over 134,000 book, journal, and media volumes and provides access to over 80,000 periodical and monographic titles via electronic databases and subscriptions. In addition to its collection of materials that supports the curricula of the University, the library has 128 public computers located throughout the building's three floors that provide access to the Internet and to a variety of software applications. The campus wireless network is accessible throughout the library. Several individual study rooms are available for use as well as a number of group rooms for collaborative projects. The lower level offers a late night computer lab and study area to students during the academic year.

The library provides on-campus and off-campus access to its online catalog, WILDPAC, and to its numerous web-based resources through its webpage at <http://libraries.wne.edu>. WILDPAC lists the holdings of both libraries on campus, the D'Amour Library and the Law Library, while also providing links to many of the other online library catalogs in the area. Other resources available from the library's webpage include JSTOR, Project Muse, MarketResearch Academic, Compendex, ARTstor, Embase, Lexicomp Academic, and several databases from EBSCOhost and Gale Cengage. Many of these online information resources provide the full text of indexed materials. Articles from the databases and from other online resources may be printed in the library at one of the six available network printers. Off-campus access to many of the online databases is limited to users affiliated with Western New England University.

The library's professional staff offers a full range of information services. Information literacy classes are offered by instruction

librarians at the request of faculty to support research and writing assignments in their disciplines as well as to fulfill the general university information literacy requirement. In addition to formal instruction, librarians also provide reference assistance 62 hours per week, including weeknights and Sundays, during the academic year. Longer, individual reference appointments may be scheduled for more in-depth research.

The library is open seven days a week during the academic year. Holidays, summer hours, and exception days are posted in the library and on the library's webpage. Internet access to the library's online databases is available 24 hours a day for authorized users.

#### The Law Library

Renovated and expanded in 2008, the three-story School of Law library offers an extensive collection of print and electronic resources, as well as a highly trained and dedicated staff to assist students and faculty members in their research. The library's collection of approximately 380,000 volumes includes the newest research and reference resources; reprints of important historical texts; electronic databases including LexisNexis, Westlaw, and Bloomberg Law; microforms; and selected CDs and DVDs. The library is also a selective depository for federal government publications.

The library is open more than 100 hours per week. The only academic law library in western Massachusetts, this rich resource is valued by students, professors, and area legal professionals.

### Professional and Regional Accreditation

The New England Association of Schools and Colleges (NEASC) regionally accredits Western New England University and all of its programs. Its professional programs are accredited by the following organizations:

#### In Arts and Sciences:

Programs in Education are approved by the Massachusetts Board of Education (MBE) and meet the standards of reciprocity of the Interstate Certification Compact. The Council on Social Work Education (CSWE) accredits the Bachelor of Social Work program.

The doctoral program in Behavior Analysis has been accredited by the Association of Behavior Analysis International (ABAI) for the period 2014-2019.

#### In Business:

The College of Business is accredited by AACSB International—The Association to Advance Collegiate Schools of Business.

Western New England University is the only private AACSB International accredited university in western Massachusetts. With accreditation, Western New England University is among an elite company of accredited business schools, which comprise 5% of business programs worldwide.

The Sport Management program has been accredited by the Commission on Sport Management Accreditation (COSMA) for 2014-2021.

AACSB International accreditation represents the highest standard of achievement for business schools worldwide. Member institutions confirm their commitment to quality and continuous improvement through a rigorous and comprehensive multiyear review.

#### In Engineering:

The undergraduate degree programs in Biomedical, Electrical, Industrial and Mechanical Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), [www.abet.org](http://www.abet.org).

The Civil Engineering and Computer Engineering undergraduate degree programs are following the application process for accreditation as outlined by ABET, Inc.

#### In Pharmacy:

The Doctor of Pharmacy program of the Western New England University College of Pharmacy was awarded candidate accreditation status in 2012.

#### In Law:

The School of Law is accredited by the American Bar Association (ABA) and is a member of the Association of American Law Schools (AALS).

#### Membership

Western New England University is a member of the Association of American Colleges and Universities, the College Entrance Examination Board, the Association of Governing Boards of Universities and Colleges, the Council of Independent Colleges, the National Association of Independent Colleges and Universities, and the Association of Independent Colleges and Universities of Massachusetts.

### Technology Services

The Office of Information Technology (OIT) provides a full range of technology and technology related services to the University.

The University boasts the latest state-of-the-art technology, including fully digital classrooms, laboratories, and equipment. Over 500 public computers are available for use throughout campus. In addition, the wireless network is, or will soon be, available in all residence halls and campus buildings, as well as some outdoor areas on campus.

There are numerous learning technologies available for faculty and students to enhance instructional capabilities including a learning management system, lecture capture solutions, distance learning capabilities, and numerous University software licenses supporting our various disciplines.

For a full description of technology services please visit the University's "OIT Handbook" at: <http://www1.wne.edu/oit/index.cfm?selection=doc.1917>

## ADMISSIONS

### Undergraduate Admissions for Full-time Enrollment

#### How to Learn More About Western New England University

Prospective students and parents are encouraged to visit the campus and to avail themselves of the opportunity for a personal interview and tour. Students and parents also have the opportunity to attend a series of Open House Programs. These programs are held on selected Saturdays and Sundays and include a tour of the campus. Currently enrolled students conduct the tours and can provide applicants with a personal perspective of the University and student life. While an interview is not required, the University encourages students to arrange for a personal interview at the Admissions Office.

In addition to a campus visit and the University literature, information is available electronically at [www.wne.edu/admissions](http://www.wne.edu/admissions).

The Admissions Office can be contacted through the following means:

Telephone: 800-325-1122, ext. 1321 or 413-782-1321

Fax: 413-782-1777

Email: [learn@wne.edu](mailto:learn@wne.edu)

#### How to Apply for Full-time Admission

The following procedure should be completed for admission as a freshman or transfer student for full-time study (12 credit hours or more per semester).

- Students should submit a completed application. An application can be submitted online through our website ([www.wne.edu/admissions](http://www.wne.edu/admissions)). Students can also download an application from the website or complete the Common Application.
  - The completed application form should be returned with the nonrefundable \$40 application fee.
  - Students should forward to the Admissions Office an official high school transcript(s). First term senior grades may be required for some students. Transfer students should forward official transcripts of final secondary work, as well as any previous undergraduate study, to the Admissions Office.
  - Results of the SAT I or ACT examinations should be forwarded to the Admissions Office. The CEEB number for the SAT is 3962; the college code for the ACT is 1930.
  - A recommendation from a guidance counselor or teacher is required.
  - Applicants should submit a personal statement, essay, or untimed writing sample of your choice (at least 250 words).
- Students should have their school forward to the Admissions Office an official English translation of the high school transcript(s) as well as an official transcript of first term senior grades when available. Transfer students should have their school forward to the Admissions Office an official English translation of transcripts of final secondary school work as well as any previous undergraduate study.
  - The official results of the Test of English as a Foreign Language (TOEFL) should be forwarded to the Undergraduate Admissions Office. IELTS, EIKEN, or PTE Academic scores will also be accepted. SAT or ACT scores can be submitted instead of the other assessments. English proficiency can also be shown by submitting proof of completion of an Intensive English program that we have an agreement with. You can find a list of these programs on our website.
  - An Affidavit of Support form must be submitted to the Admissions Office.
  - An official bank statement declaring that the financial sponsor has sufficient funding to support the student's education at Western New England University should be submitted on the bank's stationery.
  - A recommendation from a guidance counselor or teacher is required.
  - A copy of the student's passport should be provided.

The I-20 Form will be issued to an accepted international student.

#### Specific Requirements for the Various Colleges

Persons admitted as regular degree-seeking candidates must have graduated from an approved secondary school or have obtained a General Equivalency Diploma (GED). They must also have successfully completed the following minimum preparatory units:

##### *College of Arts and Sciences*

The College of Arts and Sciences requires four units English; one unit laboratory science; two units mathematics equivalent to two of the following: algebra I, geometry, or algebra II; one unit United States history.

- One unit of chemistry and one unit of biology are required for prospective majors in biology, chemistry, health sciences, forensic biology, forensic chemistry, neuroscience, pre-pharmacy and pre-physician assistant. In addition, one unit of physics is recommended for prospective majors in chemistry, forensic chemistry, health sciences, neuroscience, pre-pharmacy and pre-physician assistant.
- Prospective majors in biology, computer science, information technology, and neuroscience are required to present three units of mathematics; a fourth year is recommended.
- Prospective majors in chemistry, forensic biology, forensic chemistry, health sciences, mathematics, pre-pharmacy and pre-physician assistant are required to present four units of mathematics. One unit must be the equivalent of a pre-calculus course. Students must arrive calculus-ready.

##### *College of Business*

The College of Business requires four units English; one unit laboratory science; three units mathematics equivalent to algebra I, geometry, and algebra II; one unit United States history.

#### Application Procedure for International Students

International students who are proficient in the English language and who wish to be considered for admission should comply with the following procedure:

- Students should submit a completed application. An application can be submitted online through our website ([www.wne.edu/admissions](http://www.wne.edu/admissions)). Students can also download an application from the website or complete the Common Application.
- The completed application form should be returned with the nonrefundable \$40 application fee (U.S. dollars).

### College of Engineering

The College of Engineering requires four units English; one unit United States history; four units mathematics equivalent to algebra I, geometry, algebra II, and an additional year beyond algebra II (such as precalculus) which includes trigonometry; one unit laboratory science; and one unit physics or chemistry (preferably both). Students must arrive calculus ready.

#### When Admission Decisions Are Made

Western New England University begins accepting students for the fall semester in October. The Undergraduate Admissions Office continues to review applications until the class is filled. The University also enrolls students midyear. Acceptance for the January semester begins in early fall.

#### When It Is Necessary to Declare Enrollment Intentions

A nonrefundable tuition deposit of \$100 is required by May 1 from each student who has been accepted. Students who plan to live on campus must submit an additional \$300 nonrefundable housing deposit at the same time. These fees are deducted from the total charges. After the tuition deposit has been paid, the following are required prior to registration:

1. Physical examination form including immunization verification completed by the applicant's healthcare provider.
2. Verification of health insurance coverage, in compliance with Massachusetts state law, or participation in the University's insurance program.

#### Transfer Credit Evaluation

The number of transfer credits is based upon work completed at previous accredited institutions. The status of transfer students is not automatically determined by the number of credit hours already earned or by the nomenclature of courses taken. Rather, each transcript is evaluated on a course-by-course basis. Normally, credit is allowed for each course that is equivalent to a corresponding course at Western New England University provided the earned grade is C- or above. Within a few weeks of acceptance, the Undergraduate Admissions Office sends each transfer student a degree audit, which shows how each previous course applies to the student's specific degree program at Western New England University. In certain English and Mathematics courses, application of transfer credit may be subject to completion of additional assessment.

Up to 70 credits are acceptable in transfer from two-year colleges, and up to 90 credits from four-year colleges and universities (including any applicable two-year college credits).

The College of Business requires that the majority of credits, contact hours, or other metric in traditional business subjects counted toward the degree fulfillment be earned at Western New England University.

#### Transfer Students' Degree Requirements

Customarily, a student who has received an associate's degree in an approved program from an accredited college and who is accepted for admission will be granted junior status. Although it is often possible for such a student to complete a program in a chosen field within two years at the University, the specific requirements of some majors may require a longer period of study. It is necessary for a transfer student to complete at least one year (30 credit hours) of study at Western New England University in order to be granted a degree. Students transferring to Western New England University may follow the requirements of their chosen major using the year when they become a student at Western New England University or the year when they first matriculated at their first college if less than four years prior to

the transfer to Western New England University. This decision will be made by the student and approved by the chairperson of the major program.

#### Advising for Transfer Students

Prior to actual enrollment, transfer students may seek advice from several distinct vantage points. General transitional guidance is most often sought from the Office of First Year Students & Students in Transition. It is here that much of pre-enrollment advising is coordinated. In most cases, formal communication begins in early May for fall admission and in December for spring semester entry. This office also serves as the point of contact for initial course registration and pre-matriculation orientation. In addition, transfer students may contact the Dean's Office of the College in which the desired major is administered, particularly if there are questions regarding transfer credit and planning remaining academic work. Issues pertaining to changing curriculum choice prior to matriculation are typically handled through the Admissions office.

#### Joint Admissions

The Joint Admissions Program is offered in collaboration with the following community colleges: Berkshire, Greenfield, Holyoke and Springfield Technical. The program is designed to facilitate the transfer of students earning an associate's degree from a designated community college. Eligible students are conditionally accepted to Western New England University upon enrolling in the program. An emphasis is placed on advisement to ensure the maximize transfer credit is applied towards an approved major, and to ensure a smooth transition to Western New England University. Participating students must earn a minimum 2.3 cumulative grade point average (based on a 4.0 scale) and either the associate's degree or a minimum of sixty (60) semester hours. Students are subject to the same transfer credit restrictions that apply to traditional applicants.

#### Transfer Articulation Agreements

Transfer articulation agreements have been arranged between Western New England University and various community and junior colleges. Associate's degree graduates who have followed the prescribed programs of study at these specific institutions may be able to complete requirements for baccalaureate degrees in two years at Western New England University.

#### Reinstatement Procedure (Reactivation)

Whenever continuous enrollment has been interrupted, students must initiate formal contact with the University in order to request reinstatement and/or reactivation. Observing the following steps will result in the most efficient review, and timely decision.

- If previously suspended or on probation at the time of last enrollment, submit a written request to the Dean of First Year Students & Students in Transition, who will coordinate the necessary review by the appropriate Academic Dean.
- If enrollment is discontinued in good standing, the student may simply submit a request for reactivation, directed to the Dean's Office of the College in which the desired major is administered. Requests may also be directed as above.
- Official transcripts of any academic work taken since leaving the University must be submitted prior to the beginning of classes in the semester in which the student wishes to register. Depending on the academic program intended and the nature of the academic standing at the time of last enrollment, the student may need to provide evidence of a 2.5 GPA for any coursework taken in the interim.

- Upon re-enrollment or reinstatement, students are subject to all rules, regulations and academic requirements effective at the time of re-enrollment or reinstatement.
- On-campus housing is not necessarily guaranteed.

## Undergraduate Admissions for Part-time Study

### Part-time Day and Evening Study

#### How to Apply for Admission to Part-time Study

The Admissions Office oversees admission to part-time study. Students are accepted on a rolling admissions basis.

1. Application forms for part-time study may be obtained from the Admissions Office, or electronically from the Graduate Studies and Adult Learning link at [www.wne.edu/adultlearning](http://www.wne.edu/adultlearning)
2. A completed application includes:
  - The completed, signed application form
  - The nonrefundable \$30 application fee
  - An official high school transcript or proof of the achievement of high school equivalency
  - An official transcript from each institution of higher education attended
  - A letter of recommendation
3. Applicants may be required to complete specific college-level courses in a nondegree status prior to formal admission.
4. Students admitted to part-time status may register for day, evening, or online courses.

#### Undergraduate

Western New England University has a long tradition of providing continuing education for students who seek part-time day and evening study, those who are older than 18- to 22-year-old full-time students, and those who are beginning or returning to higher education after spending time in other pursuits.

The University may accept qualified part-time students into its daytime undergraduate degree programs. The College of Business offers a part-time evening degree program in Accounting.

#### Undergraduate Nondegree Courses

Temporary nondegree status is available for students who wish to explore new subject areas before entering a degree program or earn credit prior to formal admission. This is also an option for visiting students from other colleges and universities who satisfy admissions requirements. Students must maintain an average of at least 2.0 (C) in courses taken at Western New England University. Students may enroll in a maximum of 36 credits under nondegree status. Advising and registration of nondegree students takes place in the colleges. Nondegree students may also apply for the certificate programs (p. 169).

#### Online Bachelor of Business Administration

The University offers an online Bachelor of Business Administration (BBA). This is a degree completion program designed for students with an associates' degree or approximately 60 undergraduate credits, 30 of which must apply towards the degree. For more information and a schedule of courses visit [www.wne.edu/bba/](http://www.wne.edu/bba/).

## Graduate Admissions

### How to Apply for Admission

Admission to all graduate degree programs at Western New England University requires an earned baccalaureate from an accredited college or university and additional materials as described below. Applicants to a number of the master's programs may be admitted for any term on a rolling admissions basis. However, some graduate programs will have specific entry points for when candidates will begin their studies. Please reference the graduate studies website for further information. MEEE candidates who wish to complete the program in two years are encouraged to start during the fall term. This is due to the sequential offering of courses. The application process and admission to the JD and LLM programs in the School of Law are described in materials available directly from the School of Law.

**Graduate Transfer Credit.** Students who have earned graduate credit before they apply to Western New England University may request the transfer of a maximum of six credit hours for 30-credit master's programs or 12 credit hours for master's programs comprising at least 36 credits. The minimum required grade for transfer is B (3.0). Final award of graduate transfer credit is at the discretion of the dean responsible for the applicant's degree program.

**Credit Earned in Nondegree Graduate Status.** Graduate credit earned at Western New England University in nondegree graduate status may be applied toward graduate degree requirements up to a normal limit of six credit hours. The minimum grade is B (3.0).

**Time Limits.** Accepted graduate credits may be applied toward graduate degree requirements for no more than eight years. For example, an acceptable graduate course completed in the fall term of 2015 counts toward graduation only until the end of the 2023 summer term.

#### Application Procedures for Graduate Programs:

1. Obtain an application for graduate degree programs from the Admissions Office or electronically from the Graduate Studies and Adult Learning homepage at [www.wne.edu/graduatestudies](http://www.wne.edu/graduatestudies)
2. Submit a completed, signed application for graduate admission with the required fee to the Admissions Office.
3. Arrange to have official college and university transcripts sent directly from all institutions attended.
4. Arrange to have other documents, such as letters of recommendation or official test score reports, sent directly from the reporting person or agency as described below for the specific degree programs.
5. Completed applications are reviewed by the Graduate Admissions Committee of the appropriate college.
6. Applicants for graduate certificate programs should contact the Admissions Office for application procedures.

#### College of Arts and Sciences

##### Master of Arts in Mathematics For Teachers and Master of Arts in English for Teachers

The Master of Arts in Mathematics for Teachers (MAMT) and Master of Arts in English for Teachers (MAET) programs are designed primarily for secondary and middle school teachers in the specific disciplines. These programs are also available to candidates with an interest in further study in either mathematics or English in nonteaching fields.

The requirements for the MAMT and MAET degrees are:

1. a baccalaureate degree from an accredited college or university;
2. an overall undergraduate grade point average (GPA) of at least 2.5 (a GPA of 3.0 in the major is preferred for both programs);
3. an academic or professional background equivalent to at least a minor in mathematics for the MAMT program or in English for the MAET program. Further, it is preferable that applicants have either a Provisional or Initial License in teaching. Applicants lacking an undergraduate major in mathematics or English may have to take more than ten courses in order to complete the corresponding program;
4. a minimum of two letters of recommendation, at least one of which must be from the candidate's supervisor;
5. a current curriculum vitae; and
6. submission of a personal statement.

Applicants who do not meet the GPA requirement or GRE requirement may be considered for admission based on other aspects of their application.

#### **Master of Education in Elementary Education**

The Master of Education in Elementary Education (MEEE) program is designed primarily for elementary teachers who hold an initial license in the field.

The requirements for the MEEE are:

1. a baccalaureate degree from an accredited college or university;
2. an overall undergraduate grade point average of at least 2.8;
3. an Initial License for elementary teaching from the Commonwealth of Massachusetts;
4. two letters of recommendation, at least one of which must be from the candidate's supervisor;
5. a current curriculum vitae; and
6. submission of a personal statement.

Admission to all three programs will be based on the candidate's previous academic records, present and potential performance in teaching, and letters of reference.

Candidates desiring to take courses without the initial intent of pursuing the degrees can request tentative status, which allows them to take up to two courses in the desired program. A tentative status student upon completion of the two courses either must formally apply for admittance to the program or formally indicate no degree intent in order to continue taking courses in the program. Requests for nondegree study beyond the two course limit must be approved by the dean of the College of Arts and Sciences. Nondegree participants in the Elementary Education program must have a bachelor's degree from a regionally accredited college or university with a minimum 2.5 overall GPA.

#### **Master of Education in Curriculum and Instruction**

The Master of Education in Curriculum and Instruction program is designed primarily for elementary or secondary teachers who hold a teaching license or certificate, however, it is also available to teachers who have an interest in graduate study in any of the areas covered by our courses.

The requirements for the MED in Curriculum and Instruction are:

1. completion of a baccalaureate from an accredited institution, preferably in a field related to education;
2. an overall undergraduate grade point average of at least 2.8;
3. previous teaching, administrative or experience in other educational roles is desired but not required;
4. two recommendation letters, at least one of which must be from the candidate's supervisor and speak directly to the applicant's intellectual capacity and ability to be successful in master's level work;
5. a current curriculum vitae; and
6. a typed, one-page, single-spaced personal statement articulating your reasons for pursuing graduate study in education and how the degree will help you attain your personal goals.

#### **Master of Fine Arts in Creative Writing (Fiction)**

The Master of Fine Arts (MFA) in Creative Writing is a low-residency two-year program that combines bi-annual, short-term residencies with individualized online study. Established authors teach students how to read and think about fiction from a creator's perspective. The MFA covers all aspects of fiction writing – including sentence craft, voice development, honing dialogue, and shaping beginnings, middles and endings. The requirements for the MFA are:

1. a baccalaureate degree from an accredited college or university;
2. a fiction writing sample. The writing sample should be up to 15 pages, typewritten, singled sided, and double-spaced;
3. a typewritten personal narrative (up to 500 words) that describes the tradition of fiction that inspires your work; and
4. two letters of recommendation.

#### **Master of Science in Applied Behavior Analysis**

Developed in response to the increasing demand for teachers and practitioners trained in best practices for the education and treatment of individuals with autism and related disabilities, the Master of Science Program in Applied Behavior Analysis at Western New England University will give working professionals the skills needed to work with this population. Through a combination of coursework and supervised practical experiences, students completing this program will earn a Master's degree in Applied Behavior Analysis and meet the Behavior Analysis Certification Board (BACB) requirements for taking the exam to become Board Certified Behavior Analysts.

The requirements for the MS in Applied Behavior Analysis are:

1. a minimum of a bachelor's degree, and at least a 3.0 grade point average in their bachelor's program;
2. a combined score of 1000 on the verbal and quantitative sections of the GRE;
3. three letters of recommendation;
4. submission of a personal statement; and
5. a current curriculum vitae.

#### **Master of Arts in Communication**

The online Master of Arts in Communication with a Public Relations Concentration is designed to help communications professionals take full advantage of today's integrated media opportunities to position,

promote, and protect the image of their organizations. The online MA in Communication program is ideal for individuals who are looking to further their communication or business career, gain new skills to increase their earning potential, and enhance job satisfaction, as well as career-changing professionals interested in pursuing opportunities in communication.

The requirements for the MA in Communication are:

1. a baccalaureate degree from an accredited college or university, ideally but not necessarily in one of the following disciplines: business, communication, English, journalism, marketing, or public relations;
2. an overall undergraduate grade point average of at least 3.0. Candidates with an undergraduate GPA between 2.5 and 3.0 (on a 4.0 scale) will be considered for conditional admittance;
3. three letters of recommendation; and
4. a personal essay of no less than 500 words articulating reasons for pursuing graduate study in communication.

### **Doctor of Philosophy in Behavior Analysis**

Developed in response to the increasing demand for scientists and practitioners of evidence-based methods for the education and treatment of individuals with autism and related disabilities, the Ph.D. program in Behavior Analysis at Western New England University will give you the skills to become a leading voice in the field. Through a combination of coursework and supervised practical and research experiences, the aim of the Department of Psychology is to train researchers and scientist-practitioners in the discovery, translation, and application of knowledge toward solving human behavior problems of societal importance (e.g., autism and related disabilities). All classroom course work is done at the New England Center for Children.

The requirements for the Ph.D. in Behavior Analysis are:

1. A master's degree in behavior analysis, or certification as a master's-level behavior analyst by the Behavior Analysis Certification Board;
2. A minimum of a 3.6 grade point average (GPA) in master's degree program. (Tentative acceptance is allowed for having a GPA between 3.25 and 3.6, if other criteria are above minimal criteria.);
3. A combined verbal and quantitative score of 300 on the Graduate Record Exam (GRE) with neither score being below 150 for full admission (Tentative admission is allowed if either score is less than 150, if other criteria are above minimal criteria.);
4. Three letters of recommendation;
5. Submission of a personal statement; and
6. A current curriculum vitae.

### *College of Business*

For the Master of Business Administration (MBA), the Master of Science in Accounting (MSA) and the Master of Science in Organizational Leadership (MSOL) degrees the requirements are:

1. A baccalaureate degree from an accredited college or university.
2. An official score report for the Graduate Management Admissions Test (GMAT) taken not more than five years prior to the application date, or satisfaction of exemption as indicated below:
  - a. The completion of a graduate degree, master's, or doctorate, from an accredited college or university with quantitative coursework (six or more credits), averaging a GPA of 3.0 or higher.
  - b. Completion of a bachelor's degree from Western New England University or an AACSB accredited program with a GPA of 3.3 or higher. If you attended multiple institutions, your GPA will be based on the cumulative GPA of all institutions attended. The waiver will be granted if your earned bachelor's degree is no more than five years prior to your application date. In order to be eligible for the waiver, if you have taken Western New England University Graduate courses as an undergraduate, you must have a minimum "B" or 3.0 in EACH course (NOTE: Tentative GMAT Waiver and Admit Status: While finishing your Western New England University Degree, you must maintain an undergraduate GPA of 3.3 and a minimum of "B" or 3.0 in EACH Western New England Graduate Course if Tentatively Admitted during senior year.)
  - c. Completion of a Juris Doctor degree from an ABA accredited program.
  - d. Acceptable Graduate Record Examination (GRE) score.
  - e. Currently enrolled in the Western New England University School of Law JD program in good academic standing. Arrange for a copy of LSAT report to be sent from the School of Law to the Admissions Office.
  - f. Have passed all sections of the Uniform CPA Exam.
  - g. Current professional certification. Approved professional certifications: Certified Public Accountant (any state), Certified Management Accountant, Certified Network Engineer, Certified Professional Engineer, Certified Integrated Resource Manager, Certified in Production and Inventory Management, Certified Financial Planner, Certified Financial Analyst, Certified in Financial Management, Registered Pharmacist, Project Management Professional, Registered Nurse, Six Sigma Green Belt or higher, Fellow of Society of Actuaries.
  - h. A minimum of four years of professional experience which is reflected in a resume and written statement that demonstrates:
    - Career progression toward senior levels of management (Evidence of leadership, supervisory, and decision-making skills)
    - Increasing Budgetary Responsibilities (Not tracking but oversight, planning, and revenue forecasting and resource allocation)
  - i. For the MSOL, successful completion of the Leadership Certificate with a B (3.0) GPA and no grade lower than "B-."
3. Two letters of recommendation
4. Submission of two essays
5. A current curriculum vitae

For the Graduate Leadership Certificate, the requirements are:

1. An undergraduate degree with GPA of 3.0 or higher

## 2. Personal statement

### *College of Engineering*

For programs leading to the Master of Science in Engineering Management (MSEM), the Master of Science in Electrical Engineering (MSEE), the Master of Science in Mechanical Engineering (MSME), the requirements are:

1. the graduate programs in engineering require a baccalaureate degree in engineering, or a closely related field, from an accredited college or university. Those seeking admission to the master's programs without such a degree may petition to have their baccalaureate degree and professional experience accepted as a substitute;
2. a grade point average in the last half (usually 60 credit hours) of undergraduate work of a minimum of B (3.0);
3. two letters of recommendation from persons acquainted with the applicant's business, professional, or academic achievements;
4. current curriculum vitae; and
5. students with an undergraduate program not accredited by ABET are encouraged to submit a GRE score from the past five years.

### **Doctoral Program in Engineering Management**

#### **General Information**

The Doctor of Philosophy (Ph.D.) focuses on developing skills needed to conduct rigorous research in areas related to the improvement, design, and management of projects and programs within complex human-technological systems. These systems include engineering systems, health care systems, service systems and logistical/transportation systems. Through a combination of coursework and directed research the Department of Industrial Engineering and Engineering Management will provide a solid foundation and depth of engineering management theory and practice, provide breadth and depth across multiple types of human technological systems, and to contribute to the body and knowledge in engineering management.

The requirements for the Ph.D. in Engineering Management are:

1. possession (or nearing the completion) of a master's or bachelor's degree in engineering, or a closely related discipline (Non-engineer applicants may gain conditional admittance that requires successful completion (B or better) of a set of leveling courses as determined by the Ph.D. Admission Committee).
2. competence in at least one structured programming language: (i.e. C, C++, FORTRAN, Visual BASIC,...)
3. evidence of completion of the following course(C or better); Probability and Statistics
4. a minimum cumulative grade point average of a 3.5 in all graduate work or a minimum undergraduate cumulative grade point average of a 3.5. Tentative acceptance is allowed for candidates having a GPA between 3.0 and 3.5; and
5. a Graduate Record Exam (GRE) score from the last five years with a combined verbal and quantitative score of 300 with a quantitative score in at least the 50th percentile.

### *School of Law*

**School of Law.** The School of Law offers full- and part-time JD programs designed to be completed in three and four years respectively. A total of 88 academic credits is required for graduation.

Additional information and an application form are available by contacting:

Admissions Office  
Western New England University School of Law  
1215 Wilbraham Road  
Springfield, MA 01119  
800-782-6665, or email: [admissions@law.wne.edu](mailto:admissions@law.wne.edu)

It also offers a part-time LLM program in Estate Planning and Elder Law designed to be completed in two or three years. The programs offered online. A total of 24 academic credits is required for graduation. Additional information and an application form are available by contacting:

LLM Admissions Office  
Western New England University School of Law  
1215 Wilbraham Road  
Springfield, MA 01119  
413-782-1426, or email: [calexander@law.wne.edu](mailto:calexander@law.wne.edu)

#### **How Graduate Admission Decisions Are Made**

The admission decision is based on the applicant's undergraduate academic performance in combination with other evidence, such as official test scores submitted as part of the application. Applicants judged by the graduate admissions committee to be deficient in verbal, quantitative, or general academic preparation may be granted permission to register at the discretion of the committee. These students are allowed to take up to two courses as a nondegree student. Upon satisfying specified conditions a student will be reconsidered for admission. Conditions may include, but are not limited to, satisfactory completion of prerequisite courses; demonstrated academic performance in graduate courses at Western New England University; and satisfactory completion of undergraduate English and/or mathematics courses.

### *School of Law*

Admission to the JD program in the School of Law is dependent upon an applicant's performance on the Law School Admissions Test (LSAT), undergraduate grade point average, and other information that would assist the Admissions Committee in assessing the applicant's ability to pursue a career in legal education. College courses that improve an applicant's writing, analytical, and critical thinking skills are especially important.

*Combined JD/MBA (Juris Doctor/Master of Business Administration) Degree, JD/MSA (Master of Science in Accounting), and JD/MSOL (Master of Science in Organizational Leadership)*

Candidates for this program are required to apply to both the MBA, MSA, or MSOL program through the College of Business and the JD program through the School of Law.

*Combined PharmD/MBA and PharmD/MSOL*

Candidates for the program are required to apply to both the MBA or the MSOL through the College of Business and the PharmD program through the College of Pharmacy.

*Combined MSEM/MBA (Master of Science in Engineering Management/Master of Business Administration) Degree*

Candidates for this program are required to apply to both the MSEM program through the College of Engineering and the MBA program through the College of Business.

**Graduate Program Status Categories**

Applicants to graduate programs in Arts and Sciences, Business, and Engineering at Western New England University can be admitted in one of the following categories.

*Degree Status*

Students who are admitted as fully qualified to undertake a program leading toward a degree are termed degree status students.

*Tentative Status*

Students may be permitted to enroll in courses leading to a degree under tentative status before the application and evaluation process is complete. The tentative status is valid for a maximum of seven credits in the first term or two consecutive terms of no more than four credits each. Upon the conclusion of the tentative status period, the student's application and academic record will be evaluated. The evaluation will result in termination, admission to degree status, or admission to nondegree status.

*Nondegree Status*

Students who wish to take graduate courses outside of a degree program may be approved as nondegree status students. Nondegree status students do not require as much supporting documentation but are required to provide proof of a baccalaureate degree from an accredited college or university. They may take courses subject to space availability and an advisor's approval. Continuing registration requires minimum grades of B (3.0) in all Western New England University graduate courses. Nondegree students may apply a maximum of seven credits toward a degree if they complete the application process and are accepted as degree status students. Nondegree status students who take more than seven credits and complete the requirements for a certificate may apply for degree status and, upon their acceptance into a degree program, all courses common to both the certificate and the degree will be applied to the degree.

## **Nondegree Status**

### **How to Register for Courses Taken in Nondegree Status**

The University offers nondegree enrollment for students who wish to explore undergraduate or graduate study and earn credit before they are formally admitted to a degree program, and for visiting students from other institutions. Academic requirements may change over time so that courses completed in the nondegree status may not be applicable to the program chosen at the time of matriculation. Nondegree students are not eligible for most types of financial aid.

### **Certificate Programs**

Western New England University makes several Certificate Programs available to those who do not want a degree, but who want specialized training that goes beyond a few courses in a subject.

There are undergraduate certificate (p. 169) programs in chemistry and communication. There are graduate certificate (p. 315) programs in engineering, leadership (p. 309) and a certificate in Applied Behavior Analysis (p. 295).

Information is available through the Admissions Office.

### **Undergraduate Nondegree Study**

Permission to register requires proof of high school graduation or its equivalent. Continuing registration normally requires a cumulative grade point average of C (2.0) in courses taken at the University. Nondegree students must satisfy published course prerequisites and may be required to submit official transcripts as proof of appropriate preparation. Advising of nondegree students is provided through the colleges.

### **Graduate Nondegree Study**

Please refer to Nondegree Status (p. 14).

## UNDERGRADUATE ACADEMIC INFORMATION

### Undergraduate Policies, Procedures, and Requirements for Degrees

#### Basic Structure of the Undergraduate Degree

At Western New England University, students typically enroll in programs designed to be completed in four academic years. Bachelor's degrees are earned by completing at least 122 credit hours in a structured program, though undergraduate degrees in engineering and certain other degree programs can require up to 132 credit hours.

#### Course Loads

The University considers 12-17 credit hours per semester to constitute a normal course load for full-time students. Students who have earned Dean's List standing in the previous semester may enroll for 18 credit hours without special permission. In other cases, each request for enrollment for 18 or more credit hours per semester requires the recommendation of the student's advisor and approval by the dean of the academic college in which the student is enrolled. First year students require the approval of the Dean of First Year Students & Students in Transition.

#### Online Course Load

Full-time undergraduate students at Western New England University, in order to experience a wide range of pedagogy, are allowed to register for no more than one online course per semester of the regular academic year. Online courses can only be taken after the freshman year. There is no restriction to the number of online courses/credits a full-time student can apply toward a degree provided the courses are equivalent to Western New England University courses.

Exceptions are at the discretion of the Provost after consultation with student's faculty advisor, the department chairperson of the student's major, and/or the Dean of the College of the student's major.

#### Credit Hours System

Credit in all programs is awarded in accordance with regional accreditation standards based upon the Carnegie classification system. In that system one credit hour is earned for attending one 50-minute lecture each week for the typical 15-week semester. Thus, a three-credit-hour course meets, typically, for 50 minutes three times per week for 15 weeks or for 75 minutes twice a week for 15 weeks. Some evening courses meet only once a week for 160 minutes. In the usual 122 credit hour degree program students complete ten three-credit-hour courses per year and the two-credit-hour requirement in physical education, health, and recreation (PEHR).

#### Class Standing Designations

Students are designated as either freshman, sophomore, junior, or senior in accordance with the number of credit hours they have completed at the University in a structured degree program.

**Freshman:** 26 credit hours or fewer (27 credit hours in the College of Engineering).

**Sophomore:** 27-56 credit hours completed (28-61 credit hours in the College of Engineering).

**Junior:** 57-86 credit hours completed (62-94 credit hours in the College of Engineering).

**Senior:** 87 credit hours or more completed (95 or more credit hours in the College of Engineering).

#### Relationship of Course Designation Numbers to Stages in Curricula

All courses in the catalogue have course designation numbers. In general, the numbers designate the level of the course offering within a four-year curriculum and within a major program of study.

Freshman courses are numbered:

100 to 199 Lower Division

Sophomore courses are numbered:

200 to 299 Lower Division

Junior and Senior courses are numbered:

300 to 499 Upper Division

Major programs of study typically consist of one or two 100 level courses and two or three 200 level courses taken as prerequisites in the freshman and sophomore years, and the remaining 300 and 400 level courses taken in the junior and senior years.

#### Components of a Typical Undergraduate Degree

A student continually enrolled, with no interruption of academic program longer than one semester's absence, is expected to fulfill the requirements of the catalogue current at the time of admission to the University. A student not continually enrolled may be expected to meet the requirements current at the time of reactivation.

The courses required for a degree differ with the choice of major program and the college within which that program is offered. All students are subject to three classifications of course requirements:

1. General University requirements
2. College requirements designed to broaden and deepen students' knowledge of disciplines outside of their majors.
3. The requirements of a major

#### Qualifications for a Baccalaureate Degree

In order to qualify for a baccalaureate degree a student must:

1. Comply with the entrance requirements for normal matriculation.
2. Meet the attendance requirement.
3. Receive passing grades in all courses required for the degree.
4. Attain a minimum grade point average of 2.0 for the entire curriculum. (Transfer students must maintain a 2.0 average in courses taken at the University. Transfer hours are not included in determining the Western New England University grade point average.)
5. Attain a minimum grade point average of 2.0 in the major.
6. Complete at least 30 credit hours at Western New England University.
7. Complete at least 24 of the last 30 credit hours used in satisfaction of the degree requirements with courses offered by programs of Western New England University.
8. Complete an Application for Degree form, which will place the student's name on the list for October, February, May, or August degree conferral, as appropriate.

### *Qualifications for a Second Baccalaureate Degree*

In order to qualify for a second baccalaureate degree, a student must:

1. Complete thirty (30) additional hours
2. Meet the new requirements for the second degree
3. Allow a year to lapse between the awarding of the first degree and the second degree

When a student wishes to return for a second degree:

1. Student may return to the same College by simply requesting the same from Academic Dean
2. Student may transfer to a different College by using the Change of Major form. In this instance, the previous dean will indicate the degree already earned.
3. Academic honors for the first degree will be based on the first 120 hours completed, or will be determined at the end of that semester in which the student completes 120 hours and fulfills the requirements for graduation.
4. Student may not earn academic honors for a second degree.

### *Award of Degrees Policy*

The University does not guarantee the award of a degree or a certificate of satisfactory completion of any course of study or training program to students enrolled in any instructional or training program. The award of degrees and certificates of satisfactory completion is conditioned upon satisfaction of all current degree and instructional requirements at the time of such award, compliance with all University policies and regulations, as well as meeting bona fide expectations of the faculty.

### *Academic Advising and Student Responsibilities*

Academic advising at Western New England University is framed against the University Mission Statement and is guided by a commitment to student academic progress and personal growth. Specifically, advising is intended to enhance and support student learning in an atmosphere of personal concern. Advising seeks to engage intellectual growth and self-discovery, and is carried out through a consistent exchange between student and advisor. That shared relationship thereby attempts to prompt students to develop decision making skills, set realistic expectations, and practice the necessary coping strategies to attain their educational, life, and career goals.

Each full-time student is assigned a faculty advisor. In the freshman year of full-time study, the academic advisor is normally assigned on the basis of enrollment in First Year Seminar. After the sophomore year and beyond, students are normally assigned or may choose an advisor according to the academic department in which the student's major is contained. Students who are undecided remain with their current advisor or are assigned to the Academic Support Center (Campus Center Room 137, or 413.796.2027) until a major is declared. Academic advising is provided for part-time students through the appropriate college. Although the advisor should be consulted on matters of curriculum, the ultimate responsibility for decision on the student's program of study remains with the student. Furthermore, each student holds the ultimate responsibility to understand degree requirements and to plan for orderly fulfillment.

It is important that students work with their academic advisors to develop an academic plan enabling them to complete many of the fundamental General University Requirements by the end of the

sophomore, or second, full year of study. While this may not always be possible due to schedule limitations of certain programs or other schedule anomalies, students should strive to acquire the prerequisite skills and knowledge necessary to succeed in their major programs. For example, students will need to have skills in research and writing in order to understand and complete assignments in upper division courses in and outside of their major fields of study. Students should also consult their advisor to choose elective courses that both broaden and deepen their knowledge of disciplines that are important for success and well being beyond the University experience.

### *Degree Audit*

An automated degree requirement system, known as a Degree Audit, assists students and advisors in assessing the progress of a student's program of study. It enables students and advisors to project the orderly fulfillment of their curriculum plan. It includes a record of all the student's courses completed to date and their courses in progress, and serves as an unofficial projection of courses remaining in a degree program.

A Degree Audit can also be used to determine the progress status of degree programs other than the currently declared major. In other words, if a marketing major wants to determine the viability of becoming a management major, a trial Degree Audit can be retrieved and populated with all courses taken to date by a student, along with the remaining degree requirements.

While a Degree Audit is a useful tool for planning the orderly fulfillment of degree requirements, students and advisors must realize it is not a replacement for the official academic transcript, nor should it be used as a substitute for verifying official degree requirements. The University catalogue that the student has matriculated under, is the primary source.

### *Policies and Procedures*

#### *Student Contact Data*

Students are obliged to provide and maintain basic contact data such as permanent and local address, local telephone or cell phone, and an active email account if the account is other than the email provided by the University. This information shall be updated as necessary but must be provided prior to course registration each semester.

#### *Student Schedules, Registration, and Adding or Dropping Courses*

In order to register for classes, the student typically meets with a faculty advisor to discuss the student's selection of courses. Consultation with a faculty advisor is required to initiate the course registration process. If the advisor is not available, students may seek consultation with the corresponding assistant dean. First year students may also consult with the Office of First Year Students & Students in Transition.

Once registration has been completed, students are expected to consult with the advisor (or Dean's Office if advisor is not available) before any additions, deletions, or changes can be made in the student's schedule. All changes must be reviewed by the advisor or dean. Changes also need to comply with established deadlines to add and/or drop a course. Instructor approval must also be obtained to add a class after it has met for the equivalent of one week.

For any change of schedule to be valid (after the first week of classes), including course withdrawals, the student must submit a schedule change form to Student Administrative Services (SAS). Absence from class or notifying the instructor without completing the drop form does not constitute withdrawal from a course.

### *English and Mathematics Assessment*

In an effort to encourage student success, assessment in both English and Mathematics is required for all first year and transfer students prior to completion of course registration. Appropriate recommendations are then provided for course selection and registration, awarding of transfer credit and/or additional support services.

### *Course Offerings*

Western New England University attempts to offer the widest possible selection of courses each year, but the University reserves the right to withdraw, modify, or add to the courses offered, or to change the order of courses in curricula as circumstances warrant.

The University further reserves the right to cancel under-enrolled courses. Students affected by such cancellations will be permitted to choose another course. In cases where other courses cannot be substituted, students may be permitted to waive requirements or receive full or partial refunds of tuition and other fees. The University also reserves the right to change the requirements for graduation, the tuition, and the fees charged as circumstances dictate and needs arise.

### *Modifying a Student's Major Degree Program*

Any modification or change to a student's major degree program requires the written permission of the student's academic dean. The waiver/substitution form may be obtained in the student's academic dean's office.

Concurrent registration in more than one academic program leading to separate degrees is not allowed without the written permission of the appropriate academic dean. Permissions forms may be obtained in the student's academic dean's office.

### *Change of Student's Curriculum/Major*

Changing a student's degree program/curriculum/major within the same college or changing a student's curriculum/major to a different college, requires the completion of a "Change of Major". The form is available online or in the student's academic dean's office.

Selection of a new, or additional major (2nd major) and/or a minor, may change projected graduation date. Although the academic advisor should be consulted on matters of curriculum, the ultimate responsibility for decisions on the student's program of study remains with the student. Furthermore, each student holds the ultimate responsibility to understand degree requirements and to plan for orderly fulfillment.

Changing a degree program may result in assignment to the catalogue requirements in effect at the time of the change.

### *Taking Coursework at Another College*

Coursework towards a student's degree program may be pursued elsewhere only with the prior written permission of the student's academic dean. Permission forms are available in the student's academic dean's office. An official copy of the transcript needs to be sent to Student Administrative Services Office (SAS) upon completion of the prior approved coursework.

### *Integrity of Scholarship*

Honesty in all academic work is expected of every student. This means giving one's own answers in any and all coursework, including but not limited to homework, quizzes, and examinations without help from any source not approved by the instructor. Written material is to be the student's original composition. Appropriate credit must be given for outside sources from which ideas, language, or quotations are derived.

Additional information on academic dishonesty may be found in the Student Handbook and the Academic Integrity Booklet.

### *Attendance*

Students are expected to attend all class sessions for courses in which they are enrolled. However, it is the responsibility of the individual instructor to evaluate the importance of attendance in determination of course grades.

Accordingly, at the beginning of each semester, each instructor prepares a written statement setting forth the policy for consideration of absences, makeup examinations, and related matters, that will be in effect for that entire semester. The statement of policy on attendance, appropriate to each class, is made available at the first class meeting.

It is especially important for freshman students to establish the discipline of attending all classes and laboratories and to be properly prepared by having done all assigned reading and homework. It can be easily demonstrated that students who fail to attend class do not succeed in college.

### *Midyear and Final Examinations*

Midyear examinations are given at the discretion of the faculty member teaching the course. The normal pattern is that final examinations are given in all courses in accordance with a schedule published by the Academic Schedule Office. In case an instructor decides not to give a final examination, the instructor must inform the college's Dean.

Final examinations must be given on the date and at the time scheduled by the Academic Schedule Office unless other arrangements have been approved by the college's dean and forwarded to the Academic Schedule Office. Under no circumstances are final examinations to be administered during the final week of classes. Further, during the last week of classes, hour examinations are permitted only in those courses where there is a final examination, semester paper, or semester project requirement due the week of final examinations. The chair of each department is responsible for the adherence of the latter policy by all members of the department. In addition, no examinations or quizzes shall be administered the last day of classes (if it falls on Monday) or on the last two scheduled days of classes (if the last day of classes falls on Tuesday or thereafter). This policy does not in any way relieve the student of responsibility for material covered in the last days of classes.

The faculty member in each course in which students are enrolled determines the value and weight of a final examination. All final examinations are given at the end of the semester according to a predetermined schedule. The anticipated schedule is normally published at the beginning of each semester. Students should note the exam schedule when arranging travel plans for departure at the end of the semester.

When preparing the exam schedule, every attempt is made to avoid scheduling more than two exams for each student in any given day. Should this situation occur, however, the Faculty Senate has adopted a policy to assist students in managing the conflict. In the case of a student who is scheduled for three final examinations on one day, the examination in the middle time is expected to be rescheduled at the convenience of both the student and the faculty member. The student must give notice to the faculty member of the middle exam no later than 10 days prior to the start of the examination period for that semester.

There are two exceptions, however, to the middle exam solution. The first is that if the student can move any of the three examinations to the examination for another section of the same course taught by the

same instructor, he or she must make that request of the faculty member if the move does not cause another conflict. The second exception is that if the middle examination is a common examination (multiple sections of the course all taking the same exam), one of the other two remaining exams will be rescheduled by joint agreement between the two faculty members. The student should make the conflict known to both faculty involved. If an agreement cannot be reached, a decision will be jointly made by the Deans of the Colleges in which these two courses are housed.

The final exam schedule is posted on the Academic Schedule Office's website, [www1.wne.edu/academicschedule](http://www1.wne.edu/academicschedule) and ASAP.

### *Interpretation of the Grading System*

The work of each student is graded according to the following scale. Figures indicate grade point equivalents:

Superior	A (4.0)	A- (3.7)	
Above Average	B+ (3.3)	B (3.0)	B- (2.7)
Average	C+ (2.3)	C (2.0)	C- (1.7)
Passing	D+ (1.3)	D (1.0)	
Failure	F (0)		

In certain courses (ED 380, MATH 130, SW 314, SW 409, SW 410, SW 411 and SW 412) a grade of "P" (Pass) is assigned if the course is satisfactorily completed. "P" has no grade point equivalent.

### *Repeating a Course*

Any course in which a grade of less than "C" was received may be repeated at any time during the student's enrollment at Western New England University. The official transcript shows the complete record, but the grade point average is computed on the basis of the most recent earned grade in each course. Credit for the course is awarded only once. This policy is noted when a transcript is sent out. In cases where a course grade of "F" has been assigned as a penalty for gross academic dishonesty, a student may not replace that grade in the cumulative GPA. The student may retake the course, but the resulting grade is counted as a separate course.

### *Incomplete Work*

I (Incomplete) — This grade is awarded only when work is not completed due to circumstances beyond the student's control (such as severe illness). The student has six weeks from the last day of final examinations to satisfy course requirements. Extensions may be granted only for continued circumstances beyond the student's control and must be approved by the instructor and the Dean of the college. The "I," which can be resolved only by the instructor, carries a grade point equivalent of 0.0. The "I" becomes an "F" for work not completed after six weeks or by the conclusion of an approved extension period.

### *Withdrawal from a Course*

To withdraw from a course, the student must obtain the advisor's or the Dean's signature on the course withdrawal form available from the Student Administrative Services (SAS) office. Absence from class without completing the form does not constitute withdrawal and may result in a failing grade. (See section on Withdrawals and Refunds (p. 352) regarding payments.)

W (Withdraw) – If the student withdraws from a course within the first two weeks, no grade is assigned. If a student withdraws after the

second week of classes, but prior to the last withdrawal date published in the final schedule for that semester, a "W" is assigned. However, a student may not receive a grade of "W" to avoid the consequences of a breach of academic integrity. A grade of "W" carries no academic penalty or prejudice.

### *Withdrawal from the University*

If it becomes necessary for full time degree students to withdraw or request a leave of absence from the University, an official form must be completed and filed with the Academic Support Center. This form will be made part of the permanent record maintained in Student Administrative Services (SAS). Prior to completing the withdrawal form, students are expected to consult with the Dean of First Year Students & Students in Transition in order to complete a formal exit interview. When such conditions as severe illness or absence from the area prevent a student from filing the withdrawal form in person, an application for withdrawal by mail is acceptable. A letter should state the reasons necessitating the withdrawal and should be mailed to the Dean of First Year Students. In the case of part-time or graduate students, withdrawal forms are filed with the academic dean's office of the college in which the student's major is administered. The date recorded by the reviewing administrator is considered to be the date of withdrawal. (See the section on Procedure for Withdrawing (p. 352).)

### *President's List and Dean's List*

To be placed on the President's List, a full-time student must be enrolled in courses carrying a minimum of 12 credit hours and achieve a semester grade point average of 3.80 or above.

A part-time student may qualify for the President's List by carrying a minimum of 12 credit hours cumulatively for the academic year and achieving a grade point average of 3.80 or above.

To be placed on the Dean's List, a full-time student must be enrolled in courses carrying a minimum of 12 credit hours and achieve a semester grade point average of 3.30 or above.

A part-time student may qualify for the Dean's List by carrying a minimum of 12 credit hours cumulatively for the academic year and achieving a grade point average of 3.30 or above.

### *Honors*

Honors are awarded at graduation for superior scholastic attainment. Students are recommended for honors if, in addition to satisfying all other requirements for the degree, they have completed a minimum of 60 credit hours at the University and have earned the required grade point average:

Cum Laude requires a grade point average of at least 3.30

Magna Cum Laude requires a grade point average of at least 3.60

Summa Cum Laude requires a grade point average of at least 3.80

Students who graduate with between 45 and 59 credit hours completed at the University and who have a grade point average in those courses of 3.50 or higher graduate "With Honors".

### *Academic Progress: Probation, Suspension, and Dismissal*

Student academic progress is reviewed each semester to assure consistency with defined standards. For the purpose of review, the number of credit hours specified in the standards is normally based on credits completed at Western New England University.

Full-time degree students with fewer than 24 credit hours attempted (excluding AP or high school to college credits) will be automatically placed on academic probation if they attain less than a 1.9 semester

grade point average at the end of their first term of enrollment. Part-time students must sustain a 2.00 cumulative GPA after the first 24 credit hours. Nondegree students must sustain at least a 2.00 cumulative average in order to continue registration beyond the first semester of enrollment.

Full-time degree students with fewer than 24 credit hours who attain less than a 1.00 or successfully complete less than 9 credits at the end of the first term of enrollment shall be automatically suspended for a period of one semester except as may be approved by the Dean of First Year Students & Students in Transition. Following any period of suspension, students may petition for reinstatement by submitting a request to the Dean of First Year Students & Students in Transition who will forward a recommendation to the appropriate Assistant Dean of Arts and Science, Business, or Engineering for approval.

Any full-time degree student whose first semester GPA results in being placed on probation must contact the Dean of First Year Students & Students in Transition prior to the date set forth in the notice of probation for the purpose of initiating an academic improvement plan. The academic improvement plan is meant to establish the conditions that the student must meet to continue at the University. After the first 24 semester hours attempted, part-time, nontraditional and off-campus students must initiate contact for the same purpose with appropriate academic administrative staff within one week of the release of grades from the previous semester or term. If after establishing an academic improvement plan, the student does not comply with the prescribed conditions of continuance, the student may be subject to immediate suspension or dismissal from the University with the right of appeal to the Academic Standards Committee. Any student who does not confer within the prescribed time listed in the original notification of academic standing shall be immediately suspended from the University for a period of one semester.

After the completion of the second semester of full time enrollment or after the first 24 credit hours of work attempted as a part-time student, students shall be automatically placed on academic probation if a semester GPA of less than 2.00 is earned. Unless otherwise approved, full-time students must also successfully complete 10 or more credits during each semester of full-time enrollment. Otherwise probation shall be automatically imposed. Once placed on probation, a student must confer with the Assistant Dean of the appropriate College or Dean of First Year Students & Students in Transition or other named staff prior to the end of the first week of classes of the next semester for the purpose of defining an academic improvement plan. The academic improvement plan shall be filed in the same manner and under the same conditions as would occur after the first semester of enrollment. If conditions stipulated in an academic improvement plan are not met, the student shall be suspended for a period of one semester with the right of appeal to the Academic Standards Committee.

A student on probation must achieve a minimum of a 2.00 semester grade point average during the next semester of enrollment and adhere to the completion of the specified number of credits determined at the time of review. If a 2.00 is not achieved or the minimum number of credits is not earned, the student shall be suspended for a period of not less than one semester with the right of appeal to the Academic Standards Committee. If the student chooses to appeal, the Academic Standards Committee shall consider the appeal and either impose suspension for a period of time or reinstate the student. In either case, the Academic Standards Committee may elect to specify conditions for future or continued enrollment. If, upon reinstatement, conditions are not fulfilled, permanent dismissal may be imposed immediately and enrollment for the semester voided with no expectation of recourse, financial or otherwise.

Additionally, following the completion of 87 credit hours (Arts and Sciences or Business) or 95 credit hours (Engineering), any student with a cumulative grade point average of less than a 2.00 overall or a 2.00 in the major shall be automatically placed on probation. The student placed on probation shall be referred for academic progress monitoring (p. 344) administered through the Office of First Year Students & Students in Transition (p. 343) prior to the beginning of the probation semester or not later than the end of the first week of classes and enter into a written agreement regarding the conditions upon which the student may continue at the University. If the stipulated conditions are not met, the student shall be suspended from the University with the right of appeal to the Academic Standards Committee.

The Academic Standards Committee shall meet at the end of both the fall and spring semesters to consider academic progress records. Students who have been previously suspended or whose suspension has been lifted through consideration of appeal are subject to dismissal with the right of appeal to the Academic Standards Committee.

When the opportunity to appeal suspension or dismissal for academic reasons is given, students must exercise that option by the date indicated in the written notice. If the option to appeal is not exercised, the intended action specified in the notice (dismissal or suspension) shall be automatically imposed. All matters relating to academic status are made part of the permanent record.

All notices of suspension and dismissal are mailed to the home address of the student by first class mail. A copy of the notice is also sent to the student's faculty advisor and the appropriate assistant dean.

Appeals of Academic Standards Committee decisions are allowed only if new information not previously disclosed is submitted in writing prior to the start of classes for the semester intended. This appeal will be reviewed by the Vice President for Academic Affairs with the resulting decision final and binding and without right of further review.

## Special Academic Opportunities

### Accelerated Five-Year and Six-Year Engineering Programs

#### *Five-Year Bachelor/MBA Program*

This program allows undergraduate students in the Colleges of Arts and Sciences, Business, and Engineering to accelerate the completion of the bachelor's degree and to earn the popular and valuable Master of Business Administration (MBA) degree with just one additional year of study\*.

\*Available to all majors except for Education and Social Work. Engineering majors may be admitted to the program prior to the end of their first year.

#### *Five-Year Bachelor/MSA Program*

This program allows undergraduate accounting majors in the College of Business to accelerate the completion of both the bachelor's and master's degrees in Accounting. Students can earn the Master of Science in Accounting (MSA) degree with just one additional year of study.

#### *Five-Year Bachelor/MSEE Program*

This program allows undergraduate Electrical Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Electrical Engineering (BSEE) and to earn the master's degree in Electrical Engineering (MSEE) with just one additional year of study.

*Five-Year Bachelor/MSEM Program*

This program allows undergraduate Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Engineering and to earn the master's degree in Engineering Management (MSEM) with just one additional year of study.

*Five-Year Bachelor/MSME Program*

This program allows undergraduate Mechanical Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Mechanical Engineering (BSME) and to earn the master's degree in Mechanical Engineering (MSME) with just one additional year of study.

*Accelerated Six-Year Engineering/Law Program***Accelerated Six-Year Engineering/Law Program**

The College of Engineering's accelerated six-year BS/JD program offers qualified engineering students the opportunity to complete both their Bachelor of Science degree in their major area of study and their JD degree at the University in six years instead of seven. To be tentatively accepted into this unique program in the freshman year, students need a minimum SAT Math score of 650 and a minimum Critical Reading SAT score of 650 or ACT equivalent scores of 29 in English, Math, and Composite and a high school GPA of 3.5 or higher. Students not meeting these precollege requirements, but who have demonstrated superior performance in their studies at the University, may petition to be considered for the accelerated degree sequence at the end of their sophomore year.

Students need to maintain a 3.3 undergraduate GPA in order to maintain their tentative acceptance to the School of Law. Following the sophomore year, students take the LSAT and need to score above the 50th percentile of the previous year's matriculating Law School class. During the fourth year, students will be completing their BS degree and begin taking classes at the School of Law. These law classes are offered in the evening so there is no conflict with the engineering courses. The summer following senior year is spent completing the requirements of the first year of law school and puts the student on track to complete the law degree in just two additional years. These final two years of the program follow the standard School of Law timetable.

**Accelerated Six-year Biomedical Engineering/Law Program**

Qualified Biomedical Engineering students have the opportunity to accelerate their attainment of a BS in Biomedical Engineering (BME) and a Law degree. Entrance requirements and standards necessary to maintain a tentative acceptance to the School of Law can be found in the "Six-year Engineering/Law Program" section of this catalogue.

Students choosing this unique curricular path will need to closely follow a prescribed sequence of courses and should consult closely with their BME advisor. The first two years of study will remain the same as the BME curriculum. The third year will change slightly to accommodate the senior year when the student will take both Engineering and School of Law courses. Some summer School of Law courses will be necessary after the fourth year.

**Accelerated Six-Year Civil Engineering/Law Program**

Qualified Civil Engineering students have the opportunity to accelerate their attainment of a BS in Civil Engineering (CEE) and a Law degree. Entrance requirements and standards necessary to maintain a tentative acceptance to the School of Law can be found in the "Six-year Engineering/Law Program" section of this catalogue.

Students choosing this unique curricular path will need to closely follow a prescribed sequence of courses and should consult closely

with their CEE advisor. The first two years of study will remain the same as the CEE curriculum. The third year will change slightly to accommodate the senior year when the student will take both Engineering and School of Law courses. Some summer School of Law courses will be necessary after the fourth year.

**Accelerated Six-Year Computer Engineering/Law Program**

Qualified Computer Engineering students have the opportunity to accelerate their attainment of a BS in Computer Engineering (CPE) and a Law degree. Entrance requirements and standards necessary to maintain a tentative acceptance to the School of Law can be found in the "Six-year Engineering/Law Program" section of this catalogue.

Students choosing this unique curricular path will need to closely follow a prescribed sequence of courses and should consult closely with their CPE advisor. The first two years of study will remain the same as the CPE curriculum. The third year will change slightly to accommodate the senior year when the student will take both Engineering and School of Law courses. Some summer School of Law courses will be necessary after the fourth year.

**Accelerated Six-Year Electrical Engineering/Law Program**

Qualified Electrical Engineering students have the opportunity to accelerate their attainment of a BS in Electrical Engineering (EE) and a Law degree. Entrance requirements and standards necessary to maintain a tentative acceptance to the School of Law can be found in the "Six-year Engineering/Law Program" section of this catalogue.

Students choosing this unique curricular path will need to closely follow a prescribed sequence of courses and should consult closely with their EE advisor. The first two years of study will remain the same as the EE curriculum. The third year will change slightly to accommodate the senior year when the student will take both Engineering and School of Law courses. Some summer School of Law courses will be necessary after the fourth year.

**Accelerated Six-Year Industrial Engineering/Law Program**

Qualified Industrial Engineering students have the opportunity to accelerate their attainment of a BS in Industrial Engineering (IE) and a Law degree. Entrance requirements and standards necessary to maintain a tentative acceptance to the School of Law can be found in the "Six-year Engineering/Law Program" section of this catalogue.

Students choosing this unique curricular path will need to closely follow a prescribed sequence of courses and should consult closely with their IE advisor. The first two years of study will remain the same as the IE curriculum. The third year will change slightly to accommodate the senior year when the student will take both Engineering and School of Law courses. Some summer School of Law courses will be necessary after the fourth year.

**Accelerated Six-Year Mechanical Engineering/Law Program**

Qualified Mechanical Engineering students have the opportunity to accelerate their attainment of a BS in Mechanical Engineering (ME) and a Law degree. Entrance requirements and standards necessary to

maintain a tentative acceptance to the School of Law can be found in the “Six-year Engineering/Law Program” section of this catalogue.

Students choosing this unique curricular path will need to closely follow a prescribed sequence of courses and should consult closely with their ME advisor. The first two years of study will remain the same as the ME curriculum. The third year will change slightly to accommodate the senior year when the student will take both Engineering and School of Law courses. Some summer School of Law courses will be necessary after the fourth year.

#### Advanced Placement (AP)

The University will normally grant credit for AP subjects taken in high school and for which a student scores a 3 or higher on the standardized AP exam. A score of 4 or 5 may be required to obtain credit for a specific course. Appropriate credit depends on the specific academic program to which the credit is applied. In some circumstances, the credit will be applied to an elective rather than a course required for the major. The dean’s office of each college will determine how the credits will be applied for courses taught in that college.

#### Air Force ROTC

The Aerospace Studies Program, also known as Air Force ROTC, is unique in that it is the only agent through which a student can, upon graduation, receive a commission as an officer in the United States Air Force. To earn this commission, a student must enroll in Aerospace Studies courses, pass an Air Force Officer Qualifying Test, be physically qualified, attend an officer field training summer camp, and receive a baccalaureate degree.

Upon graduation and commissioning, the officer will normally serve a period of active duty in the Air Force. To assist the student while in college, the program offers a variety of one, two, three and four year scholarships, and provides a monthly stipend of \$250-\$400 to all contracted cadets, as well as \$600 per year for textbooks. Students in good academic standing in any recognized major are eligible for scholarships and subsequent commissions.

There are limits to the amount of ROTC credit that can be counted toward a degree. Students majoring within the College of Arts and Sciences are limited to 15 credit hours, College of Business students are limited to 12 credit hours, and College of Engineering students are limited to 3 credit hours, which must be at the 300-level or above.

For additional information about this program, please contact Air Force ROTC at 413-545-2437 or email [usairforcerotc@wne.edu](mailto:usairforcerotc@wne.edu). One can also view the website at [www.umass.edu/afrotc](http://www.umass.edu/afrotc).

#### Army ROTC

Full-time undergraduate and graduate students may participate in the Army ROTC program at Western New England University. Upon successful completion of the program, students receive commissions as Second Lieutenants in the U.S. Army (Active or Reserve). Classes are open to all students and may be taken for general education credits with no obligation.

Students who commit to pursuing the commission receive a \$350-\$500 per month stipend while participating in ROTC. Four, three, and two year scholarships are available to students who apply and meet the requirement to contract into ROTC to pursue an officer commission. These scholarships cover tuition, laboratory fees, and books and also pay each recipient a \$450-\$500 per month stipend.

Special programs exist for students to work with four semesters remaining to earn their degree and for students who desire to pursue a four semester master’s degree. This program allows the student to

complete all ROTC requirement in only two years and gain a commission as a Second Lieutenant. The classes for the first two years are waived in this option.

Any Army ROTC student who desires a commission in the Army National Guard or Army Reserves can obtain a Guaranteed Reserve Forces Duty Scholarship. For further information refer to contact listed below.

There are limits to the amount of ROTC credit that can be counted toward a degree. Students majoring within the College of Arts and Sciences are limited to 15 credit hours, College of Business students are limited to 12 credit hours, and College of Engineering students are limited to 3 credit hours, which must be at the 300-level or above.

For information contact the assistant professor of Military Leadership at the Western New England University ROTC building; 413-782-1332, or [usarmyrotc@wne.edu](mailto:usarmyrotc@wne.edu).

#### Air Force/Army ROTC College Incentive

Western New England University will provide up to full (double occupancy) room and board to any student receiving a four-year ROTC scholarship. If the student selects Gateway, Evergreen or Southwood, for residence, they will receive full (double occupancy) room and \$1,500. If the ROTC scholarship is less than full tuition, the incentive could be reduced accordingly.

Other students, including Advance Designees, who receive ROTC scholarships after enrolling at the University, will receive full (double occupancy) room during the period that they qualify for the ROTC scholarships.

The incentive will be considered part of all gift aid a student may receive from the University based on merit or need. In no case will the total gift aid provided by the University and external gift aid exceed the student’s direct cost of education.

#### Auditing

Subject to space limitations, a student may audit a course if granted approval by the instructor in which the course is offered. Auditing serves to enable a student to study the subject matter of a course when a grade is neither required nor desired. An audit carries no credit, has no grade point equivalent, and is recorded simply as “Audit.” A student intending to audit a course should consult the Student Administrative Services (SAS) office for the proper procedure. (See the “Fees (p. 350)” section.) See the academic calendar for deadline to change from “audit to credit” status or “credit to audit” status.

Graduate courses in the Colleges of Arts and Sciences, Business and Engineering may be audited on a space-available basis by alumni who have completed bachelor’s or master’s degrees at Western New England University and who also have the listed prerequisites for the course selected. Courses in the School of Law are not available for alumni auditors. The University does not maintain any record of registration or completion of courses by alumni auditors.

#### Certificate Programs

Western New England University makes several Certificate Programs available to those who do not want a degree, but who want specialized training that goes beyond a few courses in a subject. There are undergraduate certificate (p. 169) programs in chemistry and communication. There are graduate certificate (p. 315) programs in engineering, leadership (p. 309) and a certificate in Applied Behavior Analysis (p. 295).

### Center for Teaching Excellence

The Western New England Center for Teaching Excellence is designed to provide faculty with access to cutting-edge, empirically validated teaching strategies. Through workshops, faculty presentation, and consultation, the Center serves as a repository for teaching related information and gives students access to faculty who are well trained to be excellent in and out of the classroom. Founded in 2011, the Center will continue to build and develop programs focused on teaching and teaching related activities.

### Credit for Prior Learning

Undergraduate students may satisfy up to 30 credit hours of their degree requirements through demonstration and documentation of prior learning. Outlined below are several vehicles through which prior learning may be assessed.

Note: This policy does not apply to Criminal Justice or Law Enforcement majors, who must consult the requirements specific to their degree.

#### *College-Level Examination Program (CLEP)*

This nationwide program allows undergraduate students to demonstrate academic competence and obtain college credit by examination. Several general and subject area examinations are available. The subject matter of the examination taken must be applicable to the student's curriculum, but may not include foreign language in the student's native language. The student's academic dean must be notified of the intent to take such examinations. The scores must be submitted to the appropriate school for evaluation. CLEP credit may not be used to meet upper-level course requirements.

#### *Credit for Nontraditional Educational Experience*

The University will review, for possible credit, educational programs sponsored by non-collegiate organizations such as business, industry, government, professional, voluntary associations, and work place experience. Decisions to award transfer credit are based primarily upon *The National Guide to Educational Credit for Training Programs*, published by American Council on Education, and *The Directory of the National Program on Non-collegiate Sponsored Instruction*, published by the Board of Regents of the State of New York. In addition, courses and training obtained through the Armed Services will be reviewed on the basis of the recommendations made by the American Council on Education in *The Guide to the Evaluation of Educational Experiences in the Armed Services*.

#### *Portfolio-based Credit*

The deans may award transfer credit for portfolio-based credits for prior learning that have been assessed by Charter Oak State College or other regionally accredited colleges or universities.

Students who are interested in obtaining more information about portfolio assessment should contact the Admissions office for referral to Charter Oak State College where appropriate.

#### Cooperating Colleges of Greater Springfield (CCGS)

Western New England University, in cooperation with seven of the area's public and private institutions, has established a cooperative association designed to enhance the educational experience through the use of cooperative programs and services. Those services include inter-college library privileges, joint student activities, academic cooperation, and student activity calendars.

Known as the Cooperating Colleges of Greater Springfield (CCGS), the association was formed in 1970 by the presidents of the member

institutions: American International College, Bay Path College, Elms College, Holyoke Community College, Springfield College, Springfield Technical Community College, Western New England University, and Westfield State University.

CCGS also sponsors an eight-college exchange program. Under this plan for curriculum enrichment, any full-time undergraduate who has paid tuition at their own home college may take up to two courses or up to eight credit hours per semester each semester at any one of the other CCGS institutions, provided that the courses are not offered at the home institution and that seats are available at the host institution. Part-time students attempting at least six credit hours in a degree program are also qualified to participate in the CCGS program. The above-stated conditions may not apply to summer sessions, evening classes, winter session, continuing education classes, and online courses. Information concerning additional guidelines and registration procedures may be obtained from the Student Administrative Services (SAS) office.

#### Credit-in-Escrow

Qualified high school students may take regular college courses during the regular semester or in the summer as they complete their high school studies.

#### Exploratory Program

Recognizing that many students have not chosen a career path at the time of admission, the University offers direction and guidance through the Exploratory Program. Instead of selecting a major course of study, those students who prefer to defer such a selection may elect the Exploratory Program. The Exploratory Program has no specific course requirements. It provides special advising and guidance about career choices.

The selection of a major course of study is made before the end of the sophomore year. After declaring a major, the student leaves the Exploratory Program and follows the regular curriculum of the chosen program.

#### First Year Seminar

To enhance the first-time student's acclimation to collegiate study, the University provides opportunities to develop the skills and methods that will promote academic success and personal development. In the First Year Seminar courses (LA 100, BUS 101, ENGR 102) students explore such topics as goal-setting and decision-making, time management, problem solving, critical thinking, information literacy, public-speaking skills, personal identity, and an introduction to a major, or exploring fields of study.

#### Global Scholars Program

The Global Scholars program provides Western New England University students with the opportunity to distinguish themselves by developing an understanding of another region or nation outside of the United States through university coursework and international study experiences. While the structure of each Global Scholars program is determined and overseen by the College in which the student is enrolled, all Global Scholars programs include the following elements:

- An introductory experience or course
  - A period or periods of international study abroad
  - Completion of a sequence of courses in international issues, area studies, or foreign language
  - An integrating or capstone experience or course
- Each Global Scholars program includes activities that may be used to satisfy

university-wide Learning Beyond the Classroom (LBC) requirements. In addition, all Global Scholars are encouraged to participate in other globally-focused opportunities on campus.

Additional details regarding specific Global Scholars requirements are provided in each College's catalogue section: College of Arts and Sciences (p. 32) and College of Business (p. 102), the College of Arts and Sciences Special Academic Opportunities (p. 33) and the College of Business Special Academic Opportunities (p. 103) sections, or the College of Arts and Sciences, and College of Business web sites.

### Admission

Please see the specific College's websites for further details on these special academic opportunities:

College of Arts and Sciences Special Academic Opportunities (p. 33)

College of Business Special Academic Opportunities (p. 103)

(p. 136)

(p. 102)

### Global Scholars Courses

Recognizing the importance of a global perspective to the conduct of business today, the College of Business provides enhanced opportunities for its students to develop both intercultural competence and an expanded worldview. The Global Scholars program, which integrates intercultural course work and experiences, is open to students in any business major. Those students who satisfactorily complete all requirements will receive the Global Scholar designation on their University transcript and at Commencement.

College of Business Special Academic Opportunities (p. 103)

### Grand Challenges Program

Western New England University is proud to be among an elite group of institutions in the nation to offer the Grand Challenge Scholars Program of the National Academy of Engineering (NAE) to our students. The Challenge allows qualifying students to be able to supplement their education with specific curricular components that address the five areas of the Grand Challenge:

- Research experience
- Interdisciplinary curriculum the NAE refers to as "Engineering+" These span the disciplines of public policy, business, law, ethics, human behavior, etc.
- Entrepreneurship
- Global dimension
- Service learning

By focusing their academics in these areas, students will have the educational foundation to take on the challenges of the future.

Summary of Five Grand Challenge Curricular Components

### Selection of Grand Challenge Scholars (GCSP) and Anticipated Involvement

All engineering students will be invited to participate in the Grand Challenge Scholars Program during freshman year, with *full* appointment occurring during the junior year. Each academic year will require the completion of tasks with increasing involvement in

the program, culminating in the Senior Design Project and/or significant research experience in a Grand Challenge area.

Grand Challenge Scholars Program scholars will be appointed by the Program Director upon the recommendation from a committee comprised of his/her academic advisor, Assistant Dean, and an at-large member (e.g., Western New England University faculty outside of the College of Engineering, a Western New England University staff member, industrial advisor, or alumni). This committee reviews and assesses the required materials, the portfolio, and present and future plans. The committee also suggests activities, projects, and internships and Research Experience for Undergraduates (REUs) to promote the intramural and extramural activities in the GCSP.

A summary of the four-year participation and appointment process is as follows:

**Freshman year:** All students are invited to explore possibilities of GCSP. Students complete a brief application to inform their academic advisor and the program director of their interest.

**Sophomore year:** Students apply for *conditional* appointment to GCSP with a second application and present their portfolio with evidence of their initial commitment.

**Junior year:** Students apply for *full* appointment to GCSP with a proposal and academic plan for completing research and course requirements. They present their portfolio with evidence of commitment and work completed.

**Senior year:** Students meet with their academic advisor and GCSP director and committee to assess their progress in order to assure that GCSP requirements are met and documented. The students present their portfolio with evidence of commitment and work completed.

After freshman year, conditional and full appointment into the Grand Challenge Scholars Program will be based on achieving and maintaining a minimum 2.70 cumulative GPA, satisfactory academic progress, selective service status as required, and full-time status. It is strongly suggested the student maintain a minimum 2.70 major *and* cumulative GPA. Additionally, the committee will review the student's materials to determine that all requirements are met, and subsequently grant approval for continuation and completion of the GCS program.

### Grand Challenge Scholars Partners

#### Founding Members

Duke University, Pratt College of Engineering

The Franklin W. Olin College of Engineering

The University of Southern California, Viterbi College of Engineering

#### Members

Arizona State University, Ira A. Fulton College of Engineering

Lafayette College

Louisiana Tech University, College of Engineering and Science

North Carolina State University, College of Engineering

St. Louis University, Parks College of Engineering, Aviation & Technology

The University of Tennessee, College of Engineering

Western New England University, College of Engineering

For more information, visit the National Academy of Engineering (NAE) Grand Challenge Scholars Program website.

College of Engineering Special Academic Opportunities (p. 136)

High School Year in College (Early Admission)

The high school student who is academically able and socially mature may combine the senior year of high school and the first year of college. At the end of the combined year, the student is granted a high school diploma and becomes a matriculating student.

Honors Programs

Western New England University offers Honors programs in the:

College of Arts and Sciences

College of Business

College of Engineering

They are intended to give academically qualified and motivated students the opportunity to join a community and participate in challenging courses taught by some of the University's best faculty. The programs allow students to broaden their education by taking courses in a variety of disciplines with Honors students from other majors, and by exploring topics that cross disciplinary boundaries. The programs also encourage students to take an active part in leadership activities related to Honors.

#### *Admission*

Students who have been admitted to Western New England University, including transfers, will be contacted by their respective Colleges regarding Honors Program admission.

Please see the specific College's websites for further details:

Arts and Sciences Honors program

Business Honors program (p. 103)

Engineering Honors program (p. 136)

#### *Honors Courses*

All Honors courses are designed to fit graduation requirements.

HON (p. 234)

HONB (p. 235)

HONE (p. 236)

The courses are often small seminars, sometimes taught by pairs of professors from different disciplines. Whatever the topic, Honors courses encourage students to develop and support their own ideas through critical reading, writing, analysis, and discussion. Students who complete six Honors courses (18 credit hours) and a senior project will be recognized with University Honors at graduation.

#### *Senior Honors Project*

Each senior honors student works closely with a faculty advisor to plan and execute a final project of his or her choice. Students have virtually complete freedom in their choice of topic, but most opt for a topic within their majors. Interdisciplinary topics are entirely

acceptable. This project is worth at least 3 semester-hours of credit, and will normally take the form of an independent study; however, students who are already required to do an appropriate senior project for their major may, with approval, submit this as their honors project instead. All honors projects must be approved and evaluated by the Honors Curriculum Committee.

#### *Maintaining Honors Status*

Students in the Honors Program must maintain a 3.3 overall GPA to graduate with University honors. Any student whose cumulative grade point average falls below 3.3 will be given two semesters during which to restore their cumulative GPA to 3.3 or better. Students whose GPA remains below 3.3 for a third semester will be dismissed from the program, although they may reapply if they subsequently raise their GPA to an acceptable level.

#### *Independent Study and Special Arrangements*

A limited number of qualified students are accorded the opportunity to pursue course work through supervised independent study. Students must have junior or senior standing plus a minimum grade point average of 3.0 overall or in the major field. In general, such study should be of mutual interest to the student and faculty supervisor, should be of an advanced nature, and should include work not normally covered in the classroom. Credit may vary from one to three credit hours. Only six credit hours of independent study credit may count toward the degree.

In order to enroll in an independent study course, the student must make arrangements prior to registration. Applications for independent study are available from the appropriate academic dean. The application must be completed and signed by the student, the faculty supervisor, the faculty supervisor's department chair, and the student's advisor. If the student's academic dean approves the application, the student is given a form authorizing registration for the study.

#### *Special Arrangement*

A Special Arrangement course is designed for students who cannot fit a regularly offered course into their schedule. An arrangement is reached with a faculty member whereby the student can complete the course in a nontraditional format without sacrificing standards of requirements.

In order to enroll for a Special Arrangement course, the student must make arrangements prior to registration. Applications are available from the appropriate academic deans. The application must be completed and signed by the student, the faculty supervisor, the faculty supervisor's department chair, and the student's advisor. If the student's academic dean approves the application, the student is given a form authorizing registration for the course.

#### *Individualized Programs of Study (Integrated Liberal Studies)*

For the student who does not want to pursue a traditional major program, the integrated liberal studies program provides the opportunity to construct an individualized major. Such a program combines a selection of related courses from two or more disciplines according to the interests and goals of the student.

Students who wish to devise and pursue such a program should request permission and guidance from the academic departments in which they propose to do a substantial part of the work. Final approval of such a program rests with the dean of the College of Arts and Sciences upon recommendation of the departments concerned. No request for an integrated liberal studies major will be considered earlier than the end of the freshman year or later than the beginning of the senior year.

The following guidelines serve as minimum requirements for an integrated liberal studies major:

1. The general course requirements for the BA degree shall apply.
2. An integrated liberal studies major shall offer a minimum of 36 credit hours. At least 30 of these shall be courses at the 300-400 level.
3. Only courses at the 200 level or above may be counted toward fulfillment of the integrated liberal studies major.
4. A minimum of the minor in business administration is required of any student desiring to do a substantial part of the work within the College of Business. However, no more than 25% of the total coursework can be College of Business courses.

### Internships

In any discipline, qualified juniors and seniors may undertake an internship for academic credit with an approved agency, organization, or business.

Internships have a single purpose: to further the student's knowledge in a specialized area in a way not customarily available within the regular classroom setting.

Credit for internships varies from one to three credit hours. There are limits to the amount of internship credit that may be counted toward the degree: in the College of Arts and Sciences, students are limited to six credit hours; in the College of Business and College of Engineering, students are limited to three credit hours. College of Business students are limited to one non-profit board field experience. A student must have completed at least 57 credit hours and have a minimum GPA of 2.5 overall and in the major, except where an internship is required in the major, or obtain special permission of their dean to undertake an internship.

To enroll in an internship for academic credit, a student must make arrangements with the Career Development Center, prior to registration. An internship application must be completed and signed by the student, the academic advisor, the department chair, and the internship coordinator.

A student may also pursue a nonacademic internship to further enhance their knowledge in a specialized area.

### Undergraduate Research

A limited number of qualified undergraduate students may undertake supervised research if they show both interest in and aptitude for independent and creative work. Applications may be made for research in any of the disciplines in which faculty are willing to involve students. When such research is conducted, students must submit written reports for approval by the faculty of the department in which the work was conducted. The supervising faculty member and the department chair must approve grades for such work.

In order to enroll for undergraduate research, the student must make arrangements in writing prior to registration. Applications are available from the deans of the Colleges of Arts and Sciences, Business, and Engineering. Applications must have the signatures of the student, the faculty supervisor, and the department chair. If the dean of the College approves the application, the student will be given a form authorizing registration for the work.

### New England Center for Children Program

Western New England University students interested in applied psychology and the education of students with autism and other special needs have the opportunity to spend either a full semester or a full year at the New England Center for Children. This facility,

located near Boston, offers courses in applied behavior analysis and provides students with supervised experience working with children with autism. Interested students should consult with the chair of the Department of Psychology.

Selection of Students: Applications will be reviewed by the Department of Psychology and forwarded, along with the recommendations of the department, to the New England Center for Children. The Center will select the final participants.

### Pre-Law and 3+3 Law Program

Western New England University has offered legal education for nearly a century, and the Western New England University School of Law provides an excellent opportunity for those who wish to pursue the graduate professional degree in law.

Preparation for law school is not a matter of taking prescribed courses or majors. Law schools customarily do not encourage undergraduates to major in any particular subject. Students are generally successful in law school if they succeed in any major that develops skills in reading, writing, and critical thinking, and if they do well on the Law School Admission Test (LSAT).

Pre-law students may choose any major including the pre-law curriculum within Integrated Liberal Studies. Students considering a legal education should pursue their individual interests through those courses that are most likely to foster success in American law schools (courses that improve written and oral communication, provide readings about a wide range of human experience, and develop reasoning skills).

Qualified Western New England University students who want to attend Western New England University School of Law can earn their bachelor's and Juris Doctor degrees in just six years instead of seven in the 3+3 Law program. To qualify for this program, students must have a minimum undergraduate grade point average of 3.3 and score above the median LSAT for the previous year's School of Law matriculants. Students who qualify can enter the School of Law in the fall of their fourth full-time undergraduate year and receive their bachelor's degrees at its end. They are eligible to obtain their Juris Doctor degrees after two more years of study.

It is not possible, however, for all majors to qualify for the 3+3 Law program. Chemistry, Computer Science, Mathematics, Social Work, and most engineering programs require too much sequential work in those disciplines to allow completion in three years. Biology majors would require some summer course work in order to complete this program.

In order to apply for this program, transfer students must successfully complete at least 45 credit hours of undergraduate studies at Western New England University. Students considering a career in law are eligible for membership in the Pre-Law Society, which provides cocurricular activities for pre-law students. Among the society's activities are workshops on selecting and applying to law schools; field trips to observe law classes; mock trials; and films, lectures, and discussions designed to clarify the responsibilities and privileges of the profession of law.

The office of the pre-law advisor maintains files of reference materials on law schools, the Law School Admissions Test, and other subjects of interest to pre-law students. Regardless of major, students thinking about attending law school should consult with the pre-law advisor, Associate Professor Peter Fairman, Department of History and Political Science, at the earliest opportunity.

### Pre-Medical and Pre-Dental

Pre-medical and pre-dental students are not restricted to specified major areas of concentration but are encouraged to select a major that

is most consistent with their interests and that offers as many alternatives for postgraduate study or employment as possible. Students in Arts and Sciences, Business, and Engineering are able to pursue a pre-med program. Students should consult with their deans in selection of appropriate courses.

The suggested sequence of courses: BIO 107, BIO 108, BIO 117, BIO 118; CHEM 105, CHEM 106, CHEM 209, CHEM 210, CHEM 219, CHEM 220; PHYS 133, PHYS 134; MATH 133, MATH 134; one year of a modern foreign language. As early as possible, all pre-medical and pre-dental students should consult the dean of the College of Arts and Sciences who will arrange for proper advising prior to the selection of courses.

The recommended course sequence is designed to meet the requirements for entrance into most American medical and dental schools. The student is cautioned, however, that admission to such schools is highly competitive.

#### Service Members Opportunity College

Western New England University has been designated as an institutional member of Service Members Opportunity Colleges (SOC), a group of over 400 colleges and universities providing voluntary post secondary education to members of the military throughout the world. As a SOC member, Western New England University recognizes the unique nature of the military lifestyle and has committed itself to easing the transfer of relevant course credits, providing flexible academic residency requirements, and crediting learning from appropriate military training and experiences. SOC has been developed jointly by educational representatives of each of the Armed Services, the Office of the Secretary of Defense, and a consortium of 13 leading national higher education associations.

#### Study Abroad

##### *Why Study Abroad?*

Western New England University provides numerous study abroad opportunities. Besides being culturally rewarding and intellectually stimulating, study abroad will enhance your career opportunities and graduate school qualifications. By gaining an appreciation of other cultures, improving your foreign language skills, and becoming more familiar with the global marketplace, you'll open your mind to new possibilities and in the process learn as much about yourself as you will about your host nation.

##### *Are There Academic Requirements?*

The foreign university specifies the required grade point average but in most cases you'll be able to participate as long as you are in good academic standing.

##### *What About Costs?*

Besides airfare and possible differentials in costs of living, the costs are usually equivalent to what it costs to attend Western New England University for a similar time period. However, additional expenses will occur for those who are adventurous and enjoy traveling. Financial aid, either from the institution or government, can be carried over.

##### *Are Internships and Independent Studies Available?*

Yes, internships and independent studies are available at most study abroad locations. Internships are especially valuable for all students who are interested in pursuing international opportunities.

##### *Do I Need to Know A Second Language?*

While most classes are taught in English, you will probably want to seek out opportunities to learn the native language. You can choose

programs that are specifically designed to improve your foreign language skills.

##### *In What Countries Can I Choose To Study?*

You can make arrangements to study at colleges and universities throughout the world. Pick the nation where you want to live, study and work. Western New England University will facilitate your international learning experience for one or two semesters. Special opportunities exist for all students to study in Mexico, Ireland, Scotland, England, Germany, France, Spain, Greece, Australia, New Zealand, Cuba and some other countries during winter, spring, and summer breaks.

For information on any of these programs, students should contact Dr. Saeed Ghahramani, Dean of the College of Arts and Sciences, director of the Study Abroad Program, or Dr. Josie Brown-Rose, assistant director of the Study Abroad Program.

##### *Up with People*

Through the Up with People partnership, Western New England University students can spend a semester traveling across three continents while experiencing personal growth, leadership training, service learning, and involvement in performing arts. A student completing a semester at Western New England University with a grade point average of 2.5 or better and who has successfully completed 27 credits or more is eligible to participate in the Up with People Program. For details about this opportunity, students should consult with the assistant dean of Arts and Sciences and visit [www.wne.edu/upwithpeople](http://www.wne.edu/upwithpeople).

##### Summer Session and Winter Session

Western New England University is in session throughout the year. To supplement the regular academic year, there is a summer session with courses offered both day, evening, and online, and a winter session between the fall and spring semesters. Information about these course offerings and their prerequisites is customarily available by March for the summer session and November for the winter session. Schedule information may be obtained by contacting the Office of Academic Scheduling, [www1.wne.edu/academicsschedule](http://www1.wne.edu/academicsschedule) or the Student Administrative Services (SAS) office.

##### Taking Courses At Another College

A matriculating student who wants to take a course at another institution must obtain prior approval from their college's assistant dean. Grades less than C- will not transfer. After completing 70 or more credits at Western New England University, a student is only permitted to transfer one course to Western New England University from a community college or another institution that does not grant the baccalaureate degree.

##### Washington Semester

Western New England University participates in the Washington Semester Program offered by American University in Washington, DC. This program, which is open to juniors and seniors, provides an opportunity to study and intern in Washington, DC. Programs are offered in American Politics, Journalism, Justice, Foreign Policy, International Business and Trade, Transforming Communities, Public Law, Economic Policy, Contemporary Islam, International Environment and Development, Israel Studies, International Law and Organization, Peace and Conflict Resolution. Students may intern with government agencies, members of Congress, the courts, private businesses, public interest groups, professional organizations, newspapers, television studios, theaters, or museums. Interested students should contact Dr. Donald Williams.

## Writing and Reading Program

### *Writing Proficiency*

In the belief that clear writing is not only central to academic success but also the single most important indicator of professional achievement, the University encourages students to think clearly and to discipline their self-expression. In every course, regardless of the student's major, professors expect students to demonstrate in clear and effective writing that they have assimilated the information and ideas presented. A portion of the grade in each course is determined by performance in written work.

To achieve this goal, the Writing and Reading Program and the Department of English have formed the writing and reading collaborative that determines standards for clear writing and has authorized the use of common handbooks across the curriculum. The Writing and Reading Program starts in the first year with the two 100 level courses in English writing and reading that are General University Requirements. (A detailed description of the writing requirements appears in the English course descriptions on p. 249). The program continues in the sophomore, junior, and senior years with writing requirements specified by the student's major.

In support of this program the University has a Writing Center and offers tutoring services. The Center is equipped with two computer classrooms as well as print resources and a webpage. Trained peer tutors work with students at all ability levels in all phases of the writing process. Students may work on writing assignments in any course from across the curriculum, design individualized improvement programs, or work on personal writing projects.

## General University Requirements

### Foundations

Fundamental to every student's success in college and beyond is competency in four areas that provide the foundation for lifelong learning and for personal and professional effectiveness. These areas are mathematical analysis, communication, critical thinking, and computer competence, including information literacy. The University recognizes the importance of continuing development in these areas in the context of the student's major. The target level of competency in these areas will be determined and assessed by the major in which the student is enrolled. Following is a brief explanation of the importance of each foundation area with suggested courses that might satisfy the requirement.

### *Mathematical Analysis*

Daily life and many professional and intellectual pursuits and success in college require an understanding and appreciation of mathematical reasoning and of mathematical problem-solving.

The ability to establish connections between real world phenomena and mathematical ideas, to analyze quantitative data, and to reason logically allows us to grasp complex issues and better meet the problem solving needs of our technological society.

Thus, it is crucial that students develop the ability to distill what is essential to a problem or situation, to express it using mathematical equations, to use principals of mathematics logically and creatively to solve these equations, and to interpret their solutions in the context of the original problem or situation.

Each student must take the two mathematics foundation courses designated by the College in which they are enrolled. A minimum grade of C is required in one of these mathematics courses for graduation.

### *Communication*

Effective writing and speaking is important in virtually all human activities from informal exchanges with friends and family through the responsibilities of the work place to the highest professional and intellectual pursuits.

The ability to express ideas orally and in writing, using appropriate vocabulary and grammar and logical organization, allows us to communicate effectively with others in every dimension of our lives.

To develop skills in written communication, each student must take two foundation composition courses (unless exempted). Because writing and reading are closely related and because all students should have some college experience of literature, these courses also feature the analytic reading of nonfiction, fiction, poetry, and drama. Each student must complete these writing courses with grades of C or better.

To develop skills in oral communication, instruction will be provided as part of each student's first year curriculum as determined by the College in which they are enrolled.

### *Critical Thinking*

The ability to think logically about personal, social, and professional problems is important in reaching satisfactory and defensible decisions. The educated person should be able to form and recognize sound arguments.

While critical thinking is an element in virtually every course, each student must take one course in which critical thinking is a major focus. The course will be specified by each College.

### *Computer Competence and Information Literacy*

Understanding how computers function and how to use computer technology is increasingly necessary in many professional pursuits as well as in personal life. As a minimum, students should have the ability to use presentation, word processing, and spreadsheet software. They should also have the ability to access information on the Internet and existing databases.

Students should have the ability to identify, access, evaluate, and select information to fit defined needs and the ability to use that information in an ethical manner.

Each College will specify requirements to achieve computer competence and information literacy.

### *Perspectives of Understanding*

In its Mission Statement, the University commits itself to developing in its students an appreciation of multiple perspectives of understanding. Perspectives are the systematic ways various academic disciplines view and interpret the world around us. Each perspective enhances the students' understanding of the complexity of the environment in which we live and of the richness of human experience. Ultimately these perspectives have the potential to deepen our judgments and inform our responses to the opportunities and challenges of life and work in the 21st century. They can help us to lead more responsible and fulfilling lives as individuals, family members, and citizens of democracy.

Perspectives courses significantly emphasize three components. First is the approach or method of analysis in the discipline; second is the factual foundation of the discipline; and third is the contribution of the discipline to a greater knowledge of contemporary issues. Perspectives of Understanding included in this requirement are Natural Science, Behavioral Science, History, Cultural Studies,

Ethics, Aesthetics, and Integrated Liberal and Professional Learning as described below.

Students must complete a minimum of seven perspectives courses that collectively achieve the following requirements:

- All perspectives are covered.
- At least one is an integrated liberal and professional course in which two perspectives are typically presented in a team-taught offering.
- Two are natural science courses, each with laboratories, or two sequential courses in natural science, the first of which must have a laboratory.

Note: Comparative courses that combine two perspectives, such as behavioral science, history, cultural studies, ethics, or aesthetics will satisfy the requirement in both areas. However, students must still take a minimum of five perspectives courses in addition to the natural science courses.

#### *Natural Science Perspective (NSP)*

The science perspective cultivates familiarity with the vast realm of accumulated knowledge about the structure and functioning of the physical and biological world. Students should learn part of the factual foundation, including vocabulary, of at least one major area of science and should observe and practice the disciplined logic that scientists employ to discover and evaluate new knowledge.

#### *Social/Behavioral Science Perspective (SBP)*

The behavioral science perspective uses scientific methods to study the forces and processes that influence the behavior of individuals, groups, governments, and economies.

#### *Historical Perspective (HIST)*

Through historical inquiry, this perspective enriches insight into the political, social, economic, and cultural forces that have shaped the modern world, providing the context for future events.

#### *Global Cultures Perspective (CUL)*

The Global Cultures perspective gives students an understanding of the multi-cultural nature of contemporary society as it is constituted by individuals from different backgrounds, cultures and/or nations. This perspective increases students' awareness, understanding, and appreciation of how people from at least one other culture view the world.

#### *Ethical Perspective (Any PH excluding PH 110 or PH 204)*

The goal of the ethical perspective is to help students form rationally defensible ethical views to guide their behavior in all aspects of their lives. This requires heightening their sensitivity to ethical issues and providing them with a variety of tools for ethical problem-solving. It involves giving students experience in critical analysis of real-life ethical issues, coupled with a critical examination of the most influential techniques of moral decision-making and moral argument.

#### *Aesthetic Perspective (ART, FILM, MUS, and THTR)*

The aesthetic perspective regards objects in terms of the qualities that make them attractive in and of themselves. It puts natural or human creations in a picture frame and tries to appreciate their inherent richness. Whatever the objects, they are valued not for any utilitarian purpose but for their sensual and emotive effect, for their form, line, color, sound, texture, feeling, meaning.

#### *Integrated Liberal and Professional Perspectives (ILP)*

The integrated liberal and professional perspective makes clear the connections between the goals of liberal education and those of professional education. It compares and contrasts the values, perspectives, and assumptions of natural science, behavioral science, history, cultural studies, ethics or aesthetics to a perspective from a professional discipline.

#### *Learning Beyond the Classroom (LBC)*

The University is committed to making learning beyond the classroom (LBC) a significant element of every students' academic program and personal experience. It is envisioned that through the process of applying their classroom learning to their experiences in the workplace, in the community, on the playing fields, and across the campus our students will not only enhance their learning, but will also begin to connect their learning more directly to the world in which they live. For these reasons, all students will be required to complete two different LBC experiences, one for every two years of full-time study.

Exemptions to the Learning Beyond the Classroom requirement may be applied according to the following circumstances.

- Transfer credit of more than 60 credits allows for consideration of exempting one LBC provided that the student projects degree completion within four semesters. If more than four semesters are required, the exemption does not apply. Once applied, the exemption is not altered if the projected degree completion date changes. Additional information may be obtained through the Director of Learning Beyond the Classroom.
- A maximum of one LBC can be exempted.
- AP, CLEP, IB or high school to college credit cannot be used in the exemption.
- Non-Traditional/adult learner students are exempt from the LBC requirement.

Normally each LBC experience will include:

1. a minimum of fifteen (15) hours of involvement in an activity that provides a demonstrable opportunity for the student to reinforce or enhance understanding of skills introduced in the classroom; and
2. completion of a minimum 1000 word reflection paper in which the student describes the activity or experience, relates the experience to learning introduced in their courses, and reflects on the value of this experience from a learning perspective.

LBC experiences may include:

1. internships, senior projects, study abroad, or no more than one course based experience with the same course code (e.g. SOC, FIN, etc.) that would incorporate an LBC opportunity. Exceptions can be made for internships within the same department, if they are vastly different in scope and goals;
2. structured group activities in such areas as student clubs and associations, athletic teams, etc.; and
3. individual workplace-based or service activities, on campus or off campus.

Evaluation of all LBC experiences will be through a member of the University's faculty or professional staff as determined by each College. Given the volume of LBC experiences processed each year, the Colleges may arrange for readers who are part of the University

faculty or professional staff to ensure that students will be able to fulfill the requirement.

#### Personal Development

All students are required to complete course work to assist them in their transition to the academic demands of college and in the development of knowledge and skills to support lifelong physical well-being.

##### *First Year Seminar*

First year seminars orient students to the scholarly community and assist them in their transition to the academic demands of college. Each College will develop courses to meet its needs (p. 344).

Exemptions to this requirement may be based on the following circumstances:

- Transfer credit of 27 or more semester hours from a two or four-year college derived from a full time course of study. Exemption may be further considered on an individual case basis, provided that a minimum of 21 credit hours are transferred through full-time study.
- Transfer credits cannot be from CLEP, AP, IB, or high school to college sources.
- Nontraditional/adult learners are exempt and substitute course credit is applied according to the student degree program.

In all cases of exemption, substitute credit must be applied, i.e. credits toward the degree are not exempt, simply the course.

#### Physical Education, Health, and Recreation

All entering freshmen are required to complete two credit hours of physical education, health, and recreation (PEHR) for graduation unless the dean of the college in which they are enrolled has granted a specific written exemption. Exemptions to this requirement may be based on the following circumstances. Students should consult the Director of Physical Education for further information.

- Transfer credit in excess of 30 hours exempts both PEHR 151 and PEHR xxx.
- If transfer credits are in the range of 15-30, only PEHR xxx activity exemption can be applied. Physical incapacity, prior active military service, or unique life circumstance that would prevent or restrict full participation may also exempt PEHR.
- AP, CLEP, IB or high school to college credits cannot be used in the calculation of the exemption.
- Non-traditional/adult learners are exempt from the requirement and the equivalent credits.

**No more than two 100-level PEHR courses can be taken for academic credit or can be included in the calculation of a student's overall GPA.**

The PEHR requirement is satisfied by successfully completing PEHR 151 (Personal Health and Wellness) and one course from PEHR 153-199 (Lifetime Activity Series). The purpose of the requirement is to provide students with an understanding of current health issues and preventative health measures so that they have the tools necessary for continuing a healthy lifestyle. Students are expected to learn how to monitor their diets and to gain a practical understanding of the relationship between diet, exercise, and weight control. The activity series supplements the classroom work in "Personal Health and Wellness." Students enroll in one of several activities such as walking and jogging, aerobic dance, racket sports, golf, martial arts, personal fitness, strength and endurance training, women's defense training,

and, mandatory for those students pursuing certification in elementary education, "Games Children Play."

#### Strategic Initiatives

The Center for Strategic and Academic Initiatives' primary goal is international recruitment of students and development of undergraduate and graduate degree programs (traditional, professional, online, alternative/intensive scheduling, on-site, off site, graduate full- and part-time interdisciplinary, "boutique" in nature, in-house or outsourced, etc) as well as non-credit/certificate programs. The Center will serve as an incubator to implement credit and non-credit programs and degrees that the University determines should be launched to take advantage promptly of opportunities that are sought out or that present themselves and that permit the University to reach new audiences. In addition, the Center and the Office of Professional Development Programs is responsible for the development of new continuing education and non-credit opportunities to meet employer, employee, professional, and personal development needs within our region. This initiative may include the development and implementation of new graduate programs, and the development of other entrepreneurial opportunities.

#### Professional Development Programs

The Office of Professional Development offers an array of professional development/education programs. Our conferences, seminars, noncredit courses, and certificate programs are offered through public formats and onsite at organizations. These programs are designed to help professionals quickly update or acquire the job-related skills and information that will enhance their ability to be successful in their chosen professions.

All of our onsite programs can be customized to meet your organization's needs. We welcome the opportunity to meet with you to discuss your specific training needs and design a proposal for your review. If meeting space or computer resources is an issue, let us know and we will be happy to provide these services at our Springfield campus.

For brochure requests and complete details on all of our professional development programs, call us at 1-800-660-9632 or visit our website, [www.wne.edu/pd](http://www.wne.edu/pd)

- Annual Tax Institute and Workshops
- Fundamentals of Engineering/Engineering-in-Training (FE/EIT) Review Course
- Law Enforcement Seminars
- Project Management Forum
- Regional Social Work Conference and Workshops

#### Annual Conferences and Certificate Programs

##### *Regional Social Work Conference (32 years)*

This conference is an all-day event comprised of 40 plus individual workshops. These workshops vary in topics ranging from AIDS and domestic abuse to professional burnout and new policies. The conference also provides a forum for information exchange on contemporary issues and networking opportunities for human service professionals throughout New England.

##### *Tax Institute*

For 52 years, the Tax Institute has provided high quality written (and computer) materials, oral presentations from expert speakers on detailed tax structuring, and planning techniques and their practical applications. It addresses timely topics and updates based on changes

or developments in the tax law with a focus on the planning opportunities and pitfalls which may result from those changes.

#### Professional Development Workshops and Trainings

##### *Fundamentals of Engineering/Engineering-in-Training (FE/EIT) Review Course*

This 10-session course reviews fundamental engineering subjects, mathematics, and basic sciences to prepare engineers for the General Fundamentals of Engineering Exam. University faculty review concepts and solve problems similar in type and complexity as those encountered on the exam. This course is offered in January in preparation for the spring exam.

##### *Project Management Forum*

In collaboration with the SNEC PMI Chapter, the Western Massachusetts Project Management Forum hosts monthly forum meetings on the Western New England University campus for project managers. Creative discussions and guest speakers provide a platform for all area project managers to network, and share ideas, strategies, and solutions to current challenges in the field of project management.

To participate in this forum, contact Joseph Cacciola via email at [Jcacciola@MassMutual.com](mailto:Jcacciola@MassMutual.com).

##### *Social Work Workshops*

Western New England University's Bachelor of Social Work program, Office of Professional Development, and Social Work Advisory Council sponsor professional development workshops on current issues in the human service field. These workshops have served the needs of human service professionals from Massachusetts and surrounding states by providing a minimum of five programs yearly for CEUs for social workers; licensed mental health workers, CADAC, Marriage and Family Therapists; and PDPs for educators.

For detailed information, visit our website, [www.wne.edu/pd](http://www.wne.edu/pd) or call 1-800-660-9632.

## LEGEND FOR NOTES IN SEQUENCE OF COURSES

A & SR: College of Arts and Sciences Requirement

BUSR: College of Business Requirement

ER: College of Engineering Requirement

CR: Concentration Requirement

GUR: General University Requirement

MR: Major Requirement

## UNDERGRADUATE DEGREE PROGRAMS

### Notes

See Legend for Notes in Sequence of Courses (p. 31)

### College of Arts and Sciences

Dean Saeed Ghahramani

Associate Dean Ann Kizanis

Assistant Dean Josie Brown-Rose

Assistant Dean Karl Martini

### Programs of Study

The College of Arts and Sciences has three primary objectives:

1. To provide academic major and minor programs within the College as career preparation and as concentrations in the various fields of the liberal arts.
2. To provide the courses that satisfy General University requirements in keeping with the founding purpose of the College and consistent with the ongoing role of Arts and Sciences and the academic expertise of the faculty.
3. To provide required courses for its own majors and minors, foundation courses for majors in the Business and Engineering Colleges, and elective courses for the enrichment of students across the University.

In this way the College of Arts and Sciences fulfills its educational purpose in accordance with the mission statement of Western New England University. This Mission Statement calls for integrated professional and liberal education. Arts and Sciences contribute to that mission through providing major programs, General University courses, and service and elective offerings.

The College of Arts and Sciences offers courses and programs leading to a Bachelor of Arts degree with majors in economics, communication, English, Law and Society, philosophy, political science, history, creative writing, international studies, liberal studies, psychology, or sociology; a Bachelor of Science degree with majors in biology, chemistry, computer science, criminal justice, forensic biology, forensic chemistry, health sciences, information technology, mathematics, neuroscience, or psychology; and a Bachelor of Social Work degree. Majors in elementary and secondary education are approved by the Massachusetts Board of Education and lead to teacher certifications. Also offered is an Associate's Degree in Liberal Studies.

To graduate, students must complete at least 122 semester hours in academic courses. Students must complete the requirements of a major program, the General University requirements, and certain area requirements. The balance of the academic program is composed of electives, which are courses chosen entirely by the student, with guidance from an advisor.

Most students attempt to complete the General University requirements during their first two years in college. Such planning provides added flexibility during the junior and senior years, enabling students to concentrate on major programs or to participate in internships or off-campus programs such as the Washington Semester, or New England Center for Children Internship Program, or study abroad.

### Minors

The course work for a degree may include one or more of the minors offered by the University. A minor may not be completed in the same discipline as the major. Descriptions of the requirements for the minors are listed on p. 170. Students wishing to take a minor must complete a form in the Office of the Dean, College of Arts and Sciences, no later than the beginning of the final semester.

College of Arts and Sciences Department Chairs and Faculty

### Department Chairs and Faculty

#### *Arts and Humanities Faculty*

Department of Arts and Humanities

Associate Professor: Anita Dancs, Chair

Professors: Emmett Barcalow, Burton Porter

Associate Professors: Hillary Bucs, Heather Salazar

Assistant Professor: Sandra Navarro

#### *Communication Faculty*

### Department of Communication

Professor: Douglas Battema, Chair

Professors: Hsiu-Jung "Mindy" Chang, Jean-Marie Higiroy

Associate Professor: Andrea M. Davis

Assistant Professor: Jocelyn A. DeAngelis

Professional Educator: Brenda Garton

#### *Computer Science and Information Technology Faculty*

### Department of Computer Science and Information Technology

Professor: Heidi Ellis, Chair

Professor: Lisa Hansen

Associate Professor: Herman Lee Jackson II

Assistant Professor: Brian O'Neill

Professional Educator: John Willemain

#### *Economics Faculty*

### Department of Economics

Professor: Herbert Eskot, Chair

Professor: Arthur Schiller Casimir

Associate Professors: Anita Dancs, Ranganath Murthy, Karl Petrick

#### *Education Faculty*

### Department of Education

Professor: Deb Patterson, Chair

Professor:

Associate Professor: Molly Munkatchy

Assistant Professor: Raymond Ostendorf

*English Faculty***Department of English**

Professor: Winthrop Rhodes, Chair

Professors: Janet Bowdan, Brad Sullivan

Associate Professors: Pearl Abraham, Lisa Drnec-Kerr, Josie Brown-Rose, William Grohe, Edward Wesp, Jeffrey Yu

Assistant Professor: Kelly Klingensmith

Professional Educators: Linda J. Oleksak, Louise Pelletier, Stephanie Wardrop

*History and Political Science Faculty***Department of History and Political Science**

Professor: Marc Dawson, Chair

Professors: John Anzalotti, John Seung-Ho Baick, William Mandel, Theodore South, Leonard T. Vercellotti, Donald Williams

Associate Professors: Meri Clark, Jonathan Beagle, Peter Fairman, Catherine Plum

Assistant Professor: Laura L. Janik

*Mathematics Faculty***Department of Mathematics**

Professor: David Mazur, Chair

Professors: Jennifer Beineke, Saeed Ghahramani, Lorna Hanes, Lisa Hansen, Enam Hoq, Ann Kizanis

Associate Professors: Thomas Hull, Caleb M. Shor

Assistant Professors: Marcel Carcea, Adam Fox, Seungly Oh

Professional Educators: Pam Omer, John Willemain

*Neuroscience Faculty***Department of Neuroscience**

Professor: Sheralee Tershner, Chair

Associate Professor: Jacob Krans

Assistant Professor: Arie Mobley

*Physical and Biological Science Faculty***Department of Physical and Biological Sciences**

Associate Professor: Alexander Wurm, Chair

Professors: Anne Poirot, David Savickas

Associate Professors: John Drawec, Daniel Hatten, Dawn E. Holmes, Anna Klimes, Kathryn Lipson, William Macanka, Karl Martini, Suzanna C. Milheiro, Burt Rosenman

Assistant Professors: Keri A. Lee, Sean McClintock, Liang Ren Niestemski, Emily Notch, Jessica Rocheleau, Emily Garcia Saga, Nolan Samboy, Isaac Stayton

Professional Educators: Francis G. Gerberich, Melissa Lail-Trecker, Karl Sternberg, Kathleen Wurm

*Psychology Faculty***Department of Psychology**

Professor: Dennis Kolodziejski, Chair

Professors: Gregory Hanley, Denine Northrup, Dongxiao Qin, Rachel Thompson

Associate Professors: Jessica Carlson, Amanda Karsten, Ava Kleinmann, Jason Seacat

Assistant Professor: Kevin L. Zabel

*Social Work Faculty***Department of Social Work**

Professor: Jeff Schrenzel, Chair

Professional Educators: Kathleen A. Miller, Paula Nieman

*Sociology and Criminal Justice Faculty***Department of Sociology and Criminal Justice**

Professor: John Claffey, Chair

Professor: Michaela Simpson

Associate Professors: Denise Kindschi Gosselin, Laura Hansen

Assistant Professors: William Force, Kathryn Kozey, Sarah Stein

College of Arts and Sciences Special Academic Opportunities

**Special Academic Opportunities****Honors Program****Global Scholars Program**

The Global Scholars program provides Western New England University students with the opportunity to distinguish themselves by developing an understanding of another region or nation outside of the United States through university coursework and international study experiences. While the structure of each Global Scholars program is determined and overseen by the College in which the student is enrolled, all Global Scholars programs include the following elements:

- An introductory experience or course
- A period or periods of international study abroad
- Completion of a sequence of courses in international issues, area studies, or foreign language
- An integrating or capstone experience or course

Each Global Scholars program includes activities that may be used to satisfy university-wide Learning Beyond the Classroom (LBC) requirements. In addition, all Global Scholars are encouraged to participate in other globally-focused opportunities on campus.

Additional details regarding specific Global Scholars requirements are provided in each College's catalogue section: College of Arts and Sciences and College of Business.

Western New England University offers Global Scholars programs in the College of Arts and Sciences Special Academic Opportunities and the College of Business Special Academic Opportunities.

**University Global Scholars – College of Arts and Sciences Program**

The College of Arts and Sciences encourages all students to understand regions and nations outside of the United States through University courses and international experiences. The Global

Scholars program helps students prepare for and reflect upon their pre-departure, international, and re-entry processes to cultivate their intellectual and intercultural learning.

Global Scholars supports students in connecting their international and intercultural courses and experiences to their academic, professional, and personal endeavors. It is open to students from any major in the College of Arts and Sciences. Learning Beyond the Classroom opportunities are available. Students who satisfy all requirements will receive the Global Scholar designation on their University transcript and at Commencement.

To earn the College of Arts and Sciences Global Scholar designation, a student must complete successfully:

International and Intercultural Orientation and Reflection (INST 100, 2 credits, to be completed by the end of the sophomore year) aims to develop students' skills in learning about and reflecting on cultural differences in education and work abroad. It serves as a pre-orientation to international and intercultural education, presenting different models of study or work abroad and preparing students to live and learn abroad. It presents methods of reflection on international and intercultural experiences and ways to integrate these into their education, community service, and career plans upon return. Students will pursue research on different countries or regions of interest. This course is open to any University student.

Minimum six credits of study outside the United States that are completed in one or more international study experiences. This may be accomplished in many ways: through participation in the Freshman Semester in London, in one of the College's many study-abroad courses, in a semester or summer program arranged via the University's Study Abroad Office, or in a combination of courses or travel-study experiences during summer or winter breaks.

Exceptions to the international study experience may be granted for a student pursuing intensive language training (i.e. 15 credits of a foreign language may replace 3 credits of study abroad). Substitutions may also be made if a student completes more than six credits of study outside the United States, if these satisfy the requirements of part c below.

Minimum six credits of University or international courses on foreign languages, regions, or cultures, or on global issues relevant to a student's international and intercultural focus.

A capstone experience completed in the senior year (1-3 credits) that provides Global Scholars with active reflection on their international or intercultural experiences and how that learning connects to their University studies. The capstone will follow the international or intercultural experience and may include, for example, a presentation to a INST 100 class or Global Scholars; research and writing on international graduate programs and careers; or peer mentoring Global Scholars or international students. The experience must be developed in consultation with the Coordinator of Global Scholars or the Office of Study Abroad. This requirement may be aligned with the Honors Program and/or major program requirements in the College of Arts and Sciences.

Students must be in good academic standing to participate in study abroad and to graduate with Global Scholars recognition. Particular study abroad programs may require higher standards of admission.

Contact Dr. Meri Clark (mclark@wne.edu), the Coordinator of the University Global Scholars College of Arts and Sciences Program for more information.

## College of Arts and Sciences Requirements

Students in the College of Arts and Sciences are required to satisfy the General University Requirements (p. 27). All students majoring within the College of Arts and Sciences must also fulfill the following requirements:

1. Complete at least 122 credit hours of courses in order to graduate.  
Note: No more than 15 credit hours of ROTC courses may be counted within this 122;
2. Complete the requirements for a major;
3. Complete all 8 Perspectives of Understanding (p. 27);
4. Writing Intensive Requirement (WIC)  
Complete at least six additional credit hours in courses designated as "Writing Intensive," one at the 200-level and one at the 300-level. All Writing Intensive courses are approved by the Department of English; and
5. Complete at least 30 credit hours in advanced courses (numbered 300-400) that may include those in the major and other areas, or complete the requirements for a major and a minor.  
No ROTC courses may count as advanced courses.

Nonbusiness majors can apply no more than 25% of business coursework to their graduation requirement.

### Actuarial Sciences

#### Actuarial Science Major

##### General Information

Actuaries are business professionals who quantify, model, and analyze risk in a business environment. Wherever risk or uncertainty is present, such as in the contexts of life, property or casualty insurance, health care, or in the financial management of pensions or annuities, actuaries are needed to understand and manage that risk. An actuary needs to have a solid grounding in the theory and applications of calculus, probability and statistics, mathematical finance including interest theory, and various mathematical modeling techniques.

In addition to their mathematical analysis and problem-solving abilities, actuaries need to have excellent oral and written communication skills as well as a basic understanding of economics, finance, and corporate structure and decision making. An ideal actuary has mastery of technical mathematical material, can apply it in its proper context, and can communicate it to an appropriate audience.

##### Career Opportunities

The job of actuary is consistently rated very highly in terms of job satisfaction, salary, employment outlook, work environment, and growth opportunity. One can usually find it at or near the top of annual "best jobs" lists. Actuaries are in high demand and are most commonly employed in the insurance, financial services, and health care industries as well as in government agencies. The numerous such companies present in the Springfield-Hartford corridor means that actuarial jobs are relatively plentiful, and even more opportunities are possible in the greater Boston and New York areas. Graduates of Western New England have obtained positions at many of these companies.

**Program Objectives**

The Actuarial Science Major is housed within the Department of Mathematical Sciences and follows the educational recommendations of the two largest actuarial-related professional societies in the US: the Society of Actuaries (SOA) and the Casualty Actuary Society (CAS). A student who successfully completes the Actuarial Science Major will:

1. Demonstrate knowledge of the foundational mathematical concepts needed for actuarial science.
2. Demonstrate the ability to communicate actuarial mathematics to an appropriate audience, in both written and oral form.
3. Demonstrate competence with software relevant to a career in actuarial science.
4. Demonstrate success in learning mathematical concepts independently.

The SOA and CAS credential professional actuaries through a widely recognized and respected process that involves exams, coursework, and work experience. The Actuarial Science Major involves coursework that covers the majority of the syllabi for Exam P/1 (Probability), Exam FM/2 (Financial Mathematics), Exam MFE/3F (Models for Financial Economics), Exam MLC/LC (Models for Life Contingencies), and Exam ST (Stochastic Processes/Statistics). Although not a requirement, students are strongly encouraged to pass at least one if not both of Exams P/1 and FM/2 before graduation. In addition, a student completing the Major will be in position to receive credit for all three of the validation by educational experience (VEE) areas required of the SOA and CAS. See below for more information.

**Mathematics Faculty** (p. 33)

**Degree Requirements**

Required Mathematics and Computer Science courses (55 credit hours)

MATH 121	Introductory Probability and Statistics	3 cr.
MATH 133	Calculus I	4 cr.
MATH 134	Calculus II	4 cr.
MATH 235	Calculus III	3 cr.
MATH 236	Differential Equations	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
MATH 306	Linear Algebra	3 cr.
MATH 310	Theory of Interest	3 cr.
MATH 372	Probability	3 cr.
MATH 3xx-4xx	Six additional courses in probability, statistics, financial mathematics, and actuarial models.	18 cr.
CS 170	Technology in Mathematics	3 cr.
CS 171	Programming for Mathematics	4 cr.

**Subtotal: 55**

**Other required courses (27 credits)**

AC 201/HONB 203	Financial Reporting	3 cr.
EC 111	Principles of Microeconomics	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
ENGL 206	Writing for Business	3 cr.
FIN 214	Introduction to Finance	3 cr.
FIN 320	Intermediate Corporation Finance	3 cr.
FIN 417	Investments	3 cr.
ILP 317	Management Issues for Professionals	3 cr.
PH 211	Business Ethics	3 cr.

**Subtotal: 27**

**Other Recommended Courses**

A student who wishes to use their general electives to obtain additional coursework that supports a career in the actuarial sciences could take any of the following.

AC 202	Managerial Accounting	3 cr.
EC 386	Econometrics	3 cr.
FIN 418	Security Analysis	3 cr.
MATH 420	Mathematical Modeling	3 cr.
MATH 421	Real Analysis	3 cr.

**Subtotal: 15**

**Actuarial Exams and VEE Credits**

The following courses help prepare students for the corresponding SOA or CAS exams. It should be noted that preparing for an exam requires independent study beyond the coursework. For complete topics, consult the exam syllabi as published by the SOA or CAS.

SOA Exam	CAS Exam	Course(s)
Exam P	Exam 1	MATH 372
Exam FM	Exam 2	MATH 310
Exam MFE	Exam 3F	MATH 406
Exam MLC	Exam LC*	MATH 401 & MATH 402
	Exam ST	MATH 383 & MATH 405

\*Passing SOA Exam MLC allows a student to receive credit for CAS Exam LC, but passing CAS Exam LC alone does not allow a student to receive credit for SOA Exam MLC.

The validation by educational experience (VEE) requirement of the SOA and CAS can be obtained by taking the following courses, for which we anticipate VEE approval. Although VEE experiences can be completed independently of the exam process, a student needs to have passed at least two exams before applying for VEE credit.

VEE Topic	Courses
Economics	EC 111 & EC 112
Corporate Finance	FIN 320 & FIN 417
Applied Statistical Methods	MATH 383 & MATH 384

#### Obtaining a Mathematical Sciences Minor

A student obtaining an Actuarial Science Major can complete the requirements for the Mathematical Sciences Minor by taking one additional course: MATH 412, MATH 418, or MATH 421. In addition, a student wishing to pursue an Economics Minor or a Business Minor needs to take only three or four additional courses, respectively.

See the Mathematical Sciences Minor (p. 164) for the list of courses.

#### Actuarial Science Suggested Sequence of Courses

##### Degree Requirements

##### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
MATH 133	Calculus I	4 cr.
LA 100	First Year Seminar	2 cr.
HIST XXX	Historical Perspective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
BIO 107	General Biology I	3 cr.
	And	
BIO 117	General Biology Laboratory I	1 cr.
	or	
CHEM 105	General Chemistry I	4 cr.
	or	
PHYS 133	Mechanics	4 cr.

**Subtotal: 17**

##### Freshman Year - Spring Semester

CS 170	Technology in Mathematics	3 cr.
ENGL 133	English Composition II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
MATH 134	Calculus II	4 cr.
BIO 108	General Biology II	3 cr.
	And	
BIO 118	General Biology Laboratory II	1 cr.
	or	

CHEM 106	General Chemistry II	4 cr.
	or	
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 17**

##### Sophomore Year - Fall Semester

MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
MATH 310	Theory of Interest	3 cr.
AC 201/HONB 203	Financial Reporting	3 cr.
EC 111	Principles of Microeconomics	3 cr.

**Subtotal: 16**

##### Sophomore Year - Spring Semester

MATH 236	Differential Equations	3 cr.
MATH 372	Probability	3 cr.
CS 171	Programming for Mathematics	4 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.

**Subtotal: 16**

##### Junior Year - Fall Semester

MATH 306	Linear Algebra	3 cr.
MATH 3xx	Statistics Requirement	3 cr.
MATH 4xx	Probability Requirement	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
FIN 320	Intermediate Corporation Finance	3 cr.
PEHR XXX	Lifetime Activities	1 cr.

**Subtotal: 16**

##### Junior Year - Spring Semester

MATH 3xx	Statistics Requirement	3 cr.
MATH 4xx	Financial Modeling Requirement	3 cr.
ENGL 206	Writing for Business	3 cr.
GEN XXX	General Elective	3 cr.
ILP 317	Management Issues for Professionals	3 cr.

**Subtotal: 15**

##### Senior Year - Fall Semester

MATH 4xx	Actuarial Models Requirement	3 cr.
FIN 417	Investments	3 cr.
PH 211	Business Ethics	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.

**Subtotal: 13**

##### Senior Year - Spring Semester

MATH 4xx	Actuarial Models Requirement	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
GEN XXX	General Elective	3 cr.
WIC 3XX	Writing Intensive Course	3 cr.

**Subtotal: 12**

Subtotal: 122

\*Either BIO 107-BIO 108 and BIO 117-BIO 118, or CHEM 105-CHEM 106, or PHYS 133-PHYS 134 must be taken to satisfy the Natural Science Perspective requirement. The Department recommends PHYS 133-PHYS 134.

\*\*In alternate years, MATH 401-MATH 402 should be taken in the junior year with MATH 383-MATH 384 and MATH 405-MATH 406 taken in the senior year.

Total Credit Hours: 122

### Actuarial Science Suggested Sequence of Courses

#### Degree Requirements

##### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
MATH 133	Calculus I	4 cr.
LA 100	First Year Seminar	2 cr.
HIST XXX	Historical Perspective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
BIO 107	General Biology I	3 cr.
	And	
BIO 117	General Biology Laboratory I	1 cr.
	or	
CHEM 105	General Chemistry I	4 cr.
	or	
PHYS 133	Mechanics	4 cr.

**Subtotal: 17**

##### Freshman Year - Spring Semester

CS 170	Technology in Mathematics	3 cr.
ENGL 133	English Composition II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
MATH 134	Calculus II	4 cr.
BIO 108	General Biology II	3 cr.
	And	
BIO 118	General Biology Laboratory II	1 cr.
	or	
CHEM 106	General Chemistry II	4 cr.
	or	
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 17**

##### Sophomore Year - Fall Semester

MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
MATH 310	Theory of Interest	3 cr.
AC 201/HONB 203	Financial Reporting	3 cr.
EC 111	Principles of Microeconomics	3 cr.

**Subtotal: 16**

##### Sophomore Year - Spring Semester

MATH 236	Differential Equations	3 cr.
MATH 372	Probability	3 cr.
CS 171	Programming for Mathematics	4 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.

**Subtotal: 16**

##### Junior Year - Fall Semester

MATH 306	Linear Algebra	3 cr.
MATH 3xx	Statistics Requirement	3 cr.
MATH 4xx	Probability Requirement	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
FIN 320	Intermediate Corporation Finance	3 cr.
PEHR XXX	Lifetime Activities	1 cr.

**Subtotal: 16**

##### Junior Year - Spring Semester

MATH 3xx	Statistics Requirement	3 cr.
MATH 4xx	Financial Modeling Requirement	3 cr.
ENGL 206	Writing for Business	3 cr.
GEN XXX	General Elective	3 cr.
ILP 317	Management Issues for Professionals	3 cr.

**Subtotal: 15**

##### Senior Year - Fall Semester

MATH 4xx	Actuarial Models Requirement	3 cr.
FIN 417	Investments	3 cr.
PH 211	Business Ethics	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.

**Subtotal: 13**

##### Senior Year - Spring Semester

MATH 4xx	Actuarial Models Requirement	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
GEN XXX	General Elective	3 cr.

WIC 3XX Writing Intensive Course 3 cr.  
**Subtotal: 12**

Total Credit Hours: 122

American Studies

## American Studies Major

### General Information

American Studies majors take a broad, inter-disciplinary approach to the meaning and nature of culture in the United States including the context of European colonialism – an inquiry that explores the idea of America as a contested site of meaning. Literature is the core of the program, but majors position their literary study in a comparative analysis of visual media and history to supplement their understanding of the relationship between cultural expressions and their context in social, political and economic change.

### Career Opportunities

Combining a specialization in American culture with emphasis on critical reading, writing and thinking throughout the course of study, American Studies majors have many opportunities for graduate study and employment. They graduate prepared for the fields of law and politics, technical writing, editing, journalism and teaching. Students competing for positions specifically focused on American literature or culture will be able to present themselves as specialists in that field. The cultural and historical context of the American Studies program serves majors in business fields reliant on the interpretation of cultural trends and meaning such as marketing and media research, publishing and public relations.

### English Faculty (p. 33)

Professor: Winthrop Rhodes

Associate Professors: Josie Brown-Rose, Lisa Drnec-Kerr, Edward Wesp

Assistant Professor: Kelly Klingensmith

Professional Educator: Stephanie Wardrop

### Program Objectives

- To offer a broad, inter-disciplinary approach to the culture of the United States.
- To provide in-depth exposure to the forms and development of American, including African American, literature situated in the broad Anglophone tradition and history of colonization.
- To analyze film and visual media as a part of the larger American cultural discourse and sharpen students' awareness of the techniques and traditions particular to visual media.
- To supplement students' understanding of literary and visual media with historical context.
- To develop students' ability to read, analyze and interpret a variety of cultural texts.
- To develop students' ability to produce clear, nuanced and rhetorically sophisticated academic writing.

### General University and College Requirements

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

Four additional courses, of which one must treat a major author or authors, and another must treat a historically under-represented literature.

Total Credit Hours: 122

## American Studies Major-Course Requirements

The requirements call for 36 credits in the Department of English<sup>1</sup> and 6 credits from the courses taken in the Department of History.

<sup>1</sup> Optionally, 3 credits from one of two selected courses in the Department of Communications can be counted toward the 36 credit requirement.

ENGL 2xx/3xx Studies in Transatlantic Culture (p. **Error! Bookmark not defined.**) can be filled by ENGL 231 (p. 221), ENGL 232 (p. 221), ENGL 327 (p. 222), ENGL 328 (p. 222), ENGL 329 (p. 223) or ENGL 341 (p. 223) or by future courses relevant to Transatlantic study.

### Degree-Requirements

Each of the following courses in American Literature and Literary Studies:

ENGL 223	African American Literature I	3 cr.
ENGL 224	African American Literature II	3 cr.
ENGL 251	American Literature I	3 cr.
ENGL 252	American Literature II	3 cr.
ENGL 302	Approaches to the Study of Literature	3 cr.
ENGL 3xx	Topics in American Studies (Variable Topics)	3 cr.
ENGL 2xx/3xx	Studies in Transatlantic Culture - ENGL 231, 232, 327, 328 or 341	3 cr.
ENGL 336	Ethnic American Literature	3 cr.
ENGL 338/411	Major Authors	3 cr.
	or	
ENGL 345	Major African American Writers	3 cr.
ENGL 410	English Seminar	3 cr.

**Subtotal: 33**

Any two of the following courses in Film and Media Studies or Communications, one of which must be FILM xxx:

FILM 201	Studies in Mainstream Film Genres	3 cr.
FILM 210	Mass Media in Film	3 cr.
FILM 212	Women and Film	3 cr.
FILM 290	Special Topics in Film	1-3 cr.
FILM 340	Director's Signature	3 cr.
FILM 390	Special Topics in Film	1-3 cr.
COMM 324	Media Industries, Government, and Society	3 cr.
COMM 326	Race, Gender, and Ethnicity in the Media	3 cr.

**Subtotal: 6**

Any two of the following courses from the Department of History:

HIST 25x	Courses in American History	3 cr.
HIST 35x	Courses in American History	3 cr.

**Subtotal: 6**

Subtotal: 45

### Degree-Requirements

#### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
GEN XXX	General Elective	3 cr.
CS 13X	Computer Competence	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

#### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PH XXX	Ethical Perspective	3 cr.
GEN XXX	General Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.

**Subtotal: 16**

#### Sophomore Year - Fall Semester

ENGL XXX	Two literature survey courses from among ENGL 231, 232, 251 or 252	6 cr.
SBP XXX	Soc Science Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.

**Subtotal: 15**

#### Sophomore Year - Spring Semester

ENGL XXX	Two literature survey courses from among ENGL 231, 232, 251 or 252	6 cr.
ENGL 302	Approaches to the Study of Literature	3 cr.
GEN XXX	General Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

#### Junior Year - Fall Semester

ENGL 336	Ethnic American Literature	3 cr.
HIST 25x	Courses in American History	3 cr.
FILM 2xx	One from among FILM 201, 210, 212 or 290	3 cr.
ART XXX	Aesthetic Perspective	3 cr.

CUL XXX	Cultural Perspective	3 cr.
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**Subtotal: 15**

#### Junior Year - Spring Semester

ENGL 2xx/3xx	Studies in Transatlantic Culture - ENGL 231, 232, 327, 328 or 341	3 cr.
ENGL 3xx	Topics in American Studies (Variable Topics)	3 cr.
FILM/COMM 3xx	One from among FILM 340, 390 or COMM 324, 326	3 cr.
HIST 35x	Courses in American History	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

#### Senior Year - Fall Semester

ENGL 338/411	Major Authors	3 cr.
	or	
ENGL 345	Major African American Writers	3 cr.
	or	
ENGL 411/338	Major Authors	3 cr.
GEN 3XX/4XX	General Elective	3 cr.
GEN 3XX/4XX	General Elective	3 cr.
GEN 3XX/4XX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 16**

#### Senior Year - Spring Semester

ENGL 410	English Seminar	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Subtotal: 122

Total Credit Hours: 122

### Biology

#### Biology Major

##### General Information

The goal of the Biology major is to provide students with the information and skills necessary to function in jobs or to obtain the undergraduate background necessary for more advanced training and education at the graduate level. In either case, the purpose is employment in a biologically oriented field or the professions.

##### Career Opportunities

Biology graduates are employed as laboratory technicians, product analysts, quality control technicians, and forensic scientists. Others are in research, teaching, or have gone on to graduate or medical schools.

**Physical and Biological Faculty** (p. 33)

**Program Objectives:**

1. To demonstrate knowledge of basic structure and functioning of cells.
2. To understand the basic features of the synthetic theory of evolution.
3. To understand basic ecological principles.
4. To understand the principles and mathematical analysis of Mendelian and non-Mendelian inheritance.
5. To understand the structure and function of nucleic acids and molecular controls.
6. To understand the structures and functions of animals.
7. To understand the structure and physiology of plants.
8. To achieve additional understanding in population biology, organismic biology, or cellular and molecular biology.
9. To develop quantitative problem solving skills and data analysis.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34)

**Degree Requirements**

Required biology courses (34 credit hours)

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
BIO 201	Plant Biology	4 cr.
BIO 213	Ecology	3 cr.
BIO 310	Cell Biology	4 cr.
BIO 306	Genetics	4 cr.
BIO 455	Evolution	3 cr.
BIO 2xx-4xx	Eight additional semester hours of 2xx-4xx BIO courses	8 cr.

**Subtotal: 34**

Required chemistry courses (16 credit hours)

CHEM 105	General Chemistry I	4 cr.
CHEM 106	General Chemistry II	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.

**Subtotal: 16**

Twelve to 14 additional credit hours in math, physics, and statistics courses

MATH 109	Pre-Calculus Mathematics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
PHYS 123	Physics of the Life Sciences 1	4 cr.
	And	
PHYS 124	Physics of the Life Sciences 2	4 cr.
	or	
PHYS 101	Elements of Physics	3 cr.
	And	
PHYS 15X	PHYS 15x Elective	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.

**Subtotal: 12-14**

Subtotal: 62-64

Total Credit Hours: 62-64

**Biology Suggested Sequence of Courses**

Notes: The suggested sequence of courses in years two, three, and four is an example only. Some offerings for these years will alternate and the exact sequence will require consultation with the faculty and deans.

**Degree Requirements**

Freshman Year - Fall Semester

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
MATH 109	Pre-Calculus Mathematics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
LA 100	First Year Seminar	2 cr.

**Subtotal: 16**

Freshman Year - Spring Semester

BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 106	General Chemistry II	4 cr.
ENGL 133	English Composition II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

Sophomore Year - Fall Semester

BIO 213	Ecology	3 cr.
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CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
WIC 2XX	Writing Intensive Course	3 cr.
HIST XXX	History	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 14**

#### Sophomore Year - Spring Semester

BIO 201	Plant Biology	4 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CS XXX	Computer Competence Requirement	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 14**

#### Junior Year - Fall Semester

BIO 2XX/4XX	BIO Elective	4 cr.
CUL 2XX	Cultural Studies	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
PHYS 101	Elements of Physics or	3 cr.
PHYS 123	Physics of the Life Sciences 1	4 cr.

**Subtotal: 16-17**

#### Junior Year - Spring Semester

PHYS 15X	PHYS 15x Elective or	3 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.
ART XXX	Aesthetic Perspective	3 cr.
PH XXX	Ethical Perspective	3 cr.
GEN XXX	General Elective	3 cr.
BIO 310	Cell Biology	4 cr.

**Subtotal: 16-17**

#### Senior Year - Fall Semester

BIO 306	Genetics	4 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
SBP XXX	Soc Science Perspective	3 cr.

**Subtotal: 16**

#### Senior Year - Spring Semester

BIO 455	Evolution	3 cr.
BIO 2XX/4XX	BIO Elective	4 cr.

GEN XXX	General Electives	4 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.

**Subtotal: 15**

Subtotal: 122-124

#### Premedical Students:

Biology majors intending to apply to medical school should contact the premed advisor of the department for additional information concerning sequence of courses.

Total Credit Hours: 122-124

Chemistry

#### Chemistry Major

The Chemistry curriculum is designed to provide a sound theoretical background in the principles of chemistry complemented by hands-on laboratory experiences. Students have the opportunity to acquire skills in spectrophotometric, chromatographic, and advanced instrumentation methods as well as perform synthesis and characterization of organic and inorganic compounds.

#### Career Opportunities

A baccalaureate degree in chemistry provides graduates with diverse career opportunities and also prepares them for advanced studies in chemistry and related fields. Our graduates are employed as chemical research associates in industrial, governmental, clinical, and environmental settings. Others pursue a career teaching chemistry or in chemical sales. Many of our graduates pursue advanced degrees in chemistry, biochemistry, medical sciences, and other related disciplines.

Physical and Biological Faculty (p. 33)

#### Chemistry Major Objectives

Upon completing this program, a Chemistry major will be able to:

1. Perform accurate stoichiometric and chemical equilibrium calculations.
2. Predict and explain the reactivity of an organic or inorganic compound from a knowledge of its structure.
3. Assess the thermodynamic and kinetic stability of a chemical system.
4. Propose a reasonable mechanism for an organic or inorganic reaction.
5. Apply basic quantum mechanical concepts to the study of chemical systems.
6. Synthesize and characterize inorganic and organic compounds.
7. Design and perform a qualitative and quantitative analysis of a sample of matter, using both wet and instrumental methods.
8. Plan and execute experiments through the proper use of library resources.
9. Analyze data statistically and assess reliability of results.
10. Communicate effectively through oral and written reports.

#### General University and College Requirements

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34)

### Degree Requirements

#### Required chemistry courses (40 credit hours)

CHEM 105	General Chemistry I	4 cr.
CHEM 106	General Chemistry II	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 211	Analytical Methods	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
CHEM 312	Instrumental Analysis	3 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 317	Physical Chemistry I	3 cr.
CHEM 318	Physical Chemistry II	3 cr.
CHEM 322	Instrumental Analysis Laboratory	1 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
CHEM 327	Physical Chemistry Laboratory I	1 cr.
CHEM 328	Physical Chemistry Laboratory II	1 cr.
CHEM 421	Inorganic Chemistry	3 cr.
CHEM 431	Inorganic Chemistry Laboratory	1 cr.

**Subtotal: 40**

#### Mathematics and physics courses (19 credit hours)

MATH 133	Calculus I	4 cr.
MATH 134	Calculus II	4 cr.
MATH 235	Calculus III	3 cr.
PHYS 133	Mechanics	4 cr.
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 19**

Subtotal: 59

The 2.0 required grade point average in the major is based upon all CHEM courses pursued as a part of the student's degree program.

Total Credit Hours: 59

### Chemistry Suggested Sequence of Courses

Notes: The suggested sequence of courses in years three and four is an example only. Some offerings for these years will alternate and the exact sequence will require consultation with the faculty and deans.

### Degree Requirements

#### Freshman Year- Fall Semester

CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.

MATH 133	Calculus I	4 cr.
PHYS 133	Mechanics	4 cr.

**Subtotal: 17**

#### Freshman Year - Spring Semester

CHEM 106	General Chemistry II	4 cr.
ENGL 133	English Composition II	3 cr.
MATH 134	Calculus II	4 cr.
PEHR 151	Personal Health and Wellness	1 cr.
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 16**

#### Sophomore Year - Fall Semester

CHEM 209	Organic Chemistry I	3 cr.
CHEM 211	Analytical Methods	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
MATH 235	Calculus III	3 cr.
CS XXX	Computer Competence Requirement	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 17**

#### Sophomore Year - Spring Semester

CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 312	Instrumental Analysis	3 cr.
CHEM 322	Instrumental Analysis Laboratory	1 cr.
WIC 2XX	Writing Intensive Course	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

#### Junior Year - Fall Semester

CHEM 317	Physical Chemistry I	3 cr.
CHEM 327	Physical Chemistry Laboratory I	1 cr.
GEN XXX	General Elective	3 cr.
CUL 2XX	Cultural Studies	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.

**Subtotal: 13**

#### Junior Year - Spring Semester

CHEM 318	Physical Chemistry II	3 cr.
CHEM 328	Physical Chemistry Laboratory II	1 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
GEN XXX	General Elective	3 cr.

GEN XXX	General Elective	3 cr.
		<b>Subtotal: 14</b>

Senior Year - Fall Semester

GEN XXX	General Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.
PH XXX	Ethical Perspective	3 cr.
GEN XXX	General Elective	3 cr.
SBP XXX	Social/Behavioral Perspective	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Spring Semester

GEN XXX	General Elective	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
CHEM 421	Inorganic Chemistry	3 cr.
CHEM 431	Inorganic Chemistry Laboratory	1 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	2 cr.
		<b>Subtotal: 15</b>

Subtotal: 122

Total Credit Hours: 122

Communication

## Communication Major

### General Information

Students in the communication major are exposed to the fundamental tenets of several aspects of the field, including interpersonal communication, oral communication, verbal and nonverbal communication, organizational communication, intercultural communication, and electronically mediated communication. They also learn about different approaches to research and practice within each field. Students also choose one of four concentrations which will allow them to focus their studies in an area best reflecting their personal interests and professional needs: 1) Media Theory and Production, which emphasizes the production, reception, and interpretation of messages via electronic media as well as the role of media institutions in society; 2) Professional Communication, which emphasizes the analysis of verbal and nonverbal communication in interpersonal, business, and professional contexts as well as the development of skills to increase efficiency in conveying or interpreting messages in those contexts; 3) Journalism, which emphasizes the creation and interpretation of messages in a variety of news media and the development of journalistic ethics and reporting skills; and 4) Public Relations, which emphasizes the construction of messages for public consumption across media and the development of skills to enhance the efficacy of conveying a message clearly and accurately via mass media institutions.

### Career Opportunities

The benefits of a communication major are manifold. Some graduates of the communication major continue their education in graduate school or law school. Others work for television or radio broadcast stations, newspapers, public service organizations, hospitals, insurance companies, public relations firms, political campaigns, and other businesses. Our unique partnership with WAMC Northeast Public Radio enables our best students to write, produce, and

broadcast news reports at a national level—an excellent springboard for careers in journalism and broadcasting. Students also have an opportunity to produce professional promotional videos for nonprofit organizations through the University’s Institute for Media and Nonprofit Communication. Regardless of the concentration they choose, our graduates tell us that the communication curriculum has helped them not only to develop their writing and speaking skills, but also to handle specialized assignments such as creating questionnaires and conducting interviews that provide useful data for their organizations. In short, they know how to obtain, process, and disseminate information.

Communication Faculty (p. 32)

### Program Objectives

#### Intellectual Range

1. To enlarge and deepen students’ understanding of human nature as reflected in and affected by various forms of communication.
2. To enlarge and deepen students’ understanding and appreciation of the role of communication in human society and individual life.
3. To deepen students’ understanding of the various forms and media of communication.
4. To enhance students’ understanding of the conditions for both success and failure in communication, as well as abuses of power through communication.
5. To encourage critical reflection on the information and values conveyed by electronic media, as well as their role in society.
6. To encourage critical reflection on the ethical issues that arise in the field of communication.

#### Important Communication Skills

The ability to convey information and to persuade others effectively and efficiently—whether in written, oral, or electronically mediated communication—is of great value in personal, family, professional, and political life. The communication curriculum is designed to achieve the following:

1. To improve students’ ability to read, comprehend, and analyze written communication.
2. To improve students’ ability to listen to, comprehend, and analyze oral communication.
3. To develop students’ ability to design research strategies and to conduct research effectively.
4. To improve students’ ability to write clear, grammatically correct, and rhetorically powerful prose.
5. To improve students’ ability to communicate nonverbally and to understand the nonverbal communication of others in a variety of situations.
6. To enhance students’ abilities to consume, use, and create electronic media technology and products.

#### Theoretical and Practical Communication Content

1. To increase students’ knowledge of various theories of communication.
2. To heighten students’ awareness of the power of communication.

3. To develop students' capacities as powerful communicators in global society.
4. To enable students to be engaged citizens in an increasingly mediated culture.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34)

The Communication Major requires 39 credit hours in communication and/or journalism courses.

**Degree Requirements**

All communication majors are required to take the following courses (24 credit hours), in addition to the courses required by their respective concentrations:

COMM 100	Principles of Communication	3 cr.
COMM 102	Introduction to Public Speaking	3 cr.
COMM 205	Mass Communication	3 cr.
COMM 206	Introduction to Communication Research	3 cr.
COMM 300	Communication Theory	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
EC/POSC xxx	Social Science Course	3 cr.
	And	
COMM 348	Intercultural Communication	3 cr.
	or	
COMM 356	Global Communication	3 cr.
		<b>Subtotal: 24</b>

Communication majors concentrating in media theory and production are also required to take the following courses (24 credit hours):

Plus two COMM courses at the 3xx/4xx level

COMM 241	Video Production I: Introduction to Digital Editing	3 cr.
COMM 250	Video Production II	3 cr.
COMM 251	TV Broadcasting	3 cr.
COMM 324	Media Industries, Government, and Society	3 cr.
COMM 326	Race, Gender, and Ethnicity in the Media	3 cr.
COMM 490	Seminar in Media Theory and Journalism	3 cr.
		<b>Subtotal: 24</b>

Communication majors concentrating in journalism are also required to take the following courses (24 credit hours):

Plus two COMM or JRNL courses at the 3xx/4xx level

JRNL 101	Introduction to Journalism	3 cr.
JRNL 205	Journalism Ethics	3 cr.
JRNL 250	Intermediate Journalism	3 cr.

JRNL 370/COMM 371	Advanced Radio Reporting	3 cr.
COMM 285	Introduction to Public Relations	3 cr.
COMM 490	Seminar in Media Theory and Journalism	3 cr.

**Subtotal: 24**

Communication majors concentrating in professional communication are also required to take the following courses (24 credit hours):

Plus two COMM courses at the 2xx/3xx/4xx level

COMM 280	Organizational Communication	3 cr.
COMM 315	Language in Communication	3 cr.
COMM 320	Small Group Communication	3 cr.
COMM 321	Nonverbal Communication	3 cr.
COMM 348	Intercultural Communication	3 cr.
COMM 491	Seminar in Professional Communication and Public Relations	3 cr.

**Subtotal: 24**

Communication majors concentrating in public relations are also required to take the following courses (24 credit hours):

Plus two COMM courses at the 3xx/4xx level

COMM 280	Organizational Communication	3 cr.
COMM 285	Introduction to Public Relations	3 cr.
COMM 320	Small Group Communication	3 cr.
COMM 324	Media Industries, Government, and Society	3 cr.
COMM 340	Business Communication	3 cr.
COMM 491	Seminar in Professional Communication and Public Relations	3 cr.

**Subtotal: 24**

Subtotal: 120

Total Credit Hours: 120

**Communication Concentration in Media Theory and Production**

**Degree Requirements**

Freshman Year - Fall Semester

COMM 100	Principles of Communication	3 cr.
CS 13X	Computer Competence	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

Freshman Year - Spring Semester

COMM 102	Introduction to Public Speaking	3 cr.
ENGL 133	English Composition II	3 cr.
GEN XXX	General Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

Sophomore Year - Fall Semester

EC/POSC xxx	Social Science Course	3 cr.
COMM 205	Mass Communication	3 cr.
COMM 206	Introduction to Communication Research	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
COMM 241	Video Production I: Introduction to Digital Editing	3 cr.

**Subtotal: 15**

Sophomore Year - Spring Semester

ART XXX	Aesthetic Perspective	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
COMM 250	Video Production II	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
PSY/SO XXX	Social Behavioral Perspective	3 cr.

**Subtotal: 15**

Junior Year - Fall Semester

COMM 251	TV Broadcasting	3 cr.
COMM 300	Communication Theory	3 cr.
COMM 326	Race, Gender, and Ethnicity in the Media	3 cr.
WIC 3xx-4xx	Writing Intensive Course And	3 cr.
COMM 348	Intercultural Communication or	3 cr.
COMM 356	Global Communication	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester

COMM 324	Media Industries, Government, and Society	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
COMM 3XX	COMM Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

COMM 3XX	COMM Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

COMM 490	Seminar in Media Theory and Journalism	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Subtotal: 121

Total Credit Hours: 121

Communication Concentration in Professional Communication

Degree Requirements

Freshman Year- Fall Semester

COMM 100	Principles of Communication	3 cr.
CS 13X	Computer Competence	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

Freshman Year - Spring Semester

COMM 102	Introduction to Public Speaking	3 cr.
ENGL 133	English Composition II	3 cr.
PSY/SO XXX	Social Behavioral Perspective	3 cr.
HIST XXX	Historical Perspective	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

Sophomore Year - Fall Semester

EC/POSC xxx	Social Science Course	3 cr.
COMM 205	Mass Communication	3 cr.
COMM 206	Introduction to Communication Research	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 16**

Sophomore Year - Spring Semester

ART XXX	Aesthetic Perspective	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
COMM 280	Organizational Communication	3 cr.
GEN XXX	General Elective	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Fall Semester

COMM 300	Communication Theory	3 cr.
COMM 315	Language in Communication	3 cr.
COMM 321	Nonverbal Communication	3 cr.
COMM 2XX	COMM Elective	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Spring Semester

COMM 320	Small Group Communication	3 cr.
COMM 348	Intercultural Communication	3 cr.
COMM 2XX	COMM Elective	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Fall Semester

COMM 356	Global Communication	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Spring Semester

COMM 491	Seminar in Professional Communication and Public Relations	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

Subtotal: 122

Total Credit Hours: 122

Communication Concentration in Journalism

Degree Requirements

Freshman Year- Fall Semester

COMM 100	Principles of Communication	3 cr.
CS 13X	Computer Competence	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 15</b>

Freshman Year - Spring Semester

COMM 102	Introduction to Public Speaking	3 cr.
ENGL 133	English Composition II	3 cr.
HIST XXX	Historical Perspective	3 cr.
JRNL 101	Introduction to Journalism	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 16</b>

Sophomore Year - Fall Semester

PH 218	Contemporary Moral Problems	3 cr.
COMM 205	Mass Communication	3 cr.
COMM 206	Introduction to Communication Research	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
JRNL 205	Journalism Ethics	3 cr.
		<b>Subtotal: 15</b>

Sophomore Year - Spring Semester

ART XXX	Aesthetic Perspective	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
PSY/SO XXX	Social Behavioral Perspective	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
JRNL 250	Intermediate Journalism	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Fall Semester

EC/POSC xxx	Social Science Course	3 cr.
COMM 300	Communication Theory	3 cr.
GEN XXX	General Electives	4 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
	And	
COMM 348	Intercultural Communication	3 cr.
	or	
COMM 356	Global Communication	3 cr.
		<b>Subtotal: 16</b>

Junior Year - Spring Semester

COMM 285	Introduction to Public Relations	3 cr.
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GEN XXX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
JRNL 370/COMM 371	Advanced Radio Reporting	3 cr.
	And	
COMM 3XX	COMM Elective	3 cr.
	or	
JRNL 3XX	JRNL Elective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

COMM 3XX	COMM Elective	3 cr.
	or	
JRNL 3XX	JRNL Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

COMM 490	Seminar in Media Theory and Journalism	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Subtotal: 122

Total Credit Hours: 122

**Communication Concentration in Public Relations**

**Degree Requirements**

Freshman Year - Fall Semester

COMM 100	Principles of Communication	3 cr.
CS 13X	Computer Competence	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

Freshman Year - Spring Semester

COMM 102	Introduction to Public Speaking	3 cr.
ENGL 133	English Composition II	3 cr.
GEN XXX	General Elective	3 cr.

HIST XXX	Historical Perspective	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

Sophomore Year - Fall Semester

PSY/SO XXX	Social Behavioral Perspective	3 cr.
COMM 205	Mass Communication	3 cr.
COMM 206	Introduction to Communication Research	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
EC/POSC xxx	Social Science Course	3 cr.

**Subtotal: 16**

Sophomore Year - Spring Semester

ART XXX	Aesthetic Perspective	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
COMM 285	Introduction to Public Relations	3 cr.
COMM 324	Media Industries, Government, and Society	3 cr.
COMM 280	Organizational Communication	3 cr.

**Subtotal: 15**

Junior Year - Fall Semester

COMM 300	Communication Theory	3 cr.
COMM 3XX	COMM Elective	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
GEN XXX	General Elective	3 cr.
	And	
COMM 348	Intercultural Communication	3 cr.
	or	
COMM 356	Global Communication	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester

COMM 340	Business Communication	3 cr.
COMM 320	Small Group Communication	3 cr.
GEN XXX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

COMM 3XX	COMM Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>
Senior Year - Spring Semester		
COMM 491	Seminar in Professional Communication and Public Relations	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

Subtotal: 122

Total Credit Hours: 122

Computer Science

### Computer Science Major

#### General Information

The Computer Science major, which leads to a Bachelor of Science degree, is a versatile major that prepares professionals for careers that may require designing and developing software, finding effective solutions to computing problems, or using computers in innovative ways. The program is interdisciplinary in nature and involves coursework in computer science, computer engineering, and mathematics. The program provides a strong background in programming and software development including programming in Python, Java, C/C++, and more. The curriculum concentrates on the scientific, mathematical, and theoretical aspects of the design of computer systems while also developing communication skills through a strong liberal arts curriculum. The program prepares students to work as a software engineer, handling the design and development of user-oriented computer applications and systems. The substantial foundation in mathematics and computer hardware in this program offers students uniqueness and strength in today's job market. There is sufficient flexibility in the curriculum to allow students to pursue additional coursework in software and/or hardware development, mathematics, business, information processing, computer forensics, and information technology. The program has been structured to follow the current recommendations of the Computer Science Curriculum Committee of the Association for Computing Machinery.

#### Opportunities

Graduates of this program develop the creativity and patterns of thought required of computer scientists and are prepared to go on to advanced study or to enter various professional fields. Graduates are well equipped with the analytic training and the knowledge of software and hardware to enter careers in software design, software development, software management, systems programming, systems analysis, technical and software support, and computer consulting. Organizations in business, industry, and the private sector are eager for candidates with the knowledge and skills that the graduates of this program possess.

**Computer Science and Information Technology** (p. 32)

#### Program Objectives

#### Educational Objectives

The Computer Science program will prepare students to be professionals capable of applying principles to practice, able to undertake lifelong learning, and aware of social, ethical, and environmental issues associated with their professional activities. The expected accomplishments of our graduates during the first several years following graduation from the program are to:

1. Successfully apply principles and practices of computing to develop and maintain software systems that meet customer need.
2. Function ethically and responsibly as a full participant in the computing discipline.
3. Remain current in the fast-changing world of technology today by pursuing lifelong learning.
4. Operate successfully as part of a team.
5. Apply knowledge and skills to the benefit of society.

#### Program Outcomes

Upon completion of the program, the student will have the following abilities:

- Communication – Ability to communicate ideas and concepts in written and oral forms clearly and in an organized manner.
- Mathematical Foundations - Ability to apply knowledge of computing and mathematical concepts and theory to develop and analyze computing systems.
- Teamwork – Ability to work in teams.
- Design – Ability to apply system design process and notation in order to design systems.
- Critical Thinking – Ability to reason logically and evaluate and analyze a computer-based system, process, component or program to meet desired needs.
- Ethics – Ability to identify the role computers play in society and identify and analyze ethical impacts of professional behavior and actions.
- Information Literacy – Ability to identify and utilize appropriate information sources in order to understand and/or solve problems.

#### General University and College Requirements

See General University Requirements and College of Arts and Sciences Requirements

#### Degree Requirements

Required computer science and engineering courses (45 credit hours)

CS 101/IT 101	Introduction to Computing	4 cr.
CS 102/IT 102	Introduction to Programming	4 cr.
CS 200/IT 200	Data Structures	4 cr.
CS 210	Software Design	4 cr.
CS 220	Software Development	4 cr.
CS 351	Programming Paradigms	3 cr.
CS 364	Design of Database Management Systems	3 cr.

CS 366	Design and Analysis of Algorithms	3 cr.
CS 413	Parallel Computing	3 cr.
CS 490	Software Engineering	3 cr.
CS 492	Computer Science Capstone	3 cr.
CPE 310	Microprocessors I	3 cr.
CPE 360	Microprocessors II	4 cr.

**Subtotal: 45**

Required mathematics courses (12 credit hours)

MATH 150	Applied Discrete Mathematics	3 cr.
MATH 251	Advanced Discrete Mathematics	3 cr.
MATH 245	Topics in Linear Algebra and Calculus	3 cr.
MATH 363	Theory of Computation	3 cr.

**Subtotal: 12**

Science courses (6 credit hours)

**Subtotal: 6**

Three additional computer science courses numbered 300 or above, or any of the following IT courses: IT 320, IT 350, and IT 450.

Technical Elective (six credit hours).

**Subtotal: 6**

Subtotal: 69

The 2.0 required grade point average in the major is based on all computer science, mathematics, computer engineering, information technology and business information systems courses pursued as a part of the student's degree program.

Total Credit Hours: 69

Computer Science Suggested Sequence of Courses

Degree Requirements

Freshman Year- Fall Semester

CS 101/IT 101	Introduction to Computing	4 cr.
GEN XXX	General Elective	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
HIST XXX	Historical Perspective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 16**

Freshman Year - Spring Semester

CS 102/IT 102	Introduction to Programming	4 cr.
MATH 150	Applied Discrete Mathematics	3 cr.
ENGL 133	English Composition II	3 cr.
SBP XXX	Social/Behavioral Science Requirement	3 cr.
GEN XXX	General Elective	2 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

Sophomore Year - Fall Semester

CS 200/IT 200	Data Structures	4 cr.
CS 210	Software Design	4 cr.
MATH 251	Advanced Discrete Mathematics	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 17**

Sophomore Year - Spring Semester

CS 220	Software Development	4 cr.
GEN XXX	General Elective	3 cr.
MATH 245	Topics in Linear Algebra and Calculus	3 cr.
LAB/NSP XXX	Natural Science Perspective	3-4 cr.
ART XXX	Aesthetic Perspective	3 cr.

**Subtotal: 16-17**

Junior Year - Fall Semester

CS 351	Programming Paradigms	3 cr.
CS 364	Design of Database Management Systems	3 cr.
LAB XXX	Laboratory Science Requirement	3-4 cr.
CPE 310	Microprocessors I	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15-16**

Junior Year - Spring Semester

CUL XXX	Cultural Studies Perspective	3 cr.
CS 413	Parallel Computing	3 cr.
CPE 360	Microprocessors II	4 cr.
CS 366	Design and Analysis of Algorithms	3 cr.
MATH 363	Theory of Computation	3 cr.

**Subtotal: 16**

Senior Year - Fall Semester

CS/IT 3XX/4XX	CS Elective	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
CS 490	Software Engineering	3 cr.
SBP XXX	Social/Behavioral Sciences Perspective	3 cr.

**Subtotal: 12**

Senior Year - Spring Semester

GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.
PH 211	Business Ethics	3 cr.

CS 366	Design and Analysis of Algorithms	3 cr.
CS 492	Computer Science Capstone	3 cr.

**Subtotal: 13**

Subtotal: 121-123

Total Credit Hours: 121-123

Creative Writing

### Creative Writing Major

#### General Information

The Creative Writing major is intended for students who wish to combine the study of creative writing with the study of literature. Students will gain training in the art of writing within the context of aesthetics, the literary tradition, and a broad liberal arts education. The major offers students a rigorous “apprenticeship” in creative writing, developing students’ understanding of literary forms and tropes, and providing the appropriate background in literary and intellectual history.

#### Career Opportunities

The Creative Writing major will provide an excellent foundation from which students can continue to grow as writers. Because the combination of writing and literature will deal with everything from form and structure to editing to rewriting to critical thinking, Creative Writing graduates will be well suited for careers in all fields of writing, publishing, editing, advertising, technical writing, public relations, as well as graduate study.

English Faculty (p. 33)

Professor: Janet Bowdan

Associate Professors: Pearl Abraham, Lisa Drnec-Kerr

Professional Educator: Stephanie Wardrop

#### Program Objectives

1. To allow students to see and appreciate their own participation in a great tradition and learn the difference between imitation and innovation by studying the works of great writers and literary techniques so many have used.
2. To increase the student’s ability to read and understand a variety of literary works and to improve the students’ ability to write clear, grammatical, rhetorically effective prose and poetry.
3. To develop the ability to recognize literary techniques in others’ works and to utilize these techniques effectively in their own work.
4. To develop an independent and recognizable artistic “voice” and an increased imaginative capacity.
5. To gain a familiarity with the aspects of the publishing industry most relevant to their work and an experience with the process of submitting works of publishable quality.

#### General University and College Requirements

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

#### Degree Requirements

Courses		
ENGL 2XX	Introduction to Creative Writing	3 cr.
ENGL 351	Fiction Workshop	3 cr.
ENGL 352	Poetry Workshop	3 cr.
ENGL 354	Creative Non-Fiction Workshop	3 cr.
ENGL 231	British Literature I	3 cr.
ENGL 232	British Literature II	3 cr.
ENGL 316	Shakespeare: The Comedies and Histories	3 cr.
ENGL 3XX/4XX	English Elective	3 cr.
ENGL 3XX/4XX	English Elective	3 cr.
ENGL 480	Internship in English	1-3 cr.
ENGL 410	English Seminar	3 cr.
	And	
ENGL 251	American Literature I	3 cr.
	or	
ENGL 252	American Literature II	3 cr.
	And	
ENGL 314	Shakespeare: Plays and Poems	3 cr.
	or	
ENGL 315	Shakespeare: The Tragedies	3 cr.
ENGL 3XX/4XX: With approval of the Department Chair, courses in other departments may be substituted.		
Freshman Year- Fall Semester		
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
GEN XXX	General Elective	3 cr.
CS 13X	Computer Competence	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
<b>Subtotal: 15</b>		
Freshman Year - Spring Semester		
ENGL 133	English Composition II	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PH XXX	Ethical Perspective	3 cr.
GEN XXX	General Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.
<b>Subtotal: 16</b>		
Sophomore Year - Fall Semester		
ENGL 237	Creative Writing	3 cr.

ENGL 2xx	One literature survey course	3 cr.
SBP XXX	Social/Behavioral Sciences Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.

**Subtotal: 15**

Sophomore Year - Spring Semester

ENGL 2XX	Two literature survey courses	6 cr.
CUL XXX	Cultural Perspective	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
	And	
ENGL 314	Shakespeare: Plays and Poems	3 cr.
	or	
ENGL 315	Shakespeare: The Tragedies	3 cr.
	or	
ENGL 316	Shakespeare: The Comedies and Histories	3 cr.

**Subtotal: 15**

Junior Year - Fall Semester

ENGL 351	Fiction Workshop	3 cr.
ENGL XXX	English Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester

ENGL 352	Poetry Workshop	3 cr.
ENGL 338/411	Major Authors	3 cr.
ENGL XXX	English Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

ENGL 354	Creative Non-Fiction Workshop	3 cr.
ENGL XXX	English Elective	3 cr.
GEN 3XX	General Electives	9 cr.

**Subtotal: 15**

Senior Year - Spring Semester

ENGL 410	English Seminar	3 cr.
GEN 3XX	General Electives	13 cr.

**Subtotal: 16**

Courses taken to complete the major fulfill the A & S Writing Intensive Requirement.

Subtotal: 122

Total Credit Hours: 122

Criminal Justice

**Criminal Justice Major**

**General Information**

The Bachelor of Science in Criminal Justice program is primarily designed for students who intend to pursue a professional career in such fields as law enforcement, corrections, probation and parole, court administration, or the juvenile justice system. The program also provides a solid foundation for students who wish to pursue graduate studies.

**Career Opportunities**

Employment opportunities for the criminal justice professional are extensive with well over 200 different career patterns in the field. Typical careers of graduates include career law enforcement officer positions at the local, state, and federal levels; professional positions in the field of corrections, probations, and parole; positions in court administration and in the juvenile justice system; social work; and positions as industrial security specialists with major security companies and corporations.

**Criminal Justice and Sociology Faculty (p. 33)**

Professor: John Claffey

Associate Professor: Denise Kindschi Gosselin

Assistant Professors: Laura Hansen, Sarah Stein

**Program Goals and Mission**

Generally, the program goals intend to help students to acquire a higher level of knowledge, understanding, and competencies specific to criminal justice professions through curricula and other activities:

- Foundation of Knowledge: Students will develop an understanding of the major concepts, basic, and advanced terms, theories, and empirical findings in the discipline.
- Applications of Knowledge: Students will develop an understanding of the theoretical perspectives, sociocultural factors, and empirical findings important to policing a democratic society.
- Professional Ethics: Students will develop an understanding of personal and professional values to function ethically as individuals and professionals in their work group; local, and global communities.
- Science: Students will develop an understanding of important social scientific concepts and methods of scientific inquiry.

In the accomplishment of these goals, the program mission is for students to:

- develop a higher-level fund of personal and professional knowledge;
- become competent problem solvers who apply knowledge to criminal justice settings and problems;
- translate knowledge into informed professional practices; and
- convey knowledge through the delivery of high-quality services that are responsive to the needs of the community and the profession.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

## Degree Requirements

### Required criminal justice courses (34 credit hours)

CJ 101	Introduction to Criminal Justice	3 cr.
CJ 210/SO 210	Criminology	3 cr.
CJ 211	Corrections	3 cr.
CJ 218	Police and Society	3 cr.
CJ 230	Criminal Law	3 cr.
CJ 232	Criminal Procedure	3 cr.
CJ 234	The Judicial Process	3 cr.
CJ 300/SO 300	Applied Analytic Methods	3 cr.
CJ 301/SO 301	Research Methods	4 cr.
CJ 340	Ethical Decision-Making	3 cr.
CJ 450	Senior Seminar	3 cr.

**Subtotal: 34**

Subtotal: 34

An additional 15 credit hours in criminal justice courses is required. It is recommended that the student pursue a track program which will be reflected on their transcript. If the student does not choose a track program, he or she may select any 5 courses from the three track programs to fulfill this requirement.

## Criminal Justice Track Options

### Degree Requirements

#### Crime and Society

CJ 235/SO 235	Domestic Violence	3 cr.
CJ 302	Women and the Criminal Justice System	3 cr.
CJ 304/SO 304	Children, Family, and the State	3 cr.
CJ 342/SO 342	Juvenile Delinquency	3 cr.
CJ 306/SO 306	Disability and Mental Health Issues in Criminal Justice	3 cr.

**Subtotal: 15**

#### Criminal Investigation

CJ 220	Evidence	3 cr.
CJ 231	Criminal Investigation	3 cr.
CJ 313	Criminal Justice Interviewing and Interrogation	3 cr.
CJ 348	Introduction to Cyber Crimes	3 cr.
CJ 325	Forensic Science	3 cr.
	or	
CJ 405	Organized Crime	3 cr.

**Subtotal: 15**

#### Terrorism and Homeland Security

CJ 260	Introduction to Terrorism and	3 cr.
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#### Homeland Security

CJ 362	Counter-terrorism	3 cr.
CJ 363	Weapons of Mass Destructions	3 cr.
CJ 364	Terrorism and Business	3 cr.

**Subtotal: 15**

Subtotal: 45

Total Credit Hours: 45

## Criminal Justice Suggested Sequence of Courses

### Degree Requirements

#### Freshman Year- Fall Semester

CJ 101	Introduction to Criminal Justice	3 cr.
SO 101	Introduction to Sociology	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 1XX	Mathematical Analysis	3 cr.
LA 100	First Year Seminar	2 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

#### Freshman Year - Spring Semester

HIST XXX	Historical Perspective	3 cr.
CJ 218	Police and Society	3 cr.
ENGL 133	English Composition II	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

And

PSY 101	Introduction to Psychology	3 cr.
	or	

CJ 2XX	Criminal Justice Elective	3 cr.
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**Subtotal: 16**

#### Sophomore Year - Fall Semester

CJ 211	Corrections	3 cr.
POSC 102	American National Government	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
	And	

CJ 2XX	Criminal Justice Elective	3 cr.
	or	

PSY 101	Introduction to Psychology	3 cr.
	And	

SO 211	Race and Ethnicity	3 cr.
	or	

SO 309	Deviance	3 cr.
	or	

PSY 326	Abnormal Psychology	3 cr.
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<b>Subtotal: 15</b>		
Sophomore Year - Spring Semester		
ART XXX	Aesthetic Perspective	3 cr.
CJ 210/SO 210	Criminology	3 cr.
CJ 2XX or 3XX	Criminal Justice Elective	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
NSP	Natural Science Perspective	3 cr.

**Subtotal: 15**

Junior Year - Fall Semester		
CJ 230	Criminal Law	3 cr.
CJ 234	The Judicial Process	3 cr.
CJ 300/SO 300	Applied Analytic Methods	3 cr.
CS 131	Computing for the Arts and Sciences	3 cr.
or		
CS 133	Introduction to Informatics	3 cr.
PH XXX	Ethical Perspective	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester		
SO 301/CJ 301	Research Methods	4 cr.
CJ 340	Ethical Decision-Making	3 cr.
CJ 232	Criminal Procedure	3 cr.
GEN XXX	General Elective	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.

**Subtotal: 16**

Senior Year - Fall Semester		
CJ 3XX	Criminal Justice Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
And		
CJ 341	Constitutional Issues in Criminal Justice	3 cr.
or		
POSC 325	Constitutional Law	3 cr.
And		
CJ 480	Internship in Criminal Justice	3 cr.
or		
CJ 450	Senior Seminar	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester		
CJ 3XX	Criminal Justice Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

GEN 3XX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

Subtotal: 122

Notes:

1. CJ 210/SO 210 - Criminology will also satisfy the 200 level writing intensive course (WIC)
2. CJ 480 Internship in Criminal Justice will satisfy the CJ 450 Senior Seminar requirement.

Total Credit Hours: 122

Economics

### Economics Major

#### General Information

The objective of the Economics major is to provide students with the analytical tools that enable them to think for themselves, not only about economics but also about the world around them. Courses range from the traditional, such as Money and Banking or American Economic History, to the analytical, such as Microeconomics or Macroeconomics. Some courses feature hands-on experience with both microcomputers and the University's mainframe computer. The Senior Seminar provides experience in supervised research and delivery of an oral presentation.

#### Career Opportunities

Employment opportunities are available in the private, public, and nonprofit sectors. Typical employment might be in banking, with public sector agencies such as a board of health, with the federal government, as a stockbroker, in secondary level teaching, or in private sector management. Students with just one year of graduate training may enter Federal Civil Service at the GS 7 or GS 9 level.

Graduates are well positioned for graduate work in economics, law, business, and public administration. Those pursuing graduate work in economics can expect to find teaching positions at colleges and universities.

#### Economics Faculty (p. 32)

#### Program Objectives

1. To provide a thorough understanding of economic theory.
2. To apply economic theory to the analysis of a variety of social, political, and business issues.
3. To develop students' ability to think creatively and independently about a variety of social, political, and business issues.
4. To apply critical thinking and problem solving skills to developing solutions to problems at the level of an individual decision making unit like a business firm or a nonprofit organization.
5. To apply critical thinking and problem solving skills to developing solutions to problems at the level of the nation or the world.

#### General University and College Requirements

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

### Degree Requirements

Required economics and mathematics courses (24 credit hours):

EC 111	Principles of Microeconomics	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
EC 215	Intermediate Macroeconomics	3 cr.
EC 216	Intermediate Microeconomics	3 cr.
EC 490	Seminar: Issues in Contemporary Economics	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.

Or Two more advanced courses in Mathematics:

MATH 120	Intro Statistics for the Arts & Sci	3 cr.
	or	
BIS 220	Introduction to Business Statistics	3 cr.
	or	
PSY 207	Statistics for the Behavioral Sciences	3 cr.

**Subtotal: 24**

Fifteen additional credit hours selected from:

<u>EC 200/300/400 Upper-level economics courses</u>	
	<b>Subtotal: 15</b>

Eighteen additional credit hours in social science courses, including three credit hours each of political science, history, psychology, and sociology.

**Subtotal: 18**

(Also satisfies the Social and Behavioral Science Perspective.)  
Subtotal: 57

The 2.0 required grade point average in the major is based upon all EC courses pursued as a part of the student's degree program.

Total Credit Hours: 57

### Economics Suggested Sequence of Courses

Please note: Students who join the Department of Economics at the beginning of their sophomore year can begin taking their major requirement then and complete the program without academic sacrifice.

### Degree Requirements

Freshman Year- Fall Semester

EC 111	Principles of Microeconomics	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
LA 100	First Year Seminar	2 cr.
CS 13X	Computer Competence	3 cr.
ENGL 132	English Composition I	3 cr.

PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 15</b>

Freshman Year - Spring Semester

EC 112	Principles of Macroeconomics	3 cr.
ENGL 133	English Composition II	3 cr.
PH XXX	Ethical Perspective	3 cr.
HIST XXX	Historical Perspective	3 cr.
GEN XXX	General Elective	1 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 17</b>

Sophomore Year - Fall Semester

EC 215	Intermediate Macroeconomics	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
CUL XXX	Cultural/Aesthetic Perspective	3 cr.
POSC XXX	Social Science Requirement	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
	or	
BIS 220	Introduction to Business Statistics	3 cr.
	or	
PSY 207	Statistics for the Behavioral Sciences	3 cr.
		<b>Subtotal: 15</b>

Sophomore Year - Spring Semester

EC 216	Intermediate Microeconomics	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
PSY XXX	Behavioral Science Requirement	3 cr.
EC 2XX/3XX	Economics Elective	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Fall Semester

EC 3XX/4XX	Economic Elective	3 cr.
EC 3XX/4XX	Economic Elective	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
SO XXX	Behavioral Science Requirement	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Spring Semester

EC 3XX/4XX	Economic Elective	3 cr.
GEN XXX	General Elective	3 cr.
SBP XXX	Social/Behavioral Sciences Perspective	3 cr.
GEN XXX	General Elective	3 cr.

GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Fall Semester

EC 3XX/4XX	Economic Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
SBP XXX	Behavioral Science Requirement	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Spring Semester

EC 490	Seminar: Issues in Contemporary Economics	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

Subtotal: 122

Note: A one-credit course must be taken at some point during the four-year sequence.

Total Credit Hours: 122

Education

*Education Majors*

**General Information**

Throughout the history of Western New England University, many graduates have gone on to careers in education. Since the establishment of the College of Arts and Sciences in 1967, the University has offered secondary education teacher education. Following this tradition, in 1997 the University initiated a teacher licensure program for students interested in preparing for careers in elementary education, grades 1-6.

The philosophy of these majors is to provide academically well-prepared students with the professional preparation necessary to become effective teachers. They emphasize skills in classroom instruction, assessment, and management. The Massachusetts Department of Elementary and Secondary Education has approved all of the University's teacher preparation programs through processes and standards which provide reciprocity in licensure of educational personnel. They are on the NASDTEC Interstate Contract list of approved programs.

While Western New England University programs are widely reciprocal with other states, students are advised that some states may have additional requirements for licensure. An interested student should discuss this possibility with a member of the Education Department, or look at the Department of Education website for the state in question.

A regional teaching license, the Northeast Regional Credential, allows teachers in New England and New York to take a job immediately in any of the other six states and to have up to two years to complete any unmet requirements for licensure in the new state. For further information, students should consult with their advisor or the Department of Education website for the appropriate State.

Licensure requires more than just meeting course requirements. It is based upon completing University requirements, state licensure requirements and passing required MTEL exams. Interested persons may get a more detailed description of the requirements for graduating as a candidate eligible for teacher licensure in Massachusetts by contacting the Education department or looking at the handbooks online. It is important to note that the designs of the following majors reflect changes that have been made to adapt to new Massachusetts regulations that went into effect July 2013. Students who transfer into the University may not be able to graduate in four years.

Students who completed a licensure major in the academic year 2013-2014, had a 100% pass rate on all Massachusetts Tests for Educator Licensure (MTEL).

**Education Faculty** (p. 32)

**Elementary Teacher Education**

Students preparing for the Elementary Teacher license must select a major in one of the prescribed liberal arts and sciences disciplines and complete the elementary education major; they are completing a double major. Students can complete the University's General University requirements, the College of Arts and Sciences requirements, and the elementary education requirements in four years with the following majors: English, history, mathematics, sociology and psychology. Undergraduates are urged to work with the Education Department early in their university careers to carefully plan their university course of study in order to complete both required majors requirements. A student should apply to the Elementary Education Program by the end of their first year. A student will be notified of acceptance into the program during the spring semester of junior year.

Minimum eligibility requirements for acceptance into the program are:

1. Submission of an Elementary Program Application by the end of a student's first year.
2. A cumulative average of at least 2.80 in all courses, including a 2.80 in the major field and in the preliminary education courses,
3. A letter of recommendation from a member of the Arts and Sciences faculty (not education),
4. Successful completion of three Massachusetts Tests for Educator Licensure (MTEL). The MTEL Communication and Literacy Skills Test, the MTEL Foundations of Reading Test and the MTEL General Curriculum Test must be taken and passed by the spring of junior year; passing scores must be obtained on all parts of these exams.

Students will be notified in the spring of their junior year about their eligibility for the student teaching block to be completed in fall of the senior year. The criteria for advancement will be: the recommendation of an Arts and Sciences faculty member; a recommendation from a cooperating teacher from one of the student's fieldwork courses; appropriate grade point averages; and passing MTEL scores.

Under exceptional circumstances, a student with grade point averages below 2.80 may be admitted to the program. Admittance is determined by writing a letter requesting a waiver for the GPA requirement outlining valid reasons for the lower GPA, submitted to the chairperson of the education department and by passing all required MTEL tests before student teaching.

The recommendation for licensure comes at the end of the practicum semester and is a joint recommendation of the program supervisor and supervising practitioner based on the student's successful completion of the Preservice Performance Assessment. The PPA identifies student competence on state standards as outlined by the Massachusetts Department of Education during a 300-hour practicum. Students apply directly to the state for the teaching license upon graduation from the University.

Currently the University's Elementary Education Program offers students the opportunity to prepare for the Massachusetts Initial License, which is valid for five years of employment. The Massachusetts Professional License is then required of graduates and involves the completion of a Performance Assessment Program or an appropriate master's degree program, and three years of employment under the license.

Successful completion of the University's state approved program and the Massachusetts Tests for Educator Licensure (MTEL) leads the graduate to eligibility for licensure in Massachusetts and 39 other states through the NASDTEC/Interstate Contract. Regional licensure, which includes the six New England states and New York, is also available to students who successfully complete the University's state approved program at this level. This licensure allows an applicant to receive the initial license in a regional compact state and to take two years to complete any special license requirements unique to that state.

To better plan for licensure in other states, Western New England University students are urged to request information early in their University years directly from the Department of Education in the state(s) from which they seek an additional license.

Required courses for students enrolled in the Elementary Education Program:

\*Course requires 25 hours of fieldwork for ED 350, ED 375, and ED 425.

\*\*Course includes 300 hours in a full-time field-based practicum (student teaching)

Since ED 425, ED 479, and ED 480 are taken as a block in September, with ED 479 requiring full-time student teaching each day during October, November, and December, students should keep the fall semester of their senior year available for only these three courses.

## Elementary Education Major Suggested Sequence of Courses

### Degree Requirements

#### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
MATH 107	Mathematics For Elementary Education I	3 cr.
HIST 111	United States History to 1877	3 cr.
PSY 101	Introduction to Psychology	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
LA 100	First Year Seminar	2 cr.
		<b>Subtotal: 15</b>

#### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
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MATH 108	Mathematics for Elementary Education II	3 cr.
HIST 206	World History, 1500CE-Present	3 cr.
POSC 102	American National Government	3 cr.
MAJOR XXX	(Psychology majors take PSY 207)	3 cr.
PEHR 163	Games Children Play (Required for Elementary Education Majors)	1 cr.

**Subtotal: 16**

First attempt on Communication and Literary Skills MTEL encouraged in Spring semester.

#### Sophomore Year - Fall Semester

ED 350	Teaching of Elementary Reading and Language Arts	3 cr.
HIST 205	World History, Prehistory-1500CE	3 cr.
BIO 103	Life Sciences I	3 cr.
EC 111	Principles of Microeconomics	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.

**Subtotal: 15**

#### Sophomore Year - Spring Semester

ED 375	Elementary Curriculum and Methods	3 cr.
ED 252	Survey of Geography	1 cr.
PHYS 105	Basic Physics	3 cr.
ENGL 260	Literary Horizons	3 cr.
PSY 304	Educational Psychology	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.

**Subtotal: 16**

First attempts on Foundations of Reading and/or General Curriculum MTEL encouraged in this year.

#### Junior Year - Fall Semester

CS 13X	Computer Competence	3 cr.
ENGL 339	Children's Literature	3 cr.
HIST 112	United States History, 1878 to the Present	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.
ED 260	Teaching English Language Learners I	1 cr.

**Subtotal: 16**

#### Junior Year - Spring Semester

PH XXX	Ethical Perspective	3 cr.
ED 301	Principles and Problems of Education	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.
ED 270	Teaching English Language Learners II	2 cr.

**Subtotal: 17**

All MTEL tests must be passed at this point.

Senior Year - Fall Semester

ED 425	Elementary Education Topics	3 cr.
ED 479	Elementary Teaching Practicum	9 cr.
ED 480	Elementary Practicum Seminar	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

CUL XXX	Cultural Studies Perspective	3 cr.
MUS 101	Introduction to Music	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.
MAJOR XXX	See catalogue for courses in major	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 18**

Subtotal: 128

Requires 25-hour prepracticum classroom experience and journal. Journal topics are related to course. Prepracticum hours must be completed in any sophomore or junior semester, ideally one experience in sophomore year and one experience in junior year.

Major xxx slots identify where courses required by content major are taken.

\*Two courses in the curriculum must be designated "Writing Intensive."

Total Credit Hours: 128

**Elementary Education BA in the Mathematical Sciences, Teacher Preparation-Elementary School Suggested Sequence of Courses**

**Degree Requirements**

The typical course schedule for the Bachelor of Arts degree in the Mathematical Sciences, teacher preparation-elementary education, would be constructed as indicated below. The elective/required courses that will be offered every other year would be: Creative Problem Solving in Mathematics, Statistical Modeling, Probability, Number Theory, Modern Geometry, Graph Theory, Combinatorics, and Mathematical Modeling.

**Mathematical Sciences Teacher Preparation - Elementary School**

CS 170	Technology in Mathematics	3 cr.
MATH 107	Mathematics For Elementary Education I	3 cr.
MATH 108	Mathematics for Elementary Education II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
MATH 133	Calculus I	4 cr.
MATH 134	Calculus II	4 cr.
MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
MATH 282	Foundations of Mathematics II	3 cr.
MATH 306	Linear Algebra	3 cr.
MATH 371	Modern Aspects of Geometry	3 cr.
MATH 377	Elementary Number Theory	3 cr.
MATH 451	Senior Project I	1 cr.
MATH 452	Senior Project II	2 cr.

**Subtotal: 42**

Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
MATH 133	Calculus I	4 cr.
HIST 111	United States History to 1877	3 cr.
PSY 101	Introduction to Psychology	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
LA 100	First Year Seminar	2 cr.

**Subtotal: 16**

Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
MATH 134	Calculus II	4 cr.
HIST 206	World History, 1500CE-Present	3 cr.
POSC 102	American National Government	3 cr.
CS 170	Technology in Mathematics	3 cr.
PEHR 163	Games Children Play (Required for Elementary Education Majors)	1 cr.

**Subtotal: 17**

First attempt on Communication and Literacy Skills MTEL is encouraged in Spring Semester.

Sophomore Year - Fall Semester

ED 350	Teaching of Elementary Reading and Language Arts	3 cr.
BIO 103	Life Sciences I	3 cr.
MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
ENGL 339	Children's Literature	3 cr.
		<b>Subtotal: 16</b>

Sophomore Year - Spring Semester

ED 375	Elementary Curriculum and Methods	3 cr.
ED 252	Survey of Geography	1 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
ENGL 260	Literary Horizons	3 cr.
PHYS 105	Basic Physics	3 cr.
MATH 282	Foundations of Mathematics II	3 cr.
		<b>Subtotal: 16</b>

First attempts on Foundations of Reading and/or Elementary Subject Matter MTEL are encouraged in this year.

Junior Year - Fall Semester

PSY 304	Educational Psychology	3 cr.
EC 111	Principles of Microeconomics	3 cr.
HIST 112	United States History, 1878 to the Present	3 cr.
MATH 107	Mathematics For Elementary Education I	3 cr.
MATH 306	Linear Algebra	3 cr.
ED 260	Teaching English Language Learners I	1 cr.
		<b>Subtotal: 16</b>

Junior Year - Spring Semester

PH XXX	Ethical Perspective	3 cr.
ED 301	Principles and Problems of Education	3 cr.
MATH 371	Modern Aspects of Geometry	3 cr.
	or	
MATH 377	Elementary Number Theory	3 cr.
MATH 108	Mathematics for Elementary Education II	3 cr.
HIST 205	World History, Prehistory-1500CE	3 cr.
ED 270	Teaching English Language Learners II	2 cr.
		<b>Subtotal: 17</b>

All MTEL tests must be passed at this point.

Senior Year - Fall Semester

ED 425	Elementary Education Topics	3 cr.
ED 479	Elementary Teaching Practicum	9 cr.
ED 480	Elementary Practicum Seminar	3 cr.
MATH 451	Senior Project I	1 cr.
		<b>Subtotal: 16</b>

Senior Year - Spring Semester

CUL XXX	Cultural Studies Perspective	3 cr.
MUS 101	Introduction to Music	3 cr.
MATH 377	Elementary Number Theory	3 cr.
	or	
MATH 371	Modern Aspects of Geometry	3 cr.
MATH 452	Senior Project II	2 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 14</b>

Schedule of Elective Courses over a Two-Year Period:

Fall I

MATH 378	Combinatorics	3 cr.
MATH 379	Graph Theory	3 cr.

Spring I

MATH 371	Modern Aspects of Geometry	3 cr.
MATH 420	Mathematical Modeling	3 cr.

Fall II

MATH 372	Probability	3 cr.
MATH 375	Creative Problem Solving	3 cr.

Spring II

MATH 373	Statistical Modeling	3 cr.
MATH 377	Elementary Number Theory	3 cr.
		Subtotal: 42

Note: the General University Requirements in Aesthetics and Cultural Studies can be satisfied by taking a single course that has a designation (CA) of fulfilling both requirements.

- ED 350, ED 375 and ED 425 require 25-hour prepracticum classroom experience and journal. Journal topics are related to course.
- Two courses in the curriculum must be designated "Writing Intensive."
- MATH 371 and MATH 377 are offered in alternate spring semesters, so either MATH 371 or MATH 377 will be taken in the spring semester of the junior year, and the other will be taken in the spring semester of the senior year.

Secondary Teacher Education Majors

Students may prepare for an Initial License to teach in the secondary schools (grades 8-12 in Massachusetts, 7-12 in other states) in the

following programs: biology, chemistry, English, general business, history, and mathematics.

Students selecting this career option are required to satisfy all degree requirements for a Secondary Teacher Education major of their content focus. It is important for students to speak with their academic advisors early in their university careers if they intend to pursue this major.

Students considering this major are advised to consult with the Director of the Secondary Education Program as soon as possible. A student must register with the program by the second semester of the sophomore year. A student will be notified of acceptance into the program during the spring semester of the junior year.

Minimum eligibility requirements for acceptance into the program are:

1. Submission of a Secondary Program Application during the second semester of sophomore year and a one-on-one meeting with the Director of the Secondary Education Program.
2. Cumulative average of at least 2.80 in all courses, including a 2.80 average in the major field and in preliminary education courses.
3. A recommendation from a faculty member in the student's major department.
4. Successful completion of two Massachusetts Tests for Educator Licensure (MTEL). The MTEL Communication and Literacy Skills Test and the MTEL Subject Matter Content Test must also be taken and passed by the spring semester of junior year. Appropriate review materials are offered on campus for students.

Under exceptional circumstances, a student with grade point averages below 2.80 may be admitted to the program by passing the MTEL tests, and meeting with the Education Department Chairperson to determine if a waiver is possible.

The Secondary Education majors offer students the opportunity to prepare for the Massachusetts Initial License, which is valid for five years of employment. The Massachusetts Professional License is then required of graduates following three years of successful teaching experience and involves completion of a Performance Assessment Program or an appropriate master's degree program.

Since ED 380, ED 403, ED 409, and ED 410 are offered in one block, students must keep the fall semester of their senior year open for these courses. The courses ED 301, PSY 304, and ED 403 each require 25 hours of field work. The course ED 409 requires a minimum of 300 hours in a full-time, field-based practicum.

### Secondary Education Biology Major Suggested Sequence of Courses

#### Degree Requirements

##### Freshman Year - Fall Semester

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
	And	
MATH 109	Pre-Calculus Mathematics	3 cr.

or

MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
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**Subtotal: 16**

##### Freshman Year - Spring Semester

BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 106	General Chemistry II	4 cr.
ENGL 133	English Composition II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
ED 120	Introduction to Education	1 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 16**

##### Sophomore Year - Fall Semester

BIO 213	Ecology	3 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
WIC 2XX	Writing Intensive Course	3 cr.
PSY 101	Introduction to Psychology	3 cr.
ED 260	Teaching English Language Learners I	1 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 15**

##### Sophomore Year - Spring Semester

ED 301	Principles and Problems of Education	3 cr.
BIO 201	Plant Biology	4 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
ED 270	Teaching English Language Learners II	2 cr.
ART XXX	Aesthetic Perspective	3 cr.

**Subtotal: 16**

##### Junior Year - Fall Semester

BIO 306	Genetics	4 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
CS 131	Computing for the Arts and Sciences	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
	And	
PHYS 101	Elements of Physics	3 cr.
	or	
PHYS 123	Physics of the Life Sciences 1	4 cr.

<b>Subtotal: 16-17</b>		
Junior Year - Spring Semester		
BIO 2XX	Biology Elective	4 cr.
PSY 304	Educational Psychology	3 cr.
HIST XXX	Historical Perspective	3 cr.
	And	
BIO 310	Cell Biology	4 cr.

**Subtotal: 14**

Senior Year - Fall Semester		
ED 380	Secondary Education Topics	1 cr.
ED 403	Methods of Teaching in Secondary Schools	3 cr.
ED 409	Practicum in Secondary Teaching	9 cr.
ED 410	Secondary Practicum Seminar	3 cr.

**Subtotal: 16**

Senior Year - Spring Semester		
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
BIO 2XX	Biology Elective	4 cr.
PH XXX	Ethical Perspective	3 cr.
BIO 455	Evolution	3 cr.
	And	
PHYS 15X	PHYS 15x Elective	3 cr.
	or	
PHYS 124	Physics of the Life Sciences 2	4 cr.

**Subtotal: 16-17**

Subtotal: 125-127

Total Credit Hours: 125-127

### Secondary Education Chemistry Major Suggested Sequence of Courses

#### Degree Requirements

Freshman Year - Fall Semester		
CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 133	Calculus I	4 cr.
PHYS 133	Mechanics	4 cr.

**Subtotal: 17**

Freshman Year - Spring Semester		
CHEM 106	General Chemistry II	4 cr.
ENGL 133	English Composition II	3 cr.
MATH 134	Calculus II	4 cr.
PEHR 151	Personal Health and Wellness	1 cr.

ED 120	Introduction to Education	1 cr.
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 17**

Sophomore Year - Fall Semester		
CHEM 209	Organic Chemistry I	3 cr.
CHEM 211	Analytical Methods	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
MATH 235	Calculus III	3 cr.
CS XXX	Computer Competence Requirement	3 cr.
ED 260	Teaching English Language Learners I	1 cr.

**Subtotal: 15**

Sophomore Year - Spring Semester		
CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 312	Instrumental Analysis	3 cr.
CHEM 322	Instrumental Analysis Laboratory	1 cr.
WIC 2XX	Writing Intensive Course	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
ED 270	Teaching English Language Learners II	2 cr.

**Subtotal: 14**

Junior Year - Fall Semester		
CHEM 317	Physical Chemistry I	3 cr.
CHEM 327	Physical Chemistry Laboratory I	1 cr.
PH XXX	Ethical Perspective	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
PSY 101	Introduction to Psychology	3 cr.

**Subtotal: 16**

Junior Year - Spring Semester		
CHEM 318	Physical Chemistry II	3 cr.
CHEM 328	Physical Chemistry Laboratory II	1 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
PSY 304	Educational Psychology	3 cr.
ED 301	Principles and Problems of Education	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.

**Subtotal: 17**

Senior Year - Fall Semester

ED 380	Secondary Education Topics	1 cr.
ED 403	Methods of Teaching in Secondary Schools	3 cr.
ED 409	Practicum in Secondary Teaching	9 cr.
ED 410	Secondary Practicum Seminar	3 cr.

**Subtotal: 16**

Senior Year - Spring Semester

GEN XXX	General Elective	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
CHEM 421	Inorganic Chemistry	3 cr.
CHEM 431	Inorganic Chemistry Laboratory	1 cr.
GEN XXX	General Elective	1 cr.
HIST 1XX	Historical Perspective	3 cr.

**Subtotal: 14**

Subtotal: 126

Total Credit Hours: 126

Secondary Education English Major Suggested  
Sequence of Courses

Degree Requirements

Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PSY 101	Introduction to Psychology	3 cr.
CS 13X	Computer Competence	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PH XXX	Ethical Perspective	3 cr.
GEN XXX	General Elective	3 cr.
ED 120	Introduction to Education	1 cr.
HIST XXX	Historical Perspective	3 cr.

**Subtotal: 17**

Sophomore Year - Fall Semester

ENGL 231	British Literature I	3 cr.
ENGL 251	American Literature I	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
ED 260	Teaching English Language Learners I	1 cr.

	And	
ENGL 214	World Literature I	3 cr.
	or	
ENGL 215	World Literature II	3 cr.

**Subtotal: 16**

Sophomore Year - Spring Semester

ENGL 232	British Literature II	3 cr.
ENGL 252	American Literature II	3 cr.
ENGL 302	Approaches to the Study of Literature	3 cr.
CUL XXX	Cultural Perspective	3 cr.
ED 270	Teaching English Language Learners II	2 cr.
SBP XXX	Behavioral Science Requirement	3 cr.

**Subtotal: 17**

Junior Year - Fall Semester

ENGL 311	The English Language	3 cr.
ENGL 260	Literary Horizons	3 cr.
PSY 304	Educational Psychology	3 cr.
	And	
ENGL 314	Shakespeare: Plays and Poems	3 cr.
	or	
ENGL 315	Shakespeare: The Tragedies	3 cr.
	or	
ENGL 316	Shakespeare: The Comedies and Histories	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester

ED 301	Principles and Problems of Education	3 cr.
ENGL 411/338	Major Authors	3 cr.
ENGL 333	Independent Study in English	1-3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
ENGL 354	Creative Non-Fiction Workshop	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

ED 380	Secondary Education Topics	1 cr.
ED 403	Methods of Teaching in Secondary Schools	3 cr.
ED 409	Practicum in Secondary Teaching	9 cr.
ED 410	Secondary Practicum Seminar	3 cr.

**Subtotal: 16**

Senior Year - Spring Semester

ENGL 410	English Seminar	3 cr.
ENGL XXX	History Underreported Lit	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 15</b>

Courses taken to complete the major fulfill the A & S Writing Intensive Requirement.  
Subtotal: 126

Total Credit Hours: 126

### Secondary Education General Business Major

#### Degree Requirements

##### Freshman Year - Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
HIST XXX	Historical Perspective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
	And	
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
	And	
BIS 102	Problem Solving with Business Tools	3 cr.
	or	
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
		<b>Subtotal: 16</b>

##### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
COMM 100	Principles of Communication	3 cr.
PSY 101	Introduction to Psychology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
ED 120	Introduction to Education	1 cr.
	And	
	or	
MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.
	And	
BIS 102	Problem Solving with Business Tools	3 cr.

	or	
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
		<b>Subtotal: 17</b>

##### Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
ED 260	Teaching English Language Learners I	1 cr.
		<b>Subtotal: 16</b>

##### Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
ED 301	Principles and Problems of Education	3 cr.
ED 270	Teaching English Language Learners II	2 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 17</b>

##### Junior Year - Fall Semester

BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
	or	
BUS 326	Business Planning for New Ventures	3 cr.
MAN 323	Human Resource Management	3 cr.
PH 211	Business Ethics	3 cr.
CUL XXX	Cultural Perspective	3 cr.
LAB XXX	Laboratory Science Requirement	3-4 cr.
		<b>Subtotal: 15</b>

##### Junior Year - Spring Semester

PSY 304	Educational Psychology	3 cr.
BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.

BIS 210/IT 240	Foundations of Web Systems	3 cr.
BL 308	Labor Management Relations	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

ED 380	Secondary Education Topics	1 cr.
ED 403	Methods of Teaching in Secondary Schools	3 cr.
ED 409	Practicum in Secondary Teaching	9 cr.
ED 410	Secondary Practicum Seminar	3 cr.

**Subtotal: 16**

Senior Year - Spring Semester

BL 424	Business Law for Human Resource Management	3 cr.
BUS 450	Business Strategy	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
CUL XXX	Elements of Culture Requirement	3 cr.
BUS XXX	Business Elective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Subtotal: 127

This program requires 123 credit hours.

Total Credit Hours: 127

Secondary Education History Major Suggested Sequence of Courses

Degree Requirements

Freshman Year - Fall Semester

HIST 205	World History, Prehistory-1500CE	3 cr.
HIST 111	United States History to 1877	3 cr.
MATH 1XX	Mathematics	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.

**Subtotal: 14**

Freshman Year - Spring Semester

HIST 206	World History, 1500CE-Present	3 cr.
HIST 112	United States History, 1878 to the Present	3 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PSY 101	Introduction to Psychology	3 cr.
ENGL 133	English Composition II	3 cr.
ED 120	Introduction to Education	1 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 17**

Sophomore Year - Fall Semester

POSC 102	American National Government	3 cr.
EC 111	Principles of Microeconomics	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
GEN XXX	General Elective	3 cr.
ED 260	Teaching English Language Learners I	1 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 17**

Sophomore Year - Spring Semester

SO 101	Introduction to Sociology	3 cr.
CS 13X	Computer Competence	3 cr.
HIST 2XX	Methods Seminar	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
ED 301	Principles and Problems of Education	3 cr.
ED 270	Teaching English Language Learners II	2 cr.

**Subtotal: 17**

Junior Year - Fall Semester

PH XXX	Ethical Perspective	3 cr.
HIST 3XX	Upper Level History Elective	3 cr.
HIST 3XX	Upper Level History Elective	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
GEOG 101	World Geography	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester

HIST 3XX	Upper Level History Elective	3 cr.
HIST 3XX	Upper Level History Elective	3 cr.
PSY 304	Educational Psychology	3 cr.
XXX HIST	History Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

ED 380	Secondary Education Topics	1 cr.
ED 403	Methods of Teaching in Secondary Schools	3 cr.
ED 409	Practicum in Secondary Teaching	9 cr.
ED 410	Secondary Practicum Seminar	3 cr.

**Subtotal: 16**

Senior Year - Spring Semester

HIST 3XX	Upper Level History Elective	3 cr.
HIST 3XX	Upper Level History Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
HIST 490	Junior and Senior Seminar in History	3 cr.

**Subtotal: 15**

\* Two courses must be designated as writing intensive.  
Subtotal: 126

Total Credit Hours: 126

### Secondary Education Mathematical Sciences Major Suggested Sequence of Courses

#### Degree Requirements

##### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
MATH 133	Calculus I	4 cr.
HIST XXX	Historical Perspective	3 cr.
LA 100	First Year Seminar	2 cr.
PEHR 151	Personal Health and Wellness	1 cr.
BIO 107	General Biology I	3 cr.
	And	
BIO 117	General Biology Laboratory I	1 cr.
	or	
CHEM 105	General Chemistry I	4 cr.
	or	
PHYS 133	Mechanics	4 cr.

**Subtotal: 17**

##### Freshman Year - Spring Semester

CS 170	Technology in Mathematics	3 cr.
ENGL 133	English Composition II	3 cr.
MATH 134	Calculus II	4 cr.
PH 204	Symbolic Logic	3 cr.
ED 120	Introduction to Education	1 cr.
BIO 108	General Biology II	3 cr.
	And	
BIO 118	General Biology Laboratory II	1 cr.
	or	
CHEM 106	General Chemistry II	4 cr.
	or	
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 18**

##### Sophomore Year - Fall Semester

MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
MATH 306	Linear Algebra	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
ED 260	Teaching English Language Learners I	1 cr.
PSY 101	Introduction to Psychology	3 cr.

**Subtotal: 18**

##### Sophomore Year - Spring Semester

MATH 282	Foundations of Mathematics II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
CS 171	Programming for Mathematics	4 cr.
WIC 2XX	Writing Intensive Course	3 cr.
ED 301	Principles and Problems of Education	3 cr.
ED 270	Teaching English Language Learners II	2 cr.

**Subtotal: 18**

##### Junior Year - Fall Semester

MATH 418	Introduction to Modern Algebra	3 cr.
MATH XXX	Mathematics Elective	3 cr.
MATH XXX	Mathematics Elective	3 cr.
ED 260	Teaching English Language Learners I	1 cr.
PH XXX	Ethical Perspective	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.

**Subtotal: 16**

##### Junior Year - Spring Semester

MATH 421	Real Analysis	3 cr.
PSY 304	Educational Psychology	3 cr.
MATH 371	Modern Aspects of Geometry	3 cr.
	or	
MATH 377	Elementary Number Theory	3 cr.
MATH 373	Statistical Modeling	3 cr.
	or	
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
ED 270	Teaching English Language Learners II	2 cr.
MATH 302	MTEL Prep	2 cr.

**Subtotal: 16**

##### Senior Year - Fall Semester

MATH 451	Senior Project I	1 cr.
ED 380	Secondary Education Topics	1 cr.
ED 403	Methods of Teaching in Secondary Schools	3 cr.
ED 409	Practicum in Secondary Teaching	9 cr.
ED 410	Secondary Practicum Seminar	3 cr.
		<b>Subtotal: 17</b>

Senior Year - Spring Semester

MATH XXX	Mathematics Elective	3 cr.
MATH 452	Senior Project II	2 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
or		
MATH 373	Statistical Modeling	3 cr.
MATH 377	Elementary Number Theory	3 cr.
or		
MATH 371	Modern Aspects of Geometry	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 14</b>

Subtotal: 134

Note: MATH 375 Creative Problem Solving, can be substituted for MATH 373 Statistical Modeling.

Note: the General University Requirements in Aesthetics and Cultural Studies can be satisfied by taking a single course that has a designation of fulfilling both requirements.

Total Credit Hours: 134

English

### English Major

#### General Information

English majors at Western New England University learn to write and speak effectively as they develop awareness of the ethical, moral, cultural, historical, and social issues that are embedded in both traditional and underrepresented literatures. They graduate prepared to enter a variety of academic, educational, corporate, or government settings. Furthermore, as they analyze texts and develop skill in reasoning, conducting research, and formulating clear arguments, they broaden their perspectives, increase their intellectual curiosity and aesthetic appreciation, and identify themselves as active, lifetime learners.

#### Career Opportunities

Because English majors graduate with writing, speaking, and analytical skills that have been developed through four years, they are highly desirable job applicants in a number of areas. Our graduates have been successfully employed in primary and secondary schools, in writing-centered professions, and in a variety of business settings. Some have continued their studies in English or communications, completing master's and doctoral degrees. Law schools look for English majors because they want students who have learned how to think critically, articulate their ideas clearly, and summarize complex issues succinctly. English is a perfect major for those hoping to complete the University's 3+3 Law program (which enables students

to complete both undergraduate and law degrees in six years). A number of our majors have received law degrees and are now practicing that profession.

Writing skills can lead directly to employment in a number of other fields, including journalism, public relations, and technical writing. Many newspaper and magazine editors say they look for English majors because they have been taught how to write for various audiences. Many companies are hiring English majors for technical writing jobs because English majors are taught how to translate ideas and instructions into language that a general audience can understand. Grant writers are needed in all areas: for academic research, political foundations, and corporate development. The English degree can create significant opportunities in the world of professional writing when coupled with an internship or two.

Additionally, many businesses seek to hire English majors for entry-level positions because they are capable learners who have highly developed analytic skills, broad backgrounds, and excellent communication skills.

**English Faculty** (p. 33)

#### Program Objectives

The English faculty engage students in learning experiences structured to help them develop the following:

##### Flexibility and Good Judgment

Our students learn to recognize and appreciate different experiences, other cultures, and new points of view. They also learn to examine evidence carefully and to make informed value judgments.

##### Breadth of Perspective and Depth of Knowledge

Our students examine the literature of different eras and cultures, relating the creative representation of human society in literature to the broader contexts of history, philosophy, and cultural change. They also deepen and enrich their understanding of at least one literary tradition and are encouraged to pursue more advanced study in particular areas of interest.

##### Ability to Analyze and Synthesize

Our students use critical thinking to analyze texts and situations, breaking them down into manageable "pieces." They also seek patterns, make significant connections, and reconnect the parts they analyze into meaningful wholes.

##### Ability to Learn and to Share Learning

Our students gather, value, and synthesize information in their effort to understand literary works and cultural trends. They also learn the rhetorical skill necessary to present what they learn to others, to share their learning instead of simply "collecting" it.

##### Self-confidence and Self-assessment

Our students are encouraged to be creative, to use their imaginations, and to take chances. They also receive rigorous critical feedback and are encouraged to apply high standards to everything they do. To learn, one must let go of the idea that one knows everything already. Understanding that, we seek to establish a learning environment that is both fun and serious.

##### Technological Comfort and Technological Questioning

Our students learn to be comfortable with computers, with word-processing software, and with the process of writing and thinking "on

the computer.” But they are also encouraged to question the value and necessity of new technologies and their applications—and to have alternatives on hand if the technology crashes.

**Problem-solving and Problem Recognition**

Our students learn how to solve problems, to interpret new situations, and to “make sense” of complexity. They also learn how to recognize problems, even in areas that are not usually questioned. We aim to help students recognize assumptions made by institutions and cultures, to question and reassess those value judgments for themselves, and to take an active role in reshaping them.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Degree Requirements**

The following classes are required for all English Majors:

ENGL 231	British Literature I	3 cr.
ENGL 232	British Literature II	3 cr.
ENGL 251	American Literature I	3 cr.
ENGL 252	American Literature II	3 cr.
ENGL 302	Approaches to the Study of Literature	3 cr.
	And	
ENGL 314	Shakespeare: Plays and Poems	3 cr.
	or	
ENGL 315	Shakespeare: The Tragedies	3 cr.
	or	
ENGL 316	Shakespeare: The Comedies and Histories	3 cr.

Four additional courses, of which one must treat: a major author or authors, and another must treat a historically under represented literature.

**English Suggested Sequence of Courses**

**Degree Requirements**

**Freshman Year - Fall Semester**

ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
GEN XXX	General Elective	3 cr.
CS 13X	Computer Competence	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

**Freshman Year - Spring Semester**

ENGL 133	English Composition II	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
MATH 1XX	Mathematical Analysis	3 cr.

PH XXX	Ethical Perspective	3 cr.
GEN XXX	General Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.

**Subtotal: 16**

**Sophomore Year - Fall Semester**

ENGL XXX	Two literature survey courses from among ENGL 231, 232, 251 or 252	6 cr.
SBP XXX	Soc Science Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.

**Subtotal: 15**

**Sophomore Year - Spring Semester**

ENGL XXX	Two literature survey courses from among ENGL 231, 232, 251 or 252	6 cr.
ENGL 302	Approaches to the Study of Literature	3 cr.
GEN XXX	General Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

**Junior Year - Fall Semester**

ART XXX	Aesthetic Perspective	3 cr.
ENGL XXX	English Elective	3 cr.
CUL XXX	Cultural Perspective	3 cr.
GEN XXX	General Elective	3 cr.
	And	
ENGL 314	Shakespeare: Plays and Poems	3 cr.
	or	
ENGL 315	Shakespeare: The Tragedies	3 cr.
	or	
ENGL 316	Shakespeare: The Comedies and Histories	3 cr.

**Subtotal: 15**

**Junior Year - Spring Semester**

ENGL XXX	Any upper division writing course	3 cr.
ENGL XXX	English Elective	3 cr.
ENGL XXX	English Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

**Senior Year - Fall Semester**

ENGL XXX	English Elective	3 cr.
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ENGL XXX	English Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.

**Subtotal: 16**

Senior Year - Spring Semester

ENGL 410	English Seminar	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.

**Subtotal: 15**

Subtotal: 122

Total Credit Hours: 122

Forensics

**Forensic Biology Major**

**General Information**

The Forensic Biology curriculum is designed to provide the student with a solid background in the scientific principles that underlie forensic techniques. Skills are acquired through coursework augmented by practical laboratory experience.

**Career Opportunities**

A baccalaureate degree in forensic biology provides diverse opportunities for employment as forensic scientists or as laboratory analysts or for advanced training in forensics and related fields.

**Physical and Biological Faculty** (p. 33)

**Forensic Biology Objectives:**

To demonstrate

1. Knowledge of basic structure and functioning of cells.
2. To understand the principles and mathematical analysis of Mendelian and non-Mendelian inheritance.
3. To understand the structure and function of nucleic acids and molecular controls.
4. To collect and preserve forensic evidence using established protocol.
5. Plan and perform analyses of both biological and nonbiological forensic evidence.
6. Apply chemical, physical, and biological principles to the design of procedures for the analysis of forensic evidence.
7. Communicate clearly and effectively the results and reliability of an analysis of forensic evidence.
8. Function as an ethical member of the criminal justice system.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Degree Requirements**

Required Science courses: (74 credit hours)

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
BIO 401	Recombinant DNA/Fingerprinting	3 cr.
BIO 306	Genetics	4 cr.
BIO 203	Microbiology	4 cr.
BIO 310	Cell Biology	4 cr.
CHEM 105	General Chemistry I	4 cr.
CHEM 106	General Chemistry II	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 211	Analytical Methods	3 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
FS 201	Introduction to Forensics	4 cr.
FS 240	Scientific Evidence	3 cr.
FS 310	Crime Scene Processing	3 cr.
FS 325	Criminalistics I	4 cr.
FS 426	Criminalistics II	4 cr.
FS 480	Internship in Forensic Science	1-3 cr.
	or	
FS 333	Independent Study in Forensic Science	1-3 crs.
	And	
PHYS 123	Physics of the Life Sciences 1	4 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.

**Subtotal: 74**

Required courses in Math and Computer and Criminal Justice courses

MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
CJ 101	Introduction to Criminal Justice	3 cr.

CS XXX	Computer Science	3 cr.
		<b>Subtotal: 12</b>

Subtotal: 86

The 2.0 required grade point average in the major will be based upon all BIO, CHEM, and FS courses pursued as a part of the student's degree program

Total Credit Hours: 86

### Forensic Biology Suggested Sequence of Courses

Notes:

The suggested sequence of courses in years two, three, and four is an example only. Some offerings for these years will alternate and the exact sequence will require consultation with the faculty and deans.

### Degree Requirements

#### Freshman Year - Fall Semester

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
		<b>Subtotal: 16</b>

#### Freshman Year - Spring Semester

BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 106	General Chemistry II	4 cr.
CJ 101	Introduction to Criminal Justice	3 cr.
ENGL 133	English Composition II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
		<b>Subtotal: 17</b>

#### Sophomore Year - Fall Semester

CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
WIC 2XX	Writing Intensive Course	3 cr.
FS 201	Introduction to Forensics	4 cr.
PH 208	Ethics	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 15</b>

#### Sophomore Year - Spring Semester

ART XXX	Aesthetic Perspective	3 cr.
BIO 203	Microbiology	4 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.

CS XXX	Computer Competence Requirement	3 cr.
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FS 240	Scientific Evidence	3 cr.
		<b>Subtotal: 17</b>

#### Junior Year - Fall Semester

BIO 306	Genetics	4 cr.
FS 310	Crime Scene Processing	3 cr.
PHYS 123	Physics of the Life Sciences 1	4 cr.
CHEM 211	Analytical Methods	3 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

#### Junior Year - Spring Semester

BIO 310	Cell Biology	4 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.
		<b>Subtotal: 15</b>

#### Senior Year - Fall Semester

BIO 401	Recombinant DNA/Fingerprinting	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
HIST XXX	Historical Perspective	3 cr.
GEN XXX	General Elective	3 cr.
FS 325	Criminalistics I	4 cr.
		<b>Subtotal: 16</b>

#### Senior Year - Spring Semester

FS 426	Criminalistics II	4 cr.
FS 480	Internship in Forensic Science	1-3 cr.
GEN XXX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 11-13</b>

Subtotal: 123-125

Total Credit Hours: 123-125

### Forensic Chemistry Major

#### General Information

The forensic chemistry curriculum is designed to provide the student with a solid background in the chemical principles that underlie forensic techniques. Skills are acquired through coursework augmented by practical laboratory experience.

#### Career Opportunities

A baccalaureate degree in forensic chemistry provides diverse opportunities for employment as forensic scientists or as laboratory analysts or for advanced training in forensics and related fields.

**Physical and Biological Faculty** (p. 33)

**Forensic Chemistry Objectives:**

1. Perform accurate stoichiometric and chemical equilibrium calculations.
2. Predict and explain the reactivity of an organic or inorganic compound from a knowledge of its structure.
3. Assess the thermodynamic and kinetic stability of a chemical system.
4. Propose a reasonable mechanism for an organic or inorganic reaction.
5. Apply basic quantum mechanical concepts to the study of chemical systems.
6. Synthesize and characterize inorganic and organic compounds.
7. Design and perform a qualitative and quantitative analysis of a sample of matter, using both wet and instrumental methods.
8. Plan and execute experiments through the proper use of library resources.
9. Analyze data statistically and assess reliability of results.
10. Communicate effectively through oral and written reports.
11. Collect and preserve forensic evidence using established protocol.
12. Plan and perform analyses of both biological and non-biological forensic evidence.
13. Apply chemical, physical, and biological principles to the design of procedures for the analysis of forensic evidence.
14. Communicate clearly and effectively the results and reliability of an analysis of forensic evidence.
15. Function as an ethical member of the criminal justice system.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Degree Requirements**

Required Science courses: (70 credit hours)

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
CHEM 106	General Chemistry II	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 211	Analytical Methods	3 cr.

CHEM 221	Analytical Methods Laboratory	1 cr.
CHEM 312	Instrumental Analysis	3 cr.
CHEM 322	Instrumental Analysis Laboratory	1 cr.
CHEM 402	Toxicology	3 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
CHEM 421	Inorganic Chemistry	3 cr.
CHEM 431	Inorganic Chemistry Laboratory	1 cr.
CHEM 317	Physical Chemistry I	3 cr.
CHEM 327	Physical Chemistry Laboratory I	1 cr.
FS 201	Introduction to Forensics	4 cr.
FS 240	Scientific Evidence	3 cr.
FS 310	Crime Scene Processing	3 cr.
FS 325	Criminalistics I	4 cr.
FS 426	Criminalistics II	4 cr.
FS 480	Internship in Forensic Science	1-3 cr.
PHYS 123	Physics of the Life Sciences 1	4 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.

**Subtotal: 70**

Required courses in Math and Computer Science (12)

MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
CJ 101	Introduction to Criminal Justice	3 cr.
CS XXX	Computer Competence Requirement	3 cr.

**Subtotal: 12**

Subtotal: 82

The 2.0 required grade point average in the major will be based upon all BIO, CHEM, and FS courses pursued as a part of the student's degree program.

Total Credit Hours: 82

**Forensic Chemistry Suggested Sequence of Courses**

Notes:

The suggested sequence of courses in years two, three, and four is an example only. Some offerings for these years will alternate and the exact sequence will require consultation with the faculty and deans.

**Degree Requirements**

Freshman Year - Fall Semester

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.

ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.

**Subtotal: 16**

## Freshman Year - Spring Semester

CJ 101	Introduction to Criminal Justice	3 cr.
CHEM 106	General Chemistry II	4 cr.
ENGL 133	English Composition II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 14**

## Sophomore Year - Fall Semester

CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
FS 201	Introduction to Forensics	4 cr.
PH 208	Ethics	3 cr.
PHYS 123	Physics of the Life Sciences 1	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

## Sophomore Year - Spring Semester

FS 240	Scientific Evidence	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 211	Analytical Methods	3 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.

**Subtotal: 15**

## Junior Year - Fall Semester

CUL XXX	Cultural Studies Perspective	3 cr.
CS XXX	Computer Competence Requirement	3 cr.
GEN XXX	General Elective	3 cr.
FS 310	Crime Scene Processing	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.

**Subtotal: 15**

## Junior Year - Spring Semester

CHEM 312	Instrumental Analysis	3 cr.
CHEM 322	Instrumental Analysis Laboratory	1 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
HIST XXX	Historical Perspective	3 cr.

WIC 3xx-4xx	Writing Intensive Course	3 cr.
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**Subtotal: 14**

## Senior Year - Fall Semester

CHEM 317	Physical Chemistry I	3 cr.
CHEM 327	Physical Chemistry Laboratory I	1 cr.
FS 325	Criminalistics I	4 cr.
CHEM 402	Toxicology	3 cr.
GEN XXX	General Elective	3 cr.
ART XXX	Aesthetic Perspective	3 cr.

**Subtotal: 17**

## Senior Year - Spring Semester

FS 426	Criminalistics II	4 cr.
FS 480	Internship in Forensic Science	1-3 cr.
GEN XXX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
CHEM 421	Inorganic Chemistry	3 cr.
CHEM 431	Inorganic Chemistry Laboratory	1 cr.

**Subtotal: 17**

Subtotal: 124

Total Credit Hours: 124

Health Sciences

## Health Sciences Major

**General Information**

The goal of the Health Sciences major is to provide students with the undergraduate background necessary to function in jobs, or to obtain more advanced training and education at the graduate level.

**Career Opportunities**

Biomedical research or Professional programs in various health related fields.

**Physical and Biological Faculty** (p. 33)

Professor: Anne Poirot

Associate Professors: Dawn E. Holmes, Anna Klimes, Kathryn Lipson, William Macanka, Suzanna Milheiro, Burt Rosenman

Assistant Professors: Keri A. Lee, Sean McClintock, Jessica Rocheleau, Issac Stayton

Professional Educators: Frank Gerberich, Mary Rothermich, Karl Sternberg, Kathleen A. Wurm

**Program Objectives:**

1. To understand human biology at the cell, tissue and organ system levels of organization.
2. To understand the homeostatic processes that underlie physiological mechanisms of humans.
3. To understand the application of scientific principles to the methods that lead to the improvement of health and the prevention of disease and disability.

4. To understand the principles and mathematical analysis of genetics.
5. To communicate effectively through oral and written reports.
6. To develop quantitative problem solving skills and data analysis.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34)

**Degree Requirements**

The 2.0 required grade-point average in the major would be based upon all HS, BIO and CHEM courses pursued as a part of the student's degree program.

**Required biology courses (20 credit hours)**

BIO 107	General Biology I	3 cr.
BIO 108	General Biology II	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
BIO 118	General Biology Laboratory II	1 cr.
BIO 215	Anatomy and Physiology I	4 cr.
BIO 216	Anatomy and Physiology II	4 cr.
BIO 306	Genetics	4 cr.
<b>Subtotal: 20</b>		

**Required health sciences courses (13 credit hours)**

HS 2xx-4xx	Thirteen additional semester hours of HS 2xx-4xx courses	13 cr.
<b>Subtotal: 13</b>		

**Required chemistry courses (20 credit hours)**

CHEM 105	General Chemistry I	4 cr.
CHEM 106	General Chemistry II	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
<b>Subtotal: 20</b>		

**Seventeen additional credit hours in math, physics, and statistics courses**

MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.
PHYS 123	Physics of the Life Sciences 1	4 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
<b>Subtotal: 17</b>		

**Additional requirements**

Out of the program's 122 required credits, 2 of the courses must meet WIC requirement, and there are 2 required LBC experiences.

LBC 2XX	Learning Beyond the Classroom	No cr.
LBC 4XX	Learning Beyond the Classroom	No cr.
WIC XXX	Writing Intensive course	3 cr.
WIC XXX	Writing Intensive course	3 cr.
Subtotal: 70		

**Total Credit Hours: 70**

**Health Sciences Suggested Sequence of Courses**

Notes: The suggested sequence of courses in years two, three, and four is an example only. Some offerings for these years will alternate and the exact sequence will require consultation with the faculty and deans.

**Degree Requirements**

**Freshman Year - Fall Semester**

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
<b>Subtotal: 16</b>		

**Freshman Year - Spring Semester**

BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 106	General Chemistry II	4 cr.
ENGL 133	English Composition II	3 cr.
MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.
<b>Subtotal: 14</b>		

**Sophomore Year - Fall Semester**

PEHR 151	Personal Health and Wellness	1 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
PSY 101	Introduction to Psychology	3 cr.
BIO 215	Anatomy and Physiology I	4 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
<b>Subtotal: 15</b>		

**Sophomore Year - Spring Semester**

CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.

PSY 201	Developmental Psychology	3 cr.
CUL 2XX	Cultural Studies	3 cr.
BIO 216	Anatomy and Physiology II	4 cr.

**Subtotal: 14**

Junior Year - Fall Semester

PHYS 123	Physics of the Life Sciences 1	4 cr.
PH 208	Ethics	3 cr.
POSC 102	American National Government	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 16**

Junior Year - Spring Semester

HS 2XX	HS Elective	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.
HS 3xx	HS Elective	3 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

BIO 306	Genetics	4 cr.
CS 131	Computing for the Arts and Sciences	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
HIST XXX	Historical Perspective	3 cr.
HS 3xx	HS Elective	3 cr.

**Subtotal: 16**

Senior Year - Spring Semester

CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
PSY 326	Abnormal Psychology	3 cr.
GEN XXX	General Elective	3 cr.
ILP 3XX	Integrated Liberal Professional Perspective	3 cr.
HS 3xx	HS Elective	3 cr.

**Subtotal: 16**

Subtotal: 122

**Premedical Students:**

Health Sciences majors intending to apply to medical school should contact the chairperson of the department or the premed advisor for additional information concerning sequence of courses.

Total Credit Hours: 122

History

History Major

**General Information**

The study of history provides students with insight into the political, social, economic, and cultural forces that have shaped the modern world. The History program is designed to give students an introduction to world civilizations and to the history of the United States. Course offerings and distribution requirements ensure breadth of study by providing exposure to non-Western history as well as advanced courses in American and European history.

**Career Opportunities**

Students who major in History can pursue a variety of careers. Our graduates have become teachers, researchers, and journalists. They work in libraries and government agencies including the diplomatic service. Others have found opportunities in business where the skills gained in the study of history (research, analysis, and writing) are valued. Many graduates attend law school or have pursued advanced degrees in history.

**History and Political Science Faculty** (p. 33)

Professors: John Anzalotti, John Seung-Ho Baick, Marc Dawson, Theodore South

Associate Professors: Jonathan Beagle, Meri Clark, Catherine Plum

**Program Objectives**

1. To provide students with a breadth of knowledge of the development of world civilizations.
2. To give a solid introduction to the history of the United States.
3. To expose students at an advanced level to the histories of Europe, the United States, and non-Western countries.
4. To give students the research skills to work with primary and secondary sources.
5. To give students the ability to construct and write a coherent, logical, and grammatical argument.
6. To develop critical reading skills.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Degree Requirements**

Required Courses (19 credit hours)

HIST 111	United States History to 1877	3 cr.
HIST 112	United States History, 1878 to the Present	3 cr.
HIST 205	World History, Prehistory-1500CE	3 cr.
HIST 206	World History, 1500CE-Present	3 cr.
HIST 289	Sophomore Methods Seminar	3 cr.
HIST 490	Junior and Senior Seminar in History	3 cr.

**Subtotal: 19**

Twenty-one credit hours of history of which at least 12 credit hours must be at the 300-level.

These 21 hours must include at least six hours each of courses in non-Western, European, and American history.

**Subtotal: 21**

Eighteen additional credit hours in social sciences including at least three credit hours each of economics, Geography 101, political science, sociology, or psychology.

**Subtotal: 18**

Subtotal: 58

The 2.0 required grade point average in the major is based upon all HIST courses pursued as a part of the student's degree program.

Total Credit Hours: 58

### History Suggested Sequence of Courses

The schedule of courses below is a sample sequence for a history major. Many students become history majors in their sophomore year and fulfill the major requirements without academic sacrifice.

### Degree Requirements

#### Freshman Year- Fall Semester

HIST 205	World History, Prehistory-1500CE	3 cr.
HIST 111	United States History to 1877	3 cr.
MATH 1XX	Mathematical Analysis	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.

**Subtotal: 14**

#### Freshman Year - Spring Semester

HIST 206	World History, 1500CE-Present	3 cr.
HIST 112	United States History, 1878 to the Present	3 cr.
MATH XXX	Mathematics Elective	3 cr.
GEN XXX	General Elective	3 cr.
ENGL 133	English Composition II	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 16**

#### Sophomore Year - Fall Semester

POSC 102	American National Government	3 cr.
EC 111	Principles of Microeconomics	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
CUL 2XX	Cultural Studies	3 cr.
HIST 289	Sophomore Methods Seminar	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

#### Sophomore Year - Spring Semester

SO 101	Introduction to Sociology	3 cr.
CS 13X	Computer Competence	3 cr.
PSY 101	Introduction to Psychology	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

#### Junior Year - Fall Semester

PH XXX	Ethical Perspective	3 cr.
HIST 3XX	Upper Level History Elective	3 cr.
HIST 3XX	Upper Level History Elective	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
GEOG 101	World Geography	3 cr.

**Subtotal: 15**

#### Junior Year - Spring Semester

HIST 3XX	Upper Level History Elective	3 cr.
HIST 3XX	Upper Level History Elective	3 cr.
SBP XXX	Social/Behavioral Sciences Perspective	3 cr.
GEN XXX	General Elective	3 cr.
XXX HIST	History Elective	3 cr.

**Subtotal: 15**

#### Senior Year - Fall Semester

HIST 3XX	Upper Level History Elective	3 cr.
HIST 3XX	Upper Level History Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

#### Senior Year - Spring Semester

HIST 3XX	Upper Level History Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
HIST 490	Junior and Senior Seminar in History	3 cr.

**Subtotal: 16**

Subtotal: 122

\*Two courses must be designated as writing intensive courses.

Total Credit Hours: 122

### Information Technology

### Information Technology Major

#### General Information

The Information Technology major, which leads to a Bachelor of Science degree, prepares students to be able to identify and employ the information technology and methodologies required to help an organization meet its goals. Students are prepared to understand and meet the technology needs of users in an organization while being able to select, apply, integrate and administer computing technologies within the organization. Students are prepared to advocate for the users as well as to administer computer systems, manage networks of computers, design and develop web pages, and develop network and system security strategies for an organization. Due to the rapid rate of

change in technology, students are equipped to understand and manage the information technology resources of an organization in an environment of change as new technologies emerge. Students will gain hands-on experience with a range of information technologies. An internship is required to provide students with an understanding of how information technology is used in the real world.

**Opportunities**

Graduates in information technology develop the knowledge and understanding required of IT professionals and are prepared to go on to advanced study or to enter various information technology fields. Graduates are in high demand and are well equipped to enter careers in system administration, web design and development, network administration, and network security

**Computer Science and Information Technology** (p. 32)

Professors: Heidi Ellis, Lisa Hansen

Associate Professor: Herman Lee Jackson II

Professional Educator: John Willemain

**Educational Objectives**

The Information Technology program will prepare students to be professionals capable of applying principles to practice, able to undertake lifelong learning, and aware of social, ethical, and environmental issues associated with their professional activities. The expected accomplishments of our graduates during the first several years following graduation from the program are to:

1. successfully apply principles and practices of computing to design and maintain systems that meet customer need and support user needs;
2. function ethically and responsibly as a full participant in the computing discipline;
3. remain current in the fast-changing world of technology today by pursuing lifelong learning;
4. operate successfully as part of a team; and
5. apply knowledge and skills to the benefit of society.

**Program Outcomes**

Upon completion of the program, the student will have the following abilities:

- Communication – Ability to communicate ideas and concepts in written and oral forms clearly and in an organized manner.
- Mathematical Foundations - Ability to apply knowledge of computing and mathematical concepts and theory to develop and analyze computing systems.
- Teamwork – Ability to work in teams.
- Design – Ability to apply system design process and notation in order to design systems.
- Critical Thinking – Ability to reason logically and evaluate and analyze a computer-based system, process, component or program to meet desired needs.
- Ethics – Ability to identify the role computers play in society and identify and analyze ethical impacts of professional behavior and actions.
- Information Literacy – Ability to identify and utilize appropriate information sources in order to understand and/or solve

problems.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Degree Requirements**

**Required information technology courses (27 credit hours)**

CS 101/IT 101	Introduction to Computing	4 cr.
IT 102/CS 102	Introduction to Programming	4 cr.
CS 200/IT 200	Data Structures	4 cr.
IT 230	Introduction to Operating Systems and Script Development	3 cr.
IT 240/BIS 210	Foundations of Web Systems	3 cr.
IT 250/BIS 413	Data Communications and Networks	3 cr.
IT 320	Foundations of Human Computer Interaction	3 cr.
	And	
IT 300/BIS 321	Database Management Systems	3 cr.
	or	
CS 364	Design of Database Management Systems	3 cr.

**Subtotal: 27**

**Required mathematics courses (six additional credit hours)**

MATH 120	Intro Statistics for the Arts & Sci	3 cr.
MATH 150	Applied Discrete Mathematics	3 cr.

**Subtotal: 6**

**Science courses (six credit hours)**

**Subtotal: 6**

**Technical Elective (six credit hours).**

Two additional information technology or computer science courses numbered 300 or above.

**Subtotal: 6**

**Internship (three credit hours)**

IT 480	Internship in Information Technology	3 cr.
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**Subtotal: 3**

Subtotal: 48

In addition to the required courses, students must complete two concentration areas taking two courses for each of their chosen concentrations and an additional course in a third concentration area. See Information Technology Concentrations (p. 74).

Total Credit Hours: 48

**Information Technology Concentrations**

**Degree Requirements**

Area I - System Administration:

IT 310	System Operation and Administration	3 cr.
IT 410	Advanced Topics in System Administration	3 cr.
Area 2 - Network Security:		
IT 330	Network Security Concepts	3 cr.
IT 430	Advanced Topics in Network Security	3 cr.
Area 3 - Web Design and Development:		
IT 350	Web Systems Development	3 cr.
IT 450	Advanced Topics in Web Design and Development	3 cr.
Area 4 - Network Administration:		
IT 360	Network Management and Operations	3 cr.
IT 460	Advanced Topics in Network Administration	3 cr.

**Information Technology Suggested Sequence of Courses**

**Degree Requirements**

**Freshman Year- Fall Semester**

CS 101/IT 101	Introduction to Computing	4 cr.
GEN XXX	General Elective	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
HIST XXX	Historical Perspective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

**Freshman Year - Spring Semester**

IT 102/CS 102	Introduction to Programming	4 cr.
MATH 150	Applied Discrete Mathematics	3 cr.
ENGL 133	English Composition II	3 cr.
GEN XXX	General Electives	6 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 17</b>

**Sophomore Year - Fall Semester**

IT 200/CS 200	Data Structures	4 cr.
IT 230	Introduction to Operating Systems and Script Development	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
SBP XXX	Social/Behavioral Sciences Perspective	3 cr.
		<b>Subtotal: 16</b>

**Sophomore Year - Spring Semester**

IT 240/BIS 210	Foundations of Web Systems	3 cr.
IT 250/BIS 413	Data Communications and Networks	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

**Junior Year - Fall Semester**

IT 3XX	IT Concentration Area 1	3 cr.
IT 3XX	IT Concentration area 2	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
IT 300/BIS 321	Database Management Systems	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 15</b>

**Junior Year - Spring Semester**

IT 4XX	IT Concentration area 1	3 cr.
IT 4XX	IT Concentration area 2	3 cr.
PH XXX	Ethical Perspective	3 cr.
LAB XXX	Laboratory Science Requirement	3-4 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
		<b>Subtotal: 15-16</b>

**Senior Year - Fall Semester**

IT 320	Foundations of Human Computer Interaction	3 cr.
ITCS 3XX/4XX	IT Electives	3 cr.
GEN 3XX	General Electives	9 cr.
		<b>Subtotal: 15</b>

**Senior Year - Spring Semester**

IT XXX	IT Concentration area 3	3 cr.
ITCS 3XX/4XX	IT Electives	3 cr.
IT 480	Internship in Information Technology	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	2 cr.
		<b>Subtotal: 14</b>

Subtotal: 123-124

Note: Initially, the IT program will be offering only four areas of concentration.

Total Credit Hours: 123-124

Integrated Liberal Studies

Integrated Liberal Studies Major

General Information

The Integrated Liberal Studies program provides the opportunity to construct an individualized major. Such a program combines a selection of interrelated courses from two or more disciplines according to the interests and goals of the student.

Students must request permission and guidance from each department in which they propose to do a substantial part of the work. Final approval of such a program rests with the Dean of the College of Arts and Sciences upon recommendation of those departments concerned. No request for an Integrated Liberal Studies major will be considered earlier than the end of the freshman year or later than the beginning of the senior year.

### **Career Opportunities**

This program permits students to pursue goals, which are not addressed in a regular major program. Past majors have found jobs in animal science, publishing, and pharmaceutical sales.

### **Faculty**

Faculty in this major are drawn from disciplines throughout the University.

### **Program Objectives**

1. To allow students to construct a major.
2. To gather courses from at least two major departments.
3. To lead students to define educational goals.
4. To bring the students into planning their own education.
5. To lead students to find elements in disciplines that reinforce each other.

### **General University and College Requirements**

See General University Requirements (p. 15) and College of Arts and Sciences Requirements (p. 34).

Non-Business majors can apply no more than 25% of business coursework to their graduation requirements.

Minimum requirements for an integrated liberal studies major:

A minimum of 36 credit hours drawn from at least two disciplines, 18 hours in each discipline. At least 30 (15 hours in each) of these shall be courses at the 300-400 level.

### **Suggested Sequence of Courses**

The assistant dean of Arts and Sciences serves as the advisor to students in this major. Each student's four-year sequence is dependent upon the courses of study selected.

International Studies

## **International Studies Major**

### **General Information**

International Studies aims to educate global citizens. The major promotes global understanding and lifelong learning through an international, intercultural, and interdisciplinary curriculum. It is designed to foster understanding of world societies and global issues from varied disciplinary perspectives, including cultural diversity and norms, economic interconnectedness, conflict and war, environmental degradation, human rights violations and solutions. Students learn the communication, research, and critical thinking skills necessary to assess cultural, economic, political, and social systems in a global context. Majors learn to understand and communicate with diverse communities at home and abroad, a foundation of work and life in the

twenty-first century, by studying complex international issues, including the dynamic global economy and the expectations of global citizenship.

International Studies majors shape their own course of study from a curriculum that balances depth and breadth of international and regionally comparative courses in different academic specializations. Majors are encouraged to choose a relevant minor to focus their course of study. Majors are encouraged to study abroad or to pursue international or globally related internships and service learning opportunities. International Studies advances awareness of global issues on campus by promoting participation in student organizations that support international understanding and diversity education, especially the Model United Nations and United and Mutually Equal.

### **Career and Community Opportunities**

International Studies prepares students to participate creatively in a global exchange of ideas and to be successful in a dynamic global economy. The major opens a wide variety of career paths, ranging from public service, diplomacy, management, and communications to the arts, community service, entrepreneurship, health care support, and teaching. It prepares interested students for a variety of graduate programs, including those in international affairs, law, business, and public policy. The major helps students meet the challenges of the global economy by requiring at least twelve credits of foreign language(s). The major also encourages studying, volunteering, and interning abroad to sharpen students' critical thinking and communication skills, which most employers consider fundamental in the twenty-first century economy.

### **Faculty**

In this multidisciplinary major, students will learn from faculty in many disciplines from throughout the University.

### **Program Objectives**

1. To provide students with breadth of knowledge of cultural, economic, political, and social systems in a global context.
2. To provide students with analytical tools to explain complex global issues in different disciplines.
3. To expose students at an advanced level to different disciplinary perspectives on global issues and international context.
4. To acquire proficiency in a language or languages other than one's own.
5. To gain awareness of the connection between global problems and global citizenship, particularly, but not necessarily, through international study, internships, or service learning, or through globally related internships, service learning, or domestic academic exchange.
6. To develop skills in critical reading, research, argumentation, and presentation.

### **General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34). International Studies majors are encouraged to fulfill General University Requirements with courses that have international, global, or comparative focus.

For example, the major recommends all Cultures courses and such Integrated Liberal and Professional Perspective courses as: ILP 210

ILP 230  
 ILP 236  
 ILP 238  
 ILP 250

**Degree Requirements**

Group A: Core courses required (15 credit hours):

GEOG 102	World Regional Geography I: Highly Developed Countries	3 cr.
	or	
GEOG 103	World Regional Geography II: Less Developed Countries	3 cr.
HIST 206	World History, 1500CE-Present	3 cr.
INST 101/POSC 101	Introduction to Contemporary Global Issues	3 cr.
POSC 203	International Relations	3 cr.
INST 490	Seminar in International Studies	3 cr.

**Subtotal: 15**

Group B: Choose at least four courses; these cannot also count as Core courses (12 credit hours):

ART 212/HIST 212  
 ART 202  
 CJ 260  
 EC 111  
 EC 112  
 \*ENGL 215  
 GEOG 102  
 GEOG 103  
 HIST 133  
 HIST 171  
 HIST 212/ART 212  
 HIST 261  
 INST 100  
 INST 190  
 INST 290  
 INTB 251  
 LSOC 203  
 LSOC 230/POSC 230  
 MUS 240  
 PH 120  
 PH 230  
 PH 240  
 POSC 201  
 POSC 2XX  
 REL 220  
 REL 221

**Subtotal: 12**

Group C: Choose at least seven courses; note any prerequisites (21 credit hours):

COMM 348  
 COMM 356  
 EC 315  
 EC 321  
 EC 371  
 EC 372  
 EC 3XX  
 EC 39X  
 \*ENGL 336  
 \*ENGL 341

\*ENGL 343  
 \*ENGL 376  
 ENTR 380  
 FILM 312  
 FIN 322  
 HIST 320  
 HIST 332  
 HIST 341  
 HIST 343  
 HIST 345  
 HIST 346  
 HIST 348  
 HIST 372  
 HIST 373  
 HIST 374/INST 374  
 HIST 375  
 HIST 380  
 HIST 39X (topics vary; INTLS Dir. approval)  
 \*HIST 490 (topics vary; INTLS Dir. approval)  
 INST 390  
 INST 480  
 LSOC 344  
 MAN 311  
 MK 311  
 PH 316  
 POSC 310  
 POSC 312  
 POSC 316  
 POSC 318  
 POSC 340  
 \*POSC 345  
 POSC 346  
 POSC 350  
 POSC 355  
 POSC 39X (topics vary; INTLS Dir. approval)  
 POSC 490 (topics vary; INTLS Dir. approval)  
 SPMN 420

\*Fulfills Writing Intensive Requirement. Two courses must be designated as writing intensive.

**Subtotal: 21**

**Foreign Languages requirement (12 crs)**

At least 12 credits (four semesters) of a foreign language or languages are required. A student may earn exemption from up to two semesters of a foreign language and up to two semesters of a different native language other than English. Exemptions may be earned through a proficiency test administered and/or approved by an appropriate University faculty member or the Director of International Studies.

Students who earn the maximum language exemption will be required to take one course from Group C above. The remaining credits will become general electives.

**Subtotal: 12**

Subtotal: 60

**Total Credit Hours: 60**

## International Studies Suggested Sequence of Courses

### Degree Requirements

#### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
INST 101/POSC 101	Introduction to Contemporary Global Issues	3 cr.
LA 100	First Year Seminar	2 cr.
LANG XXX	First Semester Foreign Language	3 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

#### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
GEOG 103	World Regional Geography II: Less Developed Countries	3 cr.
HIST 206	World History, 1500CE-Present	3 cr.
LANG XXX	First Semester Foreign Language	3 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

#### Sophomore Year - Fall Semester

INST 1-2XX	See INST Curriculum List	3 cr.
INST 1-2XX	See INST Curriculum List	3 cr.
LAB XXX	Laboratory Science Requirement	4 cr.
PH 1-2XX	See INST Curriculum List	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.

**Subtotal: 16**

#### Sophomore Year - Spring Semester

CS XXX	Computer Competence Requirement	3 cr.
INST XXX	See INST Curriculum List	3 cr.
INST XXX	See INST Curriculum List	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
POSC 203	International Relations	3 cr.

**Subtotal: 15**

#### Junior Year - Fall Semester (Study Abroad Encouraged)

ART/FILM/MUS/THTR XXX	See INST Curriculum List	3 cr.
INST 3XX	See INST Curriculum List	3 cr.
INST 3XX	See INST Curriculum List	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LANG XXX	Foreign Language	3 cr.

**Subtotal: 15**

#### Junior Year - Spring Semester (Study Abroad Encouraged)

CUL XXX	Cultural Studies Perspective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
INST 3XX	See INST Curriculum List	3 cr.
LANG XXX	Foreign Language	3 cr.

**Subtotal: 15**

#### Senior Year - Fall Semester

GEN 3XX	General Elective	3 cr.
GEN 3XX	General Elective	3 cr.
INST 3XX	See INST Curriculum List	3 cr.
INST 3XX	See INST Curriculum List	3 cr.
WIC 3XX	Writing Intensive Course	3 cr.

**Subtotal: 15**

#### Senior Year - Spring Semester

GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
INST 3XX	See INST Curriculum List	3 cr.
INST 490	Seminar in International Studies	3 cr.

**Subtotal: 15**

Subtotal: 122

\*Two courses must be designated as writing intensive courses.

Total Credit Hours: 122

Law and Society

## Law and Society Major

### General Information

The Law and Society major is a course of study for the liberal arts student who is interested in studying the origins, actors, institutional frameworks, cultural development, and theoretical foundations of law and justice as they relate to society. The study of law and society draws from the insights and tools of academic disciplines like history, political science, philosophy, sociology, economics, and related social sciences, to illuminate the development and practice of law and jurisprudence through a variety of legal traditions. This major looks at law, broadly construed, and legal actors and institutions in a wide variety of contexts: domestic (i.e., United States), foreign, and international.

This is an interdisciplinary major, so students in this program are not confined to learning about law through the narrow prism of one particular discipline. The goal of the program is to allow students the freedom to sample from a wide variety of courses and instructors and to pursue specific interests within a broad organizing framework — the law.

### Career Opportunities

The goal of the program is to produce students who can think clearly and dissect and analyze arguments critically. The multidisciplinary

approach exposes students to a great variety of human behaviors and institutions. The law and society major is not designed to be the only path for preparing students for law school, nor does it provide paralegal training, but many students who plan to attend law school may benefit from and enjoy this major as a field of study. The broadly based education offered by this major is an excellent preparation for careers in law, education, government, business, and international affairs.

**History and Political Science Faculty** (p. 33)

**Program Objectives**

1. Understand law in its various theoretical, institutional, and historical forms and as it exists in practice.
2. Consider how various historical, social, economic, and political contexts shape the construction, mobilization, and interpretation of law.
3. Develop an appreciation for international law and for non-Western legal traditions from the Middle East, Sub-Saharan Africa, South Asia, and East Asia.
4. Understand the comparative development and practice of constitutional law in the United States and other societies.
5. Perceive the dynamic relationship between law, society, and politics on a local, national, and international level.
6. Understand the development and dynamics of legal institutions and practices in the United States and elsewhere in an increasingly globalizing world.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Degree Requirements**

Required law and society courses (33 credit hours)

LSOC 101	Introduction to Law and Society	3 cr.
LSOC 203	Theories of Justice	3 cr.
POSC 102	American National Government	3 cr.
POSC 201	Comparative Politics	3 cr.
POSC 207	Western Political Thought	3 cr.
POSC 225	Law and Judicial Politics	3 cr.
POSC 325	Constitutional Law	3 cr.
	or	
POSC 326	Civil Liberties	3 cr.
POSC 340	International Law and Organization	3 cr.
	or	
POSC 345	International Human Rights	3 cr.
LSOC 344	Comparative Legal Systems	3 cr.
SO 413	Social Inequality	3 cr.
LSOC 490	Senior Seminar in Law and Society	3 cr.
		<b>Subtotal: 33</b>

The major will require that the student select five courses (15 credits) from the following:

BL 201/HONB 201	Introduction to Business Law	3 cr.
CJ 230	Criminal Law	3 cr.
CJ 234	The Judicial Process	3 cr.
CJ 342/SO 342	Juvenile Delinquency	3 cr.
EC 105	The Economics of Crime	3 cr.
ENGL 366	Crime and Punishment	3 cr.
HIST 336	Early American Republic	3 cr.
ILP 253	Justice Then and Now	3 cr.
LSOC 202	The Literature of the Law	3 cr.
LSOC 206	Legal Justice and Social Justice	3 cr.
LSOC 230/POSC 230	When Cultures Collide	3 cr.
SO 208	Gender	3 cr.
SO 211	Race and Ethnicity	3 cr.
SO 214	Drugs, Society, and The Criminal Justice System	3 cr.
SO 309	Deviance	3 cr.
SW 204	Social Work and Criminal Justice	3 cr.

**Subtotal: 15**

The student will also be required to take courses outside the major as follows:

EC 111	Principles of Microeconomics	3 cr.
SO 101	Introduction to Sociology	3 cr.

**Subtotal: 6**

Subtotal: 54

Total Credit Hours: 54

**Law and Society Suggested Sequence of Courses**

**Degree Requirements**

Freshman Year- Fall Semester

LSOC 101	Introduction to Law and Society	3 cr.
SO 101	Introduction to Sociology	3 cr.
	or	
POSC 102	American National Government	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 1XX	Mathematical Analysis	3 cr.
LA 100	First Year Seminar	2 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

Freshman Year - Spring Semester

LSOC 203	Theories of Justice	3 cr.
SO 101	Introduction to Sociology	3 cr.

	or		
POSC 102	American National Government	3 cr.	
ENGL 133	English Composition II	3 cr.	
MATH XXX	Mathematical Analysis	3 cr.	
HIST XXX	Historical Perspective	3 cr.	
PEHR 153-199	Lifetime Activity	1 cr.	

**Subtotal: 16**

## Sophomore Year - Fall Semester

LAB XXX	Laboratory Science Requirement	3 cr.	
POSC 225	Law and Judicial Politics	3 cr.	
EC 111	Principles of Microeconomics	3 cr.	
POSC 201	Comparative Politics	3 cr.	
GEN XXX	General Elective	3 cr.	

**Subtotal: 15**

## Sophomore Year - Spring Semester

POSC 207	Western Political Thought	3 cr.	
XXX	Major Elective	3 cr.	
LAB XXX	Laboratory Science Requirement	3 cr.	

or

CS 13X	Computer Competence	3 cr.	
XXX	Major Elective	3 cr.	
GEN XXX	General Electives	6-9 cr.	

**Subtotal: 15**

## Junior Year - Fall Semester

POSC 325	Constitutional Law	3 cr.	
	or		
POSC 326	Civil Liberties	3 cr.	
CS 13X	Computer Competence	3 cr.	
	or		
LAB/NSP XXX	Natural Science Perspective	3 cr.	
XXX	Major Elective	3 cr.	
ILP XXX	Integrated Liberal Professional Perspective	3 cr.	
GEN XXX	General Elective	3 cr.	

**Subtotal: 15**

## Junior Year - Spring Semester

POSC 340	International Law and Organization	3 cr.	
	or		
POSC 345	International Human Rights	3 cr.	
XXX	Major Elective	3 cr.	
GEN XXX	General Elective	3 cr.	

GEN XXX	General Elective	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.

**Subtotal: 15**

## Senior Year - Fall Semester

GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.
XXX	Major Elective	3 cr.
PH XXX	Ethical Perspective	3 cr.
SO 413	Social Inequality	3 cr.
ART XXX	Aesthetic Perspective	3 cr.

**Subtotal: 16**

## Senior Year - Spring Semester

LSOC 344	Comparative Legal Systems	3 cr.
LSOC 490	Senior Seminar in Law and Society	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Subtotal: 122

\*Two courses must be designated as writing intensive courses.

Total Credit Hours: 122

Liberal Studies

## Liberal Studies Major

**General Information**

The liberal studies programs are open only to part-time students (no more than 11 credits per semester).

**Program Objectives**

1. To provide a wide array of courses.
2. To present a well balanced program of courses.
3. To frame (for the associate's degree) a realistic, near-term goal.
4. To allow students to make maximum use of courses taken.

**Associate of Arts in Liberal Studies**

The Associate of Arts in Liberal Studies is particularly appropriate for nontraditional students who are entering or reentering college after a long pause in their formal education. The two-year degree may be designed by the student, with the assistance of an academic advisor, to serve as a career development tool as well as preparation for upper-level study in a four-year degree program.

**Bachelor of Arts in Liberal Studies**

The Bachelor of Arts in Liberal Studies satisfies the broad interests of older students who wish to further their formal education without reference to specific career preparation or as preparation for graduate study. Advisors can give more information and guidance on this flexible degree option.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

Non-business majors can apply no more than 25% of business coursework to their graduation requirements.

Candidates for the Bachelor of Arts in Liberal Studies must meet all general requirements of the University and area requirements of the College of Arts and Sciences.

### Degree Requirements

#### Associate of Arts in Liberal Studies - Course of Study (60 credit hours)

xxx	Freshman English	6 cr.
WIC XXX	Writing Intensive course	3 cr.
xxx	Humanities	9 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
xxx	Mathematics	3 cr.
xxx	Mathematics or Computer	3 cr.
xxx	Social Sciences	12 cr.
<u>GEN XXX</u>	<u>General Electives</u>	<u>21 cr.</u>
		<b>Subtotal: 60</b>

#### Bachelor of Arts in Liberal Studies - Course of Study (120 credit hours)

xxx	Computer course	3 cr.
xxx	Freshman English	6 cr.
WIC XXX	Writing Intensive course	6 cr.
xxx	Humanities	24 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.
xxx	Mathematics	6 cr.
xxx	Social Sciences	30 cr.
<u>GEN XXX</u>	<u>General Electives</u>	<u>39 cr.</u>
		<b>Subtotal: 120</b>

Humanities: 9 credit hours at 300-400 level

Social Sciences: 9 credit hours at 300-400 level

General Electives: 12 credit hours at 300-400 level

Subtotal: 120

Total credit hours required for graduation—120.

Total Credit Hours: 120

Mathematical Sciences

### Mathematical Sciences Major

#### General Information

The primary goals of the Mathematical Sciences curriculum are to offer general training in mathematical reasoning and to develop mastery of mathematical tools needed for a lifelong series of different jobs and continuing education. Much emphasis is placed on the theory of problem-solving and nurturing such abilities as intuition, inductive and deductive reasoning, and model building.

The student is also made aware of the power and elegance of mathematical truth through careful analysis of axiomatic systems and mathematical theories. Throughout the undergraduate program students are encouraged to formulate their own problems and conjectures, thus challenging their own ability to cope with the mathematical literature.

In fostering these goals the Mathematical Sciences curriculum provides grounding in the traditional areas of theoretical mathematics. It also requires students to select a track of study based on future career or graduate school goals: pure mathematics, applied mathematics, teacher preparation-secondary school, or teacher preparation-elementary school.

In seminars, independent study courses, and internships the student is encouraged to formulate and carry out research projects, working creatively with the literature in either pure, applied mathematics or mathematics education. In the senior year students work individually with a faculty member on their self-selected senior project, which culminates in a research paper and a presentation, usually at the Hudson River Undergraduate Mathematics Conference.

The programs lead to a Bachelor of Science degree in the Mathematical Sciences, whether pursuing the pure, applied, or teacher preparation-secondary school track, or a Bachelor of Arts degree in Mathematics, if pursuing the teacher preparation-elementary school track. The programs have been patterned to follow the recommendations of the Committee on Undergraduate Programming in Mathematics of the Mathematical Association of America.

#### Career Opportunities

Graduates in mathematics develop the type of creative thinking and problem-solving abilities required of professional mathematicians. As a consequence, they are well prepared to complete advanced study or pursue a wide variety of employment opportunities in industry, commerce, or the public sector. Graduates have secured positions in the areas of actuarial science, finance, operations research, computer programming, statistics, systems analysis, software engineering, and teaching. Others have received fellowships to pursue graduate study in mathematics or related areas.

#### Mathematics Faculty (p. 33)

### Degree Requirements

#### Required mathematics and other courses (37 credit hours)

for the Bachelor of Science degree in the Mathematical Sciences for the Pure, Applied, and Teacher Preparation - Secondary School tracks:

CS 170	Technology in Mathematics	3 cr.
CS 171	Programming for Mathematics	4 cr.
MATH 133	Calculus I	4 cr.
MATH 134	Calculus II	4 cr.
MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
MATH 282	Foundations of Mathematics II	3 cr.
MATH 306	Linear Algebra	3 cr.
MATH 418	Introduction to Modern Algebra	3 cr.
MATH 421	Real Analysis	3 cr.

MATH 451	Senior Project I	1 cr.
MATH 452	Senior Project II	2 cr.
		<b>Subtotal: 37</b>

If pursuing the Pure or Applied Track, nine additional credit hours (three courses) selected from one of the following areas, plus three credit hours of a MATH elective above 235:

Pure Mathematics

MATH 375	Creative Problem Solving	3 cr.
MATH 377	Elementary Number Theory	3 cr.
MATH 378	Combinatorics	3 cr.
MATH 379	Graph Theory	3 cr.
MATH 412	Introduction to Topology	3 cr.
MATH 427	Complex Analysis	3 cr.

Applied Mathematics

MATH 236	Differential Equations	3 cr.
MATH 369	Linear Programming	3 cr.
MATH 372	Probability	3 cr.
MATH 373	Statistical Modeling	3 cr.
MATH 378	Combinatorics	3 cr.
MATH 379	Graph Theory	3 cr.
MATH 420	Mathematical Modeling	3 cr.

If pursuing the Teacher Preparation-Secondary School track, twelve additional credit hours (four courses) selected from below, and MATH 121, MATH 371 & MATH 377 are required:

Teacher Preparation-Secondary School

MATH 121	Introductory Probability and Statistics	3 cr.
MATH 371	Modern Aspects of Geometry	3 cr.
MATH 373	Statistical Modeling	3 cr.
MATH 375	Creative Problem Solving	3 cr.
MATH 377	Elementary Number Theory	3 cr.

To satisfy the science core requirements

Either BIO 107, BIO 108 with BIO 117, BIO 118, CHEM 105, CHEM 106, or PHYS 133, PHYS 134 must be taken to satisfy the science core requirements. (PHYS 133, PHYS 134 is recommended.)

BIO 107	General Biology I	3 cr.
BIO 108	General Biology II	3 cr.
	with	
BIO 117	General Biology Laboratory I	1 cr.
BIO 118	General Biology Laboratory II	1 cr.
	or	
CHEM 105	General Chemistry I	4 cr.

CHEM 106	General Chemistry II	4 cr.
	or	
PHYS 133	Mechanics	4 cr.
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 8**

Teacher Preparation - Elementary School track (41 credits)

Required mathematics and other courses for the Bachelor of Arts degree in Mathematical Sciences.

CS 170	Technology in Mathematics	3 cr.
MATH 107	Mathematics For Elementary Education I	3 cr.
MATH 108	Mathematics for Elementary Education II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
MATH 133	Calculus I	4 cr.
MATH 134	Calculus II	4 cr.
MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
MATH 282	Foundations of Mathematics II	3 cr.
MATH 306	Linear Algebra	3 cr.
MATH 371	Modern Aspects of Geometry	3 cr.
MATH 377	Elementary Number Theory	3 cr.
MATH 451	Senior Project I	1 cr.
MATH 452	Senior Project II	2 cr.

**Subtotal: 41**

Note: Concurrent completion of the Elementary Education major, which yields a Bachelor of Arts Degree in Elementary Education, is required for the Teacher Preparation - Elementary School Track.

The typical course schedule for the Bachelor of Science degree in the Mathematical Sciences, pure or applied, would be constructed from what follows. The first two years are common for all students while the latter two will be dictated by the elective area selected (pure or applied). The elective/required courses that will be offered every other year would be: Creative Problem Solving in Mathematics, Statistical Modeling, Probability, Number Theory, Modern Geometry, Graph Theory, Combinatorics, and Mathematical Modeling.

**Bachelor of Science in the Mathematical Sciences  
Pure or Applied Track Suggested Sequence of  
Courses**

**Degree Requirements**

Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
MATH 133	Calculus I	4 cr.
LA 100	First Year Seminar	2 cr.

HIST XXX	Historical Perspective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
BIO 107	General Biology I	3 cr.
	And	
BIO 117	General Biology Laboratory I	1 cr.
	or	
CHEM 105	General Chemistry I	4 cr.
	or	
PHYS 133	Mechanics	4 cr.

**Subtotal: 17**

Freshman Year - Spring Semester

CS 170	Technology in Mathematics	3 cr.
ENGL 133	English Composition II	3 cr.
MATH 134	Calculus II	4 cr.
PH 204	Symbolic Logic	3 cr.
BIO 108	General Biology II	3 cr.
	And	
BIO 118	General Biology Laboratory II	1 cr.
	or	
CHEM 106	General Chemistry II	4 cr.
	or	
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 17**

Sophomore Year - Fall Semester

MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
ART XXX	Aesthetic Perspective	3 cr.
SBP XXX	PSY/SO/EC/POSC/HIST/CJ/ED	3 cr.
MATH 306	Linear Algebra	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 17**

Sophomore Year - Spring Semester

MATH XXX	Mathematics Elective	3 cr.
MATH 282	Foundations of Mathematics II	3 cr.
CS 171	Programming for Mathematics	4 cr.
WIC 2XX	Writing Intensive Course	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 16**

Junior Year - Fall Semester

MATH XXX	Mathematics Elective	3 cr.
MATH XXX	Mathematics Elective	3 cr.
MATH 418	Introduction to Modern Algebra	3 cr.

CUL XXX	Cultural Studies Perspective	3 cr.
PH XXX	Ethical Perspective	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester

MATH 421	Real Analysis	3 cr.
MATH XXX	Mathematics Electives	3-6 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
GEN XXX	General Electives	3-6 cr.

**Subtotal: 15**

Senior Year - Fall Semester

MATH 451	Senior Project I	1 cr.
MATH XXX	Mathematics Electives	6 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
GEN XXX	General Electives	6 cr.

**Subtotal: 16**

Senior Year - Spring Semester

MATH 452	Senior Project II	2 cr.
MATH XXX	Mathematics Electives	6 cr.
GEN XXX	General Electives	6 cr.

**Subtotal: 14**

Subtotal: 127

Note: The General University Requirements in Aesthetics and Cultural Studies can be satisfied by taking a single course that has a designation of fulfilling both requirements.

Total Credit Hours: 122

**Bachelor of Science in the Mathematical Sciences, Teachers Preparation - Secondary School, Suggested Sequence of Courses**

**Degree Requirements**

Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
MATH 133	Calculus I	4 cr.
HIST XXX	Historical Perspective	3 cr.
LA 100	First Year Seminar	2 cr.
PEHR 151	Personal Health and Wellness	1 cr.
BIO 107	General Biology I	3 cr.
	And	
BIO 117	General Biology Laboratory I	1 cr.
	or	
CHEM 105	General Chemistry I	4 cr.
	or	
PHYS 133	Mechanics	4 cr.

			<b>Subtotal: 17</b>
Freshman Year - Spring Semester			
CS 170	Technology in Mathematics	3 cr.	
ENGL 133	English Composition II	3 cr.	
MATH 134	Calculus II	4 cr.	
PH 204	Symbolic Logic	3 cr.	
BIO 108	General Biology II	3 cr.	
	And		
BIO 118	General Biology Laboratory II	1 cr.	
	or		
CHEM 106	General Chemistry II	4 cr.	
	or		
PHYS 134	Electricity and Magnetism	4 cr.	
			<b>Subtotal: 17</b>
Sophomore Year - Fall Semester			
MATH 235	Calculus III	3 cr.	
MATH 281	Foundations of Mathematics I	4 cr.	
MATH 306	Linear Algebra	3 cr.	
ART XXX	Aesthetic Perspective	3 cr.	
PEHR 153-199	Lifetime Activity	1 cr.	
PSY 101	Introduction to Psychology	3 cr.	
			<b>Subtotal: 17</b>
Sophomore Year - Spring Semester			
MATH 282	Foundations of Mathematics II	3 cr.	
MATH 121	Introductory Probability and Statistics	3 cr.	
CS 171	Programming for Mathematics	4 cr.	
WIC 2XX	Writing Intensive Course	3 cr.	
ED 301	Principles and Problems of Education	3 cr.	
ED 120	Introduction to Education	1 cr.	
			<b>Subtotal: 17</b>
Junior Year - Fall Semester			
MATH 418	Introduction to Modern Algebra	3 cr.	
MATH XXX	Mathematics Elective	3 cr.	
MATH XXX	Mathematics Elective	3 cr.	
ED 260	Teaching English Language Learners I	1 cr.	
PH XXX	Ethical Perspective	3 cr.	
CUL XXX	Cultural Studies Perspective	3 cr.	
			<b>Subtotal: 16</b>
Junior Year - Spring Semester			
MATH 421	Real Analysis	3 cr.	

PSY 304	Educational Psychology	3 cr.
MATH 371	Modern Aspects of Geometry	3 cr.
	or	
MATH 377	Elementary Number Theory	3 cr.
MATH 373	Statistical Modeling	3 cr.
	or	
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
ED 270	Teaching English Language Learners II	2 cr.
MATH 302	MTEL Prep	2 cr.

**Subtotal: 16**

## Senior Year - Fall Semester

MATH 451	Senior Project I	1 cr.
ED 380	Secondary Education Topics	1 cr.
ED 403	Methods of Teaching in Secondary Schools	3 cr.
ED 409	Practicum in Secondary Teaching	9 cr.
ED 410	Secondary Practicum Seminar	3 cr.

**Subtotal: 17**

## Senior Year - Spring Semester

MATH XXX	Mathematics Elective	3 cr.
MATH 452	Senior Project II	2 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
	or	
MATH 373	Statistical Modeling	3 cr.
MATH 377	Elementary Number Theory	3 cr.
	or	
MATH 371	Modern Aspects of Geometry	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 14**

Subtotal: 131

Note: MATH 375, Creative Problem Solving, can be substituted for MATH 373, Statistical Modeling.

Note: the general university requirements in Aesthetics and Cultural Studies can be satisfied by taking a single course that has a designation of fulfilling both requirements.

Total Credit Hours: 131

**Bachelor of Arts in the Mathematical Sciences,  
Teacher Preparation-Elementary School  
Suggested Sequence of Courses**

### Degree Requirements

The typical course schedule for the Bachelor of Arts degree in the Mathematical Sciences, teacher preparation-elementary school, would be constructed as indicated below. The elective/required courses that will be offered every other year would be: Creative Problem Solving in Mathematics, Statistical Modeling, Probability, Number Theory, Modern Geometry, Graph Theory, Combinatorics, and Mathematical Modeling.

#### Mathematical Sciences Teacher Preparation - Elementary School

CS 170	Technology in Mathematics	3 cr.
MATH 107	Mathematics For Elementary Education I	3 cr.
MATH 108	Mathematics for Elementary Education II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
MATH 133	Calculus I	4 cr.
MATH 134	Calculus II	4 cr.
MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
MATH 282	Foundations of Mathematics II	3 cr.
MATH 306	Linear Algebra	3 cr.
MATH 371	Modern Aspects of Geometry	3 cr.
MATH 377	Elementary Number Theory	3 cr.
MATH 451	Senior Project I	1 cr.
MATH 452	Senior Project II	2 cr.

**Subtotal: 41**

#### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
MATH 133	Calculus I	4 cr.
HIST 111	United States History to 1877	3 cr.
PSY 101	Introduction to Psychology	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
LA 100	First Year Seminar	2 cr.

**Subtotal: 16**

#### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
MATH 134	Calculus II	4 cr.
HIST 206	World History, 1500CE-Present	3 cr.
POSC 102	American National Government	3 cr.
CS 170	Technology in Mathematics	3 cr.
PEHR 163	Games Children Play (Required for Elementary Education Majors)	1 cr.

**Subtotal: 17**

First attempt on Communication and Literacy Skills MTEL is encouraged in Spring Semester.

#### Sophomore Year - Fall Semester

ED 350	Teaching of Elementary Reading and Language Arts	3 cr.
BIO 103	Life Sciences I	3 cr.
MATH 235	Calculus III	3 cr.
MATH 281	Foundations of Mathematics I	4 cr.
ENGL 339	Children's Literature	3 cr.

**Subtotal: 16**

#### Sophomore Year - Spring Semester

ED 375	Elementary Curriculum and Methods	3 cr.
ED 252	Survey of Geography	1 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
ENGL 260	Literary Horizons	3 cr.
PHYS 105	Basic Physics	3 cr.
MATH 282	Foundations of Mathematics II	3 cr.

**Subtotal: 16**

First attempts on Foundations of Reading and/or Elementary Subject Matter MTEL are encouraged in this year.

#### Junior Year - Fall Semester

PSY 304	Educational Psychology	3 cr.
ED 260	Teaching English Language Learners I	1 cr.
EC 111	Principles of Microeconomics	3 cr.
HIST 112	United States History, 1878 to the Present	3 cr.
MATH 107	Mathematics For Elementary Education I	3 cr.
MATH 306	Linear Algebra	3 cr.

**Subtotal: 16**

#### Junior Year - Spring Semester

PH XXX	Ethical Perspective	3 cr.
ED 301	Principles and Problems of Education	3 cr.
MATH 371	Modern Aspects of Geometry	3 cr.
	or	
MATH 377	Elementary Number Theory	3 cr.
MATH 108	Mathematics for Elementary Education II	3 cr.
ED 270	Teaching English Language Learners II	2 cr.
HIST 205	World History, Prehistory-1500CE	3 cr.

**Subtotal: 17**

All MTEL tests must be passed at this point.

#### Senior Year - Fall Semester

ED 425	Elementary Education Topics	3 cr.
ED 479	Elementary Teaching Practicum	9 cr.
ED 480	Elementary Practicum Seminar	3 cr.
MATH 451	Senior Project I	1 cr.
		<b>Subtotal: 16</b>

#### Senior Year - Spring Semester

CUL XXX	Cultural Studies Perspective	3 cr.
MUS 101	Introduction to Music	3 cr.
MATH 377	Elementary Number Theory	3 cr.
or		
MATH 371	Modern Aspects of Geometry	3 cr.
MATH 452	Senior Project II	2 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 14</b>

- \*Requires 25-hour prepracticum classroom experience and journal. Journal topics are related to course. Prepracticum hours must be completed in any sophomore or junior semester, ideally one experience in sophomore year and one experience in junior year.
  - Two courses in the curriculum must be designated "Writing Intensive."
  - MATH 371 and MATH 377 are offered in alternate spring semesters, so either MATH 371 or MATH 377 will be taken in the spring semester of the junior year, and the other will be taken in the spring semester of the senior year.
- Subtotal: 41

Note: Concurrent completion of the Elementary Education major, which yields a Bachelor of Arts Degree in Elementary Education, is required for the Teacher Preparation - Elementary School Track.

Note: the General University Requirements in Aesthetics and Cultural Studies can be satisfied by taking a single course that has a designation (CA) of fulfilling both requirements.

### Schedule of Elective Courses Over a Two-Year Period:

#### Degree Requirements

##### Fall I

MATH 378	Combinatorics	3 cr.
MATH 379	Graph Theory	3 cr.

##### Spring I

MATH 371	Modern Aspects of Geometry	3 cr.
MATH 420	Mathematical Modeling	3 cr.

##### Fall II

MATH 372	Probability	3 cr.
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MATH 375	Creative Problem Solving	3 cr.
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##### Spring II

MATH 373	Statistical Modeling	3 cr.
MATH 377	Elementary Number Theory	3 cr.

#### Neuroscience

### Neuroscience Major

#### General Information

Neuroscience is a field of study that integrates psychology, biology, physics, and chemistry for the common goal of understanding the structure, development and function of the brain and nervous system. Through research, neuroscientists are able to describe the normal function of electrical tissue. For example, improving our understanding of the brain allows us to understand and find ways to prevent or treat many devastating neurological and psychiatric disorders. Students majoring in neuroscience will have access to a range of tools including behavioral testing, electrophysiology, histology, and molecular biology, as they participate first-hand in basic exploratory research. Students are involved in all stages of research including project design, data collection and results reporting. This major is housed in a research-rich environment that supports a curriculum steeped in scientific investigation, where students and faculty work as partners in research and education.

#### Career Opportunities

Students who receive an undergraduate degree in Neuroscience typically continue their studies at the masters or doctoral level or pursue advanced degrees in a variety of medical professions (e.g. MD, DDO, DDS, VDM, or OD). Career options include positions within neuroscience, psychiatry, medicine, academia, pharmaceuticals, forensic science, health and allied health professionals, science writing and communications, and state and federal governmental science agencies (e.g. CIA, FBI, NIH, CDC, or FDA).

#### Neuroscience Faculty (p. 33)

#### Student Competencies

As an undergraduate neuroscience major, students will study the nervous system, behavior and cognitive processes from a variety of perspectives. The Neuroscience major has been patterned to follow the recommendations of the advisory committee of the Faculty for Undergraduate Neuroscience. Students, at the point of graduation, should be able to demonstrate the following core competencies:

- an understanding of critical natural science and psychological principles
- an understanding of experimental methodology, design and data analysis
- an understanding of historical trends and theoretical perspectives that inform the field
- an advanced understanding of a particular area or areas of study within neuroscience
- critical thinking and independent thought
- the ability to communicate effectively

- the ability to discern and articulate a rationale for ethical conduct in research
- understanding of how neuroscience is informed by perspectives from a wide range of disciplines beyond the sciences
- an appreciation of the value of diversity and the ability to work with colleagues from a variety of backgrounds and perspectives.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Course of Study for B.S.**

There are four categories of required courses for the Neuroscience Major.

**Degree Requirements**

Core courses (26 credits)

PSY 101	Introduction to Psychology	3 cr.
NSCI 212	Introduction to Behavioral Neuroscience	3 cr.
PSY 207	Statistics for the Behavioral Sciences	3 cr.
NSCI 267	Neurobiology	4 cr.
PSY 309	Research Methods	3 cr.
PSY 313	Learning	3 cr.
NSCI 405	Seminar in Neuroscience	4 cr.
PH 208	Ethics	3 cr.
	or	
PH 231	Biomedical Ethics	3 cr.

**Subtotal: 26**

Neuroscience electives (9 crs.)

Students must select three courses from within the Neuroscience program (NSCI 200 - 400 level) or from an approved list of electives from the departments of Psychology, Biology, Physics, or Chemistry.

**Subtotal: 9**

Neuroscience Tracks (17 credits)

A central mission of the Neuroscience major is to provide opportunities for students to work closely with sponsoring faculty to learn experimental techniques and engage in neuroscience research.

Track I - Research Intensive

Students will have the opportunity to rotate through labs to observe and become familiar with various research practices and theories. Students are then required to select a faculty sponsor to engage in research in a more concentrated capacity. After placement, students will engage in a year-long senior thesis project.

NSCI 250	Neuroscience Lab Rotation I	1 cr.
NSCI 251	Neuroscience Lab Rotation II	2 cr.
NSCI 350	Neuroscience Lab Placement I	3 cr.
NSCI 351	Neuroscience Lab Placement II	3 cr.
NSCI 450	Senior Neuroscience Thesis I	4 cr.

NSCI 451	Senior Neuroscience Thesis II	4 cr.
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**Subtotal: 17**

Or Track II - Course Intensive

Students have the option to continue with the Neuroscience Major by completing additional upper level courses in Neuroscience or approved courses in other disciplines.

NSCI 250	Neuroscience Lab Rotation I	1 cr.
NSCI 251	Neuroscience Lab Rotation II	2 cr.
3XX/4XX	Fourteen 3xx/4xx credits in Neuroscience or approved courses	14 cr.

**Subtotal: 17**

Basic science and math courses (30 credits)

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 105	General Chemistry I	4 cr.
CHEM 106	General Chemistry II	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
MATH 109	Pre-Calculus Mathematics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
	or	
MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.

**Subtotal: 30**

Subtotal: 82

Total Credit Hours: 82

**Neuroscience Suggested Sequence of Courses**

**Degree Requirements**

Freshman Year - Fall Semester

PSY 101	Introduction to Psychology	3 cr.
ENGL 132	English Composition I	3 cr.
BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
LA 100	First Year Seminar	2 cr.
PEHR 151	Personal Health and Wellness	1 cr.
MATH 109	Pre-Calculus Mathematics	3 cr.

	or		
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.	

**Subtotal: 16**

## Freshman Year - Spring Semester

NSCI 212	Introduction to Behavioral Neuroscience	3 cr.	
ENGL 133	English Composition II	3 cr.	
BIO 108	General Biology II	3 cr.	
BIO 118	General Biology Laboratory II	1 cr.	
PEHR 153-199	Lifetime Activity	1 cr.	
MATH 120	Intro Statistics for the Arts & Sci	3 cr.	

or

MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.	
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**Subtotal: 14**

## Sophomore Year - Fall Semester

PSY 207	Statistics for the Behavioral Sciences	3 cr.	
NSCI 267	Neurobiology	4 cr.	
PH 208	Ethics	3 cr.	
	or		
PH 231	Biomedical Ethics	3 cr.	
CHEM 105	General Chemistry I	4 cr.	
NSCI 250	Neuroscience Lab Rotation I	1 cr.	

**Subtotal: 15**

## Sophomore Year - Spring Semester

PSY 309	Research Methods	3 cr.	
CS 13X	Computer Competence	3 cr.	
CHEM 106	General Chemistry II	4 cr.	
NSCI 247	Scientific Communication	3 cr.	
NSCI 251	Neuroscience Lab Rotation II	2 cr.	

**Subtotal: 15**

## Junior Year - Fall Semester

PSY 313	Learning	3 cr.	
CHEM 209	Organic Chemistry I	3 cr.	
CHEM 219	Organic Chemistry Laboratory I	1 cr.	
NSCI 2XX-4XX	Neuroscience Elective	3 cr.	
NSCI 2XX-4XX	Neuroscience Elective	3 cr.	
NSCI 350	Neuroscience Lab Placement I	3 cr.	

or

NSCI 3XX/4XX	Neuroscience Elective	3 cr.	
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**Subtotal: 16**

## Junior Year - Spring Semester

WIC 3xx-4xx	Writing Intensive Course	3 cr.	
NSCI 405	Seminar in Neuroscience	4 cr.	
CHEM 210	Organic Chemistry II	3 cr.	
CHEM 220	Organic Chemistry Laboratory II	1 cr.	
NSCI 351	Neuroscience Lab Placement II	3 cr.	

or

NSCI 3XX/4XX	Neuroscience Elective	3 cr.	
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**Subtotal: 14**

## Senior Year - Fall Semester

ILP XXX	Integrated Liberal Professional Perspective	3 cr.	
NSCI 3XX/4XX	Neuroscience Elective	3 cr.	
HIST 1XX	Historical Perspective	3 cr.	
GEN XXX	General Elective	3 cr.	
NSCI 450	Senior Neuroscience Thesis I	4 cr.	

or

NSCI 3XX/4XX	Neuroscience Elective	4 cr.	
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**Subtotal: 16**

## Senior Year - Spring Semester

CUL XXX	Cultural Perspective	3 cr.	
ART XXX	Aesthetic Perspective	3 cr.	
GEN XXX	General Elective	3 cr.	
GEN XXX	General Elective	3 cr.	
NSCI 451	Senior Neuroscience Thesis II	4 cr.	

or

NSCI 3XX/4XX	Neuroscience Elective	4 cr.	
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**Subtotal: 16**

Subtotal: 122

Total Credit Hours: 122

Philosophy

## Philosophy Major

## General Information

Philosophers engage in critical, rigorous, disciplined reflection about the world around us, the social systems in which we live, and the individuals with whom we live. They ask such questions as, Does God exist? Do we have nonphysical souls or minds? Do we have free will? What is the difference between knowing and believing? How can we distinguish between moral right and wrong? What rights do people have? What is justice?

The questions that philosophers ask are those that most reflective people ask at some point in their lives. Philosophy differs from science in that the answers to its questions cannot be directly confirmed by appeal to perception and observation. That doesn't mean, though, that we cannot distinguish between more reasonable and less reasonable answers. Philosophers appeal to reason in answering their questions. That is, they critically evaluate the reasons

for and against the various views one can have on these questions in order to determine what it is most reasonable to believe and do. They evaluate the arguments of others, analyze concepts, and construct arguments to defend their own views.

The study of philosophy helps develop our critical and analytical capacities, our ability to understand what we read, and our ability to argue and persuade. It helps us understand, appreciate, and respect other points of view. It reinforces respect for truth and love of learning. It enhances flexibility in thinking, imagination, and intellectual creativity, and nourishes the sense of wonder and the passion for wisdom. It increases sensitivity to moral issues and provides intellectual tools for thinking constructively about them.

**Career Opportunities**

The Philosophy major prepares students for any career that requires or values the abilities to think rigorously, critically, and creatively; to communicate effectively orally and in writing; to comprehend what one reads; to analyze information and to appreciate the limits of reliability and degrees of uncertainty; and to work effectively with others while respecting people with different points of view and from different cultural traditions. Most employers prize these abilities. In addition, almost every public and private institution, such as hospitals, social service agencies, corporations, and government departments, face complex ethical issues. People who have studied philosophy are in a particularly good position to help these institutions clarify the issues they face and make reasonable decisions.

Philosophy majors are among those who do best on the Graduate Record Examination Law School Admission Test and who do best in law school, as well as medical school. The major in Philosophy can also prepare highly motivated students for graduate study in philosophy.

Arts and Humanities Faculty (p. 32)

Professors: Emmett Barcalow, Burton Porter

Assistant Professors: Andrew J. Lambert, Heather Salazar

**Program Objectives**

- To provide students with knowledge of major figures and trends in the history of philosophy.
- To provide students with knowledge of the major ethical and political theories in the Western tradition.
- To provide students with the intellectual skills that will enable them to apply philosophical theories to real world problems encountered in personal and family life, at work, and as citizens of a democracy.
- To encourage students to evaluate carefully the reliability of sources of information and the reasonability of what they read and hear.
- To enhance students' ability to comprehend what they read.
- To enhance students' ability to make inferences and see logical connections among claims.
- To enhance students' ability to communicate effectively in writing and orally.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Degree Requirements**

**Required Courses**

PH 103	Introduction to Philosophy	3 cr.
PH 110	Critical Thinking	3 cr.
	or	
PH 204	Symbolic Logic	3 cr.
PH 120/REL 120	East Asian Traditions	3 cr.
PH 208	Ethics	3 cr.
PH 230	Social and Political Philosophy	3 cr.
PH 340	Ancient Philosophy	3 cr.
PH 341	Modern and Contemporary Philosophy	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
<u>Three other Philosophy courses at the 200 or 300 level</u>		
		<b>Subtotal: 33</b>

Subtotal: 33

Total Credit Hours: 33

**Philosophy Suggested Sequence of Courses**

**Degree Requirements**

**Freshman Year- Fall Semester**

ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PH 103	Introduction to Philosophy	3 cr.
CS 13X	Computer Competence	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 15</b>

**Freshman Year - Spring Semester**

ENGL 133	English Composition II	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
HIST XXX	Historical Perspective	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
GEN XXX	General Elective	3 cr.
PH 110	Critical Thinking	3 cr.
	or	
PH 204	Symbolic Logic	3 cr.
		<b>Subtotal: 16</b>

**Sophomore Year - Fall Semester**

GEN XXX	General Elective	3 cr.
PH 120/REL 120	East Asian Traditions	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
PSY/SO XXX	Social Behavioral Perspective	3 cr.

CUL 2XX	Cultural Studies	3 cr.
		<b>Subtotal: 15</b>

## Sophomore Year - Spring Semester

LAB/NSP XXX	Natural Science Perspective	3 cr.
PH 208	Ethics	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
GEN XXX	General Elective	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
		<b>Subtotal: 15</b>

## Junior Year - Fall Semester

PH 230	Social and Political Philosophy	3 cr.
PH 2XX/3XX	Philosophy Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
GEN XXX	General Electives	6 cr.
		<b>Subtotal: 15</b>

## Junior Year - Spring Semester

PH XXX	Philosophy Elective	3 cr.
PH 2XX/3XX	Philosophy Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
GEN XXX	General Electives	4 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
		<b>Subtotal: 16</b>

## Senior Year - Fall Semester

PH 340	Ancient Philosophy	3 cr.
GEN XXX	General Electives	12 cr.
		<b>Subtotal: 15</b>

## Senior Year - Spring Semester

PH 341	Modern and Contemporary Philosophy	3 cr.
PH 480	Internship in Philosophy	3 cr.
GEN 3XX	General Electives	9 cr.
		<b>Subtotal: 15</b>

Subtotal: 122

Total Credit Hours: 122

## Political Science

## Political Science Major

(Formerly Government)

## General Information

The general objective of the Political Science major is to equip students with the analytical tools necessary to understand political processes at work within their own and other societies as well as among states in the global community. The major program offers a wide variety of courses in the areas of American government,

comparative politics, international relations, and political thought. Political Science majors benefit from an active internship program that places eligible students in business and industry as well as local, state, and federal government.

## Career Opportunities

Graduates of the program attend law school as well as graduate programs in political science, public administration, and business. Others enter government service or pursue careers in diverse areas ranging from education to business.

## History and Political Science Faculty (p. 33)

Professors: William Mandel, Donald Williams

Associate Professors: Peter Fairman, Timothy Vercellotti

Assistant Professor: Laura Janik

## Program Objectives

1. To assist students in acquiring a more sophisticated understanding of politics in the United States.
2. To develop an appreciation for political processes at work within other societies.
3. To equip students with the analytical tools necessary to understand political processes at work among states in the global community.
4. To accommodate individual interests by providing a wide variety of courses in the areas of American government, comparative government, international relations, and political thought.
5. To provide opportunities for students to pursue internships in local, state, and federal government.

## General University and College Requirements

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

## Degree Requirements

Required Political Science courses (24 credit hours)

POSC 101/INST 101	Introduction to Contemporary Global Issues	3 cr.
POSC 102	American National Government	3 cr.
POSC 201	Comparative Politics	3 cr.
POSC 203	International Relations	3 cr.
POSC 207	Western Political Thought	3 cr.
POSC 212	Political Analysis	3 cr.
POSC 490	Seminar in Political Science	3 cr.
POSC 205	Public Administration	3 cr.
	or	
POSC 210	State Politics in America	3 cr.
	or	
POSC 218	Public Policy in America	3 cr.
	or	
POSC 225	Law and Judicial Politics	3 cr.
GEOG 101	World Geography	3 cr.

	or		
GEOG 110	Geography of United States and Canada	3 cr.	
			<b>Subtotal: 24</b>

Twenty-one additional credit hours of political science including 15 additional credit hours of upper-level courses (POSC 300-400).

The 15 upper-level credit hours must include three credit hours each of comparative government, international relations, and American government.

**Subtotal: 21**

Eighteen credit hours in social sciences including EC 111 and EC 112, and at least three credit hours in geography, history, and psychology.

Also students must take MATH 120.

**Subtotal: 18**

Subtotal: 63

The 2.0 required grade point average in the major is based upon all POSC courses pursued as a part of the student's degree program.

Total Credit Hours: 63

### Political Science Suggested Sequence of Courses

The schedule of courses below is a sample sequence for a Political Science major. Many students become Political Science majors in their sophomore year and fulfill the major requirements without academic sacrifice.

#### Degree Requirements

##### Freshman Year- Fall Semester

HIST XXX	History Requirement	3 cr.
POSC 102	American National Government	3 cr.
MATH 1XX	Mathematical Analysis	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
<b>Subtotal: 14</b>		

##### Freshman Year - Spring Semester

POSC 101/INST 101	Introduction to Contemporary Global Issues	3 cr.
PSY 101	Introduction to Psychology	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
GEN XXX	General Elective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
ENGL 133	English Composition II	3 cr.
<b>Subtotal: 16</b>		

##### Sophomore Year - Fall Semester

POSC 201	Comparative Politics	3 cr.
POSC 203	International Relations	3 cr.
EC 111	Principles of Microeconomics	3 cr.

LAB XXX	Laboratory Science Requirement	3-4 cr.
PEHR 153-199	Lifetime Activity	1 cr.
GEN XXX	General Elective	3 cr.
<b>Subtotal: 16</b>		

##### Sophomore Year - Spring Semester

POSC 207	Western Political Thought	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
POSC 2XX	Political Science Elective	3 cr.
POSC 212	Political Analysis	3 cr.
<b>Subtotal: 16</b>		

##### Junior Year - Fall Semester

PH XXX	Ethical Perspective	3 cr.
CS 13X	Computer Competence	3 cr.
POSC 2XX/3XX	Political Science Elective	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
GEOG 101	World Geography	3 cr.
or		
GEOG 110	Geography of United States and Canada	3 cr.
<b>Subtotal: 15</b>		

##### Junior Year - Spring Semester

POSC 3XX	Upper Level Political Science Elective	3 cr.
POSC 3XX	Upper Level Political Science Elective	3 cr.
GEN XXX	General Elective	3 cr.
SBP XXX	Social/Behavioral Sciences Perspective	3 cr.
CUL XXX	Cultural Studies Perspective	3 cr.
<b>Subtotal: 15</b>		

##### Senior Year - Fall Semester

POSC 3XX	Upper Level Political Science Elective	3 cr.
POSC 3XX	Upper Level Political Science Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
<b>Subtotal: 15</b>		

##### Senior Year - Spring Semester

POSC 490	Seminar in Political Science	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

Subtotal: 122

Two courses must be designated as writing intensive courses.

Total Credit Hours: 122

Pre-pharmacy

## Pre-pharmacy

### General Information

The Pre-pharmacy program offered by the College of Arts and Sciences provides an opportunity for qualified students to prepare for admission to any school of pharmacy leading to a Doctor of Pharmacy degree. More specifically, students who successfully complete all of the requirements of the Western New England University Pre-pharmacy program will be placed in the "preferred" applicant pool for entry into the Western New England University College of Pharmacy. Following submission of their application by the deadline established by the College of Pharmacy, preferred applicants are granted an automatic interview with the College of Pharmacy admissions committee. All other students will be placed in the general applicant pool.

To successfully satisfy the requirements of the Western New England University Pre-pharmacy program, a student must:

- complete the required 67 credits within two academic years as listed below for each fall and spring semester (Please note: It is important that pre-pharmacy students demonstrate a capacity to handle 17 and 18 credit semesters, therefore, any credits taken outside the fall and spring semesters listed below must be replaced by courses of comparable rigor as determined in consultation with the student's academic adviser);
- transfer in no credits of science coursework completed prior to matriculation at Western New England University and, following matriculation, transfer in no credits for any course satisfying a requirement for the Pre-pharmacy program; and
- maintain an overall GPA of 3.30 for all Pre-pharmacy course work with no grade in any course less than a "C". Students may not withdraw from or retake any course that would have satisfied any of the Pre-pharmacy requirements.

The College of Pharmacy will offer guaranteed admissions interviews *first* to those Pre-pharmacy students who attain a cumulative GPA of 3.30 or higher after their first year of Pre-pharmacy coursework, and then to those Pre-pharmacy student who attain a cumulative GPA of at least 3.00.

## Pre-pharmacy Program Summary

### Degree Requirements

#### First Year - First Semester

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.

PSY 101	Introduction to Psychology	3 cr.
		<b>Subtotal: 17</b>

#### First Year - Second Semester

BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 106	General Chemistry II	4 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
ENGL 133	English Composition II	3 cr.
COMM 102	Introduction to Public Speaking	3 cr.

**Subtotal: 17**

#### Second Year - First Semester

PHYS 123	Physics of the Life Sciences 1	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
BIO 215	Anatomy and Physiology I	4 cr.
PH 208	Ethics	3 cr.

**Subtotal: 15**

#### Second Year - Second Semester

CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
EC 111	Principles of Microeconomics	3 cr.
BIO 203	Microbiology	4 cr.
BIO 216	Anatomy and Physiology II	4 cr.
SSEL XXX	Social Science Elective	3 cr.

**Subtotal: 18**

\* Note: Social Science Elective can be met with one course (three credit hours) in one of the following subjects: history, sociology, political science, law and society.

Subtotal: 67

Total Credit Hours: 67

Pre-physician Assistant

## Pre-physician Assistant Major

### General Information

The Pre-physician Assistant program offered by the College of Arts and Sciences provides an opportunity for qualified students to prepare for admission to a Physician Assistant program.

Students who successfully complete their first year in an accredited PA Program have the option of receiving a BS in Health Sciences from Western New England University.

To successfully satisfy the requirements of the Western New England University Pre-PA program, a student must:

- Complete the required 101 credits within three academic years as listed below for each fall and spring semester.
- Transfer in no credits (including AP credits) of science coursework completed prior to matriculation at Western New England University and, following matriculation, transfer in

no credits for any course satisfying a requirement for the Pre-PA program.

- Maintain a sufficiently high GPA for all Pre-PA course work with no grade in any course less than a “C”.

NOTE: Students should check with the particular PA Programs for their particular admission requirements.

Physical and Biological Science Faculty (p. 33)

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34)

**Degree Requirements**

Required biology courses

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
BIO 203	Microbiology	4 cr.
BIO 215	Anatomy and Physiology I	4 cr.
BIO 216	Anatomy and Physiology II	4 cr.
BIO 306	Genetics	4 cr.

**Subtotal: 24**

Required chemistry courses

CHEM 105	General Chemistry I	4 cr.
CHEM 106	General Chemistry II	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.

**Subtotal: 20**

Required math and physics courses

MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
PHYS 123	Physics of the Life Sciences 1	4 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.

**Subtotal: 17**

Additional requirements

Out of the program's 101 required credits, 2 of the courses must meet WIC requirement, and there are 2 required LBC experiences.

LBC 2XX	Learning Beyond the Classroom	No cr.
LBC 4XX	Learning Beyond the Classroom	No cr.
WIC XXX	Writing Intensive course	3 cr.
WIC XXX	Writing Intensive course	3 cr.
Subtotal: 61		

Total Credit Hours: 61

**Pre-physician Assistant Suggested Sequence of Courses**

Students who have successfully completed the Western New England University Pre-physician Assistant program requirements can be considered for admission to the Salus University Physician Assistant Studies program, which leads to the Master of Medical Science.

Applicants to the Salus University Physician Assistant Studies program must:

- Complete the curriculum of 101 credits required by the Pre-physician Assistant program within three academic years.
- Maintain an overall GPA of 3.1 for all coursework and otherwise be in good standing in the Western New England University Pre-PA program.

Under the articulation agreement, Salus will provide up to four seats for qualified Western New England University pre-PA program students who apply for admission and are accepted into the Salus Physician Assistant Studies program.

If there are more than four Western New England University Pre-PA students who successfully meet all criteria for admission to the Salus PA program, the remaining applicants not offered one of the four seats will be considered for admission to the Salus PA along with other applicants in the Salus University general application pool. Salus University will confer the Master of Medical Science (MMS) degree to students who successfully complete the Physician Assistant Studies program at Salus.

Qualified candidates may submit an application to the Salus Physician Assistant Studies Program through the Central Application Service for Physician Assistants (CASPA) by September 1 at the start of the third year in the Pre-PA program.

At the time of application to Salus University, students must:

1. have accumulated at least the minimum number of required hours of direct patient care experience as listed on the Salus University website where a list of qualifying experiences is available.
2. have earned and maintained a current certificate in Basic Life Support for Healthcare Provider offered through the American Heart Association (AHA).
3. have a minimum CASPA calculated overall cumulative grade point average of 3.10 or higher.
4. have a minimum CASPA calculated BCP grade point average of 3.10. (BCP GPA includes all biology, chemistry, and physics courses completed.)

5. arrange for submission of a letter of recommendation from a Western New England University faculty member in the sciences familiar with the student's academic work as part of the CASPA application.
6. provide Western New England University with the Salus transcript after successful completion of first year of the Salus PA Studies program in order to receive a BS in Health Sciences from Western New England University.

NOTE: Students interested in applying to other PA programs should check with those schools for their particular admission requirements, which may require applicants to have a bachelor's degree.

### Degree Requirements

#### Freshman Year - Fall Semester

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 17</b>

#### Freshman Year - Spring Semester

BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 106	General Chemistry II	4 cr.
ENGL 133	English Composition II	3 cr.
MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.
PSY 101	Introduction to Psychology	3 cr.
		<b>Subtotal: 17</b>

#### Sophomore Year - Fall Semester

PSY 201	Developmental Psychology	3 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
CS 131	Computing for the Arts and Sciences	3 cr.
BIO 215	Anatomy and Physiology I	4 cr.
		<b>Subtotal: 17</b>

#### Sophomore Year - Spring Semester

CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.

CUL XXX	Cultural Perspective	3 cr.
BIO 216	Anatomy and Physiology II	4 cr.
PH 208	Ethics	3 cr.
POSC 102	American National Government	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 17**

#### Junior Year - Fall Semester

BIO 306	Genetics	4 cr.
PHYS 123	Physics of the Life Sciences 1	4 cr.
ART XXX	Aesthetic Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
HIST XXX	Historical Perspective	3 cr.

**Subtotal: 17**

#### Junior Year - Spring Semester

PHYS 124	Physics of the Life Sciences 2	4 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.
PSY 326	Abnormal Psychology	3 cr.
BIO 203	Microbiology	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

Subtotal: 101

**NOTE:**

Students interested in applying to other PA programs should check with those schools for their particular admission requirements, which may require applicants to have a bachelor's degree.

### Psychology

#### Psychology Major

**General Information**

Psychology is the scientific study of behavior. In addition to helping students understand themselves and others, the research findings of psychology have wide application to many professional fields, from human services to medical, industrial, and educational settings. Within the major there is flexibility to select courses that meet individual career objectives, i.e. Sports Psychology, School Psychology, Forensic Psychology, Health Psychology, Organizational Psychology, Clinical Psychology, Child Psychology, Neuropsychology, Applied Behavior Analysis, Special Education, Autism, Cognitive, Developmental, Social, Gender, Conservation Psychology, etc.

The Department of Psychology offers students the opportunity to receive either the BA or the BS Degree. The BS degree includes all of the requirements of the BA degree, along with an additional six credits of any science courses, as well as an additional 12 credits of research courses in Psychology (or any 18 credit combination of research courses in Psychology and science courses approved by the department chairperson).

Students interested in pursuing a research methods track should take one or more of our advanced research courses.

Students interested in the Neuroscience major should see Neuroscience Major (p. 86) for a full description of the Neuroscience program.

Students may also pursue teacher certification at the elementary level by also majoring in Elementary Education, or receive training in special education by participating in the New England Center for Children internship program.

**Career Opportunities**

Students are prepared to enter the world of work in counseling, research, autism treatment, personnel administration, human service agencies, special education, elementary school teaching or other child life work; to continue their studies at the graduate level; or to enter related fields such as medicine, law, criminal justice, and social work.

**Psychology Faculty** (p. 33)

**Program Objectives**

1. To study human and other animal behavior from a scientific perspective with consideration of the environmental, biological, and multicultural influences on behavior.
2. To introduce students to the scientific findings of psychology as they relate to diverse populations and as they apply to a range of professional fields including medicine, human services, industry, and educational settings.
3. To provide flexibility of course selection to meet individual career objectives.
4. To encourage internships and minors in related fields of interest.

**Student Competencies**

Students who complete the degree requirements in psychology should be able to:

- identify the environmental, biological, and multicultural influences on behavior;
- differentiate and appreciate the value of primary research literature in psychology compared to popular media reports;
- understand and perform statistical analyses and know how to generate an original research hypothesis;
- demonstrate how psychologists use the scientific method to generate psychology’s knowledge base;
- gather information in psychology using a variety of relevant resources including PsycINFO database, MedLine, etc.;
- prepare papers using an APA format;
- demonstrate sensitivity to issues of human diversity as they apply to psychological research and practice;
- understand how contemporary psychology evolved from its historical roots;
- demonstrate what ethical principles apply to psychologists in testing, counseling, and research.

**Student Assessment**

Students’ progress in psychology is assessed in a variety of ways and may include: objective and essay quizzes and examinations, class attendance and participation, journals, individual and group projects, oral presentations, poster sessions, research papers, critical review papers, videotaping, and simulations.

Students are encouraged to keep a portfolio of their work as a means of tracking their own development, as well as to demonstrate their abilities and accomplishments when applying to graduate school and/or for positions in the field of psychology.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Degree Requirements**

Required courses (27 credit hours):

PSY 101	Introduction to Psychology	3 cr.
PSY 201	Developmental Psychology	3 cr.
PSY 207	Statistics for the Behavioral Sciences	3 cr.
PSY 214	Social Psychology	3 cr.
PSY 309	Research Methods	3 cr.
NSCI 212	Introduction to Behavioral Neuroscience	3 cr.
PSY 313	Learning	3 cr.
PSY 326	Abnormal Psychology	3 cr.
PSY 420	History of Psychology and Personality Theory	3 cr.

**Subtotal: 27**

Nine additional credit hours required in upper-level psychology (PSY 300-400) courses.

**Subtotal: 9**

Note that for the BS degree these credit hours may include the required upper level research courses in psychology.

Three additional credit hours in a multicultural perspectives course or an approved equivalent.

**Subtotal: 3**

Subtotal: 39

The 2.0 required grade point average in the major is based on all PSY courses pursued as a part of the student’s degree program.

Total Credit Hours: 39

**Psychology Suggested Sequence of Courses**

**Degree Requirements**

Freshman Year - Fall Semester

PSY 101	Introduction to Psychology	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
HIST 1XX	Historical Perspective	3 cr.
MATH XXX	Mathematical Analysis	3 cr.

PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 15</b>

Freshman Year - Spring Semester

PSY 201	Developmental Psychology	3 cr.
ENGL 133	English Composition II	3 cr.
CS 13X	Computer Competence	3 cr.
PSY 214	Social Psychology	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 16</b>

Sophomore Year - Fall Semester

PSY 207	Statistics for the Behavioral Sciences	3 cr.
PSY 313	Learning	3 cr.
PH XXX	Ethical Perspective	3 cr.
SBP XXX	Social/Behavioral Perspective	3 cr.
BIO 101	Basic Biology: Organisms	3 cr.
		<b>Subtotal: 15</b>

Sophomore Year - Spring Semester

PSY 309	Research Methods	3 cr.
NSCI 212	Introduction to Behavioral Neuroscience	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
GEN XXX	General Elective	3 cr.
NSP	Natural Science Perspective	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Fall Semester

PSY 3XX/4XX	Psychology Required Elective	3 cr.
PSY 326	Abnormal Psychology	3 cr.
ART XXX	Aesthetic Perspective	3 cr.
SBMP XXX	Multicultural Perspectives	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 15</b>

Junior Year: Students should consider enrolling in PSY 35x Advanced Research and/or PSY 480 Internship in Psychology during this year and their senior year. Please see the staff in the Career Development Center for a listing of Internship sites.

Multicultural Perspectives: Note that most courses in the African American Studies or Latin American Studies minors fulfill this requirement.

Junior Year - Spring Semester

PSY 3XX/4XX	Psychology Required Elective	3 cr.
PSY 3XX/4XX	Psychology Required Elective	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.

CUL XXX	Cultural Studies Perspective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	1 cr.
		<b>Subtotal: 16</b>

Senior Year - Fall Semester

PSY 420	History of Psychology and Personality Theory	3 cr.
GEN 3XX/4XX	General Elective	3 cr.
GEN 3XX/4XX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Spring Semester

GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

Senior Year: Students intending to Study Abroad, or intending to become certified as teachers in elementary education, or intending to enroll in the New England Center for Children program, may need to take all of their major requirements except for PSY 420, by the end of their junior year so that one semester of their senior year would be free to go abroad, or to take the Student Teaching Practicum, or participate in the NECC program. Student Teaching Practicum students must also take PSY 304 and ED 301 prior to their senior year. In addition, these students should refer to the elementary education program requirements that list the necessary prerequisites for Teacher Certification, including the specific math, history, government and other requirements necessary for teacher certification in Massachusetts.  
Subtotal: 122

Total Credit Hours: 122

Social Work

Social Work Major

General Information

The study of professional social work is designed for those dedicated to helping people to satisfy their biological, psychological, and social needs; to developing mutually beneficial relationships between people and their environments; empowering people to recognize and mobilize their strengths; and to helping society to create policies and programs more responsive to human need.

The overall mission of the Department of Social Work is to prepare students for generalist social work practice at the bachelor's degree level and for graduate level social work education. This preparation is developed through offering the student a broad liberal arts education combined with a social work foundation that incorporates the knowledge, values, and skills of the social work profession. Both the liberal arts sequence and the professional social work sequence emphasize a holistic view of the person-in-environment and the impact of biological, psychological, and social forces upon human

functioning. Underlying the knowledge base of social work education at Western New England University are values and ethics that emphasize the worth and dignity of all people regardless of race, gender, age, creed, ethnic or national origin, ability, political orientation, sexual orientation, or social class. The goals and objectives of the Department of Social Work teach students the skills to work in partnership with clients to support and develop strengths and competencies to procure the resources necessary to meet their basic human needs and develop human potential. This Social Work Program is accredited by the Council on Social Work Education at the BSW level and students are eligible to apply for advanced standing to graduate schools of social work, to obtain an MSW degree in one year, rather than two.

**Career Opportunities**

Students develop the knowledge, values, and skills to work in a wide variety of social service settings under both governmental and private voluntary auspices. Rewarding career opportunities include work with diverse populations of children and adults at the individual, family, group, and community levels in agencies that provide healthcare, services to abused and neglected children, mental health services, substance abuse rehabilitation, family services, services to battered women, residential child care and treatment, educational settings, criminal justice programs for juvenile and adult offenders, nursing home and elderly services, services for pregnant and parenting teens, services to people affected by HIV/AIDS, and many other programs for people whose emotional and/or physical health and safety are at risk. Students are prepared for entry-level professional generalist social work practice at the BSW level and for further social work education at the graduate level.

**Social Work Faculty** (p. 33)

**Program Goals**

1. Engage in evidence-based entry level social work practice within individuals, families, groups, communities and organizations within a multicultural society.
2. Identify and respond to human need, wherever it exists, using interventions that promote the social welfare of all people, with attention to oppressed and vulnerable populations.
3. Understand and practice to enhance human functioning, informed by biological, psychological, sociological, cultural, historical, economic and spiritual knowledge.
4. Identify as a social work practitioner/researcher who can competently apply and integrate theory with evidence-based practice.
5. Facilitate change through professional practice within a professional context that nurtures diverse human relationships at all levels.
6. Engage in policy practice to advance social and economic well-being and to deliver effective social work services.

**General University and College Requirements**

See General University Requirements (p. 27) and College of Arts and Sciences Requirements (p. 34).

**Requirements for Acceptance into the BSW Program**

1. Students apply during the second semester of their sophomore year. (Transfer students at the junior level must also apply for

admission to the social work program prior to beginning their social work methods courses.)

2. Students need to have an overall minimum grade point average of 2.2 and a grade of "C" or better in any social work course and PH 210. (Except for transfer students who have not taken these courses.) A grade of less than a "C" will necessitate repeating the course.
3. Students submit to the department chair a completed application form, a personal essay that shows evidence of a desire to help others and values consistent with the social work profession, a sample of the student's academic writing, and a letter of reference.
4. Interview with department chair.

The admissions process for social work students is used as a vehicle to make sure that those students who become social work majors have a sincere desire to pursue this degree.

**Degree Requirements**

**Required Courses**

SW 100	Introduction to Social Work	3 cr.
SW 207	An Invitation to the World of Aging	2 cr.
SW 216	Human Behavior in the Social Environment	3 cr.
SW 300	Social Work Pre-Practicum Seminar	1 cr.
SW 301	Social Work Interventive Methods I	3 cr.
SW 302	Social Work Interventive Methods II	3 cr.
SW 303	Social Work Interventive Methods III	3 cr.
SW 305	The Helping Relationship Project	2 cr.
SW 306	The Helping Relationship Practicum	1 cr.
SW 313	Social Welfare and Social Policy	3 cr.
SW 314	Field Instruction in Macro Practice	3 cr.
SW 320	Dynamics of Oppression and Empowerment	3 cr.
SW 321	Empowerment Practice with Underserved Populations	3 cr.
SW 404	Social Work Interventive Methods IV	3 cr.
SW 409	Field Instruction in Social Work I	3 cr.
SW 410	Field Instruction in Social Work I	3 cr.
SW 411	Field Instruction in Social Work II	3 cr.
SW 412	Field Instruction in Social Work II	3 cr.
SW 414	Seminar in Field Instruction I	2 cr.

SW 415	Seminar in Field Instruction II	1 cr.
SW 419	Social Work and Research	3 cr.
SW 420	Social Work Research Seminar	2 cr.
POSC 102	American National Government	3 cr.
SO 101	Introduction to Sociology	3 cr.
PSY 101	Introduction to Psychology	3 cr.
PSY 201	Developmental Psychology	3 cr.
EC 106	The Economics of Poverty and Discrimination	3 cr.
BIO 101	Basic Biology: Organisms	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
PH 210	Ethics for Social Workers	3 cr.
ENGL 336	Ethnic American Literature	3 cr.
SPAN 140	Spanish for Social Services	3 cr.

Note: Requirements for the major can satisfy the student's perspectives of understanding requirements.  
Subtotal: 124

The 2.2 required grade point average in the major is based on all SW courses, including PH 210, pursued as part of the student's degree program. A grade of "C" or better is needed in all SW courses taken including PH 210.

Total Credit Hours: 124

### Social Work Suggested Sequence of Courses

#### Degree Requirements

##### Freshman Year- Fall Semester

LA 100	First Year Seminar	2 cr.
LA 101	First Year Field Experience	1 cr.
MATH 1XX	Mathematical Analysis	3 cr.
ENGL 132	English Composition I	3 cr.
SW 100	Introduction to Social Work	3 cr.
PSY 101	Introduction to Psychology	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

##### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
POSC 102	American National Government	3 cr.
CS 13X	Computer Competence	3 cr.
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
HIST XXX	Historical Perspective	3 cr.
		<b>Subtotal: 16</b>

##### Sophomore Year - Fall Semester

SW 216	Human Behavior in the Social Environment	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
PSY 201	Developmental Psychology	3 cr.
BIO 101	Basic Biology: Organisms	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 15</b>

##### Sophomore Year - Spring Semester

EC 106	The Economics of Poverty and Discrimination	3 cr.
SW 207	An Invitation to the World of Aging	2 cr.
ART XXX	Aesthetic Perspective	3 cr.
		or
xxx	Cultures/Aesthetics course	3 cr.
SPAN 140	Spanish for Social Services	3 cr.
NSP	Natural Science Perspective	3 cr.
		<b>Subtotal: 14</b>

##### Junior Year - Fall Semester

SW 301	Social Work Interventive Methods I	3 cr.
SW 306	The Helping Relationship Practicum	1 cr.
SW 320	Dynamics of Oppression and Empowerment	3 cr.
SW 300	Social Work Pre-Practicum Seminar	1 cr.
CUL 2XX	Cultural Studies	3 cr.
		or
xxx	Cultures/Aesthetics course	3 cr.
PH 210	Ethics for Social Workers	3 cr.
GEN XXX	General Elective	3 cr.
		<b>Subtotal: 17</b>

##### Junior Year - Spring Semester

SW 302	Social Work Interventive Methods II	3 cr.
SW 313	Social Welfare and Social Policy	3 cr.
SW 321	Empowerment Practice with Underserved Populations	3 cr.
SW 303	Social Work Interventive Methods III	3 cr.
SW 314	Field Instruction in Macro Practice	3 cr.
SW 305	The Helping Relationship Project	2 cr.
		<b>Subtotal: 17</b>

##### Senior Year - Fall Semester

SW 404	Social Work Interventive Methods IV	3 cr.
SW 419	Social Work and Research	3 cr.
SW 409	Field Instruction in Social Work I	3 cr.
SW 410	Field Instruction in Social Work I	3 cr.
SW 414	Seminar in Field Instruction I	2 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 17**

Senior Year - Spring Semester

SW 411	Field Instruction in Social Work II	3 cr.
SW 412	Field Instruction in Social Work II	3 cr.
SW 415	Seminar in Field Instruction II	1 cr.
SW 420	Social Work Research Seminar	2 cr.
ENGL 336	Ethnic American Literature	3 cr.

**Subtotal: 12**

Note: SW 419 and ENGL 336 (or its equivalent) have been designated as Writing Intensive courses.

Subtotal: 124

Total Credit Hours: 124

Sociology

**Sociology Major**

**General Information**

The sociological perspective helps us to recognize that individuals' lives are shaped by society. Sociologists learn to see social patterns in individual behavior and to apply scientific reasoning to all aspects of social life. Areas of special interest include the family, education, the economy, poverty, social inequality, social change, and deviance. While contemporary American society is the main focus of the major, comparative and cross-cultural approaches are also included. The unique perspective and insight offered by sociology provide a significant opportunity to understand forces that shape and determine our lives. Research and writing skills are emphasized, and students have an opportunity to conduct their own research. Students may choose to concentrate in Crime and Society. Students may also pursue teacher certification at the elementary level by also majoring in Elementary Education.

**Career Opportunities**

The sociology major provides an excellent background for careers in social services, teaching, career counseling, personnel management, insurance, school administration, health administration, police, courts, and corrections.

**Criminal Justice and Sociology Faculty** (p. 33)

Professor: Michaela Simpson

Associate Professor: Laura Hansen

Assistant Professor: William Force

**Program Objectives**

1. Demonstrate an ability to conduct research on a social issue in a way that lends itself to practical application in a number of fields, including business, criminal justice, government, and in social services.
2. Ability to identify, define, and discuss the social significance of key sociological variables and apply them to real-world issues.
3. Ability to identify and define social patterns and their effect (or impact) on social institutions and organizations.
4. Demonstrate an ability to apply social analysis in discussion of social change.
5. Successfully apply social theory and methods within completion of an internship in preparation for a meaningful career.

**General University and College Requirements**

See General University Requirements and College of Arts and Sciences Requirements.

**Degree Requirements**

Required sociology courses (15 credit hours)

SO 101	Introduction to Sociology	3 cr.
SO 201	Social Problems	3 cr.
SO 301/CJ 301	Research Methods	4 cr.
	or	
SO 307	Qualitative Research Methods	3 cr.
SO 322	Social Theory	3 cr.
SO 3XX-4XX	Sociology Elective	3 cr.

**Subtotal: 15-16**

An additional eighteen credit hours in sociology with at least four courses (12 credit hours) selected from upper-level courses in sociology (300-level or above) is required.

Total Credit Hours: 33

**Sociology Suggested Sequence of Courses**

**Degree Requirements**

Freshman Year - Fall Semester

SO 101	Introduction to Sociology	3 cr.
ENGL 132	English Composition I	3 cr.
CS XXX	Computer Competence Requirement	3 cr.
LA 100	First Year Seminar	2 cr.
MATH 1XX	Mathematical Analysis	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 15**

Freshman Year - Spring Semester

LAB XXX	Laboratory Science Requirement	3-4 cr.
GEN XXX	General Elective	3 cr.
ENGL 133	English Composition II	3 cr.
PSY 101	Introduction to Psychology	3 cr.

MATH 120	Intro Statistics for the Arts & Sci	3 cr.
PEHR XXX	Lifetime Activities	1 cr.

**Subtotal: 16-17**

## Sophomore Year - Fall Semester

SO 201	Social Problems	3 cr.
SO xxx	Sociology Elective	3 cr.
CUL 2XX	Cultural Studies	3 cr.
GEN XXX	General Electives	6 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

## Sophomore Year - Spring Semester

SO xxx	Sociology Elective	3 cr.
SO 3XX/4XX	Sociology Elective	3 cr.
GEN XXX	General Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.

**Subtotal: 15**

## Junior Year - Fall Semester

EC xxx	Eco-Social Science Req	3 cr.
POSC 102	American National Government	3 cr.
SO 322	Social Theory	3 cr.
SO 3XX-4XX	Sociology Elective	3 cr.
GEN XXX	General Elective	3 cr.

**Subtotal: 15**

## Junior Year - Spring Semester

SO 301/CJ 301	Research Methods	4 cr.
	or	
SO 307	Qualitative Research Methods	3 cr.
HIST XXX	Historical Perspective	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.
GEN XXX	General Electives	7 cr.

**Subtotal: 15-16**

## Senior Year - Fall Semester

SO 3XX/4XX	Sociology Elective	3 cr.
SO 3XX-4XX	Sociology Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

## Senior Year - Spring Semester

ART XXX	Aesthetic Perspective	3 cr.
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PH XXX	Ethical Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

SO 3XX/4XX	Sociology Elective	3 cr.
GEN 3XX/4XX	General Elective	3 cr.

**Subtotal: 15**

Subtotal: 121-123

Note: If students choose to take SO 301 Research Methods they must take SO 300 as a prerequisite.

Total Credit Hours: 121-123

## Crime and Society Concentration

**General Information**

The Crime and Society concentration focuses on the behavior that violates the criminal law and seeks explanations for that behavior from the sociological perspective. Sociologists learn to see social patterns in individual behavior and to apply scientific reasoning to all aspects of social life. Students learn how certain behavior has come to be defined as criminal. Research and writing skills are emphasized, and students have an opportunity to conduct their own research and to engage in internship opportunities.

**Career Opportunities**

The crime and society concentration provides an excellent background for all careers in the criminal justice field, including policing, courts, and corrections. Additional career opportunities include the social services such as juvenile delinquency prevention, abuse and neglect investigation, and juvenile corrections.

**Program Objectives**

1. Demonstrate an ability to conduct research on a social issue in a way that lends itself to practical application in a number of fields, including business, criminal justice, government, and in social services.
2. Ability to identify, define, and discuss the social significance of key sociological variables and apply them to real-world issues.
3. Ability to identify and define social patterns and their effect (or impact) on social institutions and organizations.
4. Demonstrate an ability to apply social analysis in discussion of crime.
5. Successfully apply social theory and crime causation within completion of an internship in preparation for a meaningful career.

**Degree Requirements**

## Required Courses (33 Credits)

SO 101	Introduction to Sociology	3 cr.
SO 201	Social Problems	3 cr.
CJ 210/SO 210	Criminology	3 cr.
SO 214	Drugs, Society, and The Criminal Justice System	3 cr.
SO 235/CJ 235	Domestic Violence	3 cr.
SO 306/CJ 306	Disability and Mental Health Issues in Criminal Justice	3 cr.

SO 307	Qualitative Research Methods	3 cr.
SO 309	Deviance	3 cr.
SO 322	Social Theory	3 cr.
SO 342/CJ 342	Juvenile Delinquency	3 cr.
SO 3XX/4XX	Sociology Elective	3 cr.

**Subtotal: 33**

Subtotal: 33

Total Credit Hours: 33

**Crime And Society Suggested Sequence of Courses**

**Degree Requirements**

**Freshman Year - Fall Semester**

SO 101	Introduction to Sociology	3 cr.
CJ 101	Introduction to Criminal Justice	3 cr.
ENGL 132	English Composition I	3 cr.
LA 100	First Year Seminar	2 cr.
PEHR 151	Personal Health and Wellness	1 cr.
MATH XXX	Mathematical Analysis	3 cr.

**Subtotal: 15**

**Freshman Year - Spring Semester**

ENGL 133	English Composition II	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
SO 201	Social Problems	3 cr.
CJ 210/SO 210	Criminology	3 cr.
PEHR XXX	Lifetime Activities	1 cr.

**Subtotal: 16**

**Sophomore Year - Fall Semester**

CUL XXX	Cultural Studies Perspective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.
MATH 120	Intro Statistics for the Arts & Sci	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.
SO 214	Drugs, Society, and The Criminal Justice System	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

**Sophomore Year - Spring Semester**

GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.
NSP	Natural Science Perspective	3 cr.
PSY 101	Introduction to Psychology	3 cr.
CJ 235/SO 235	Domestic Violence	3 cr.

**Subtotal: 15**

**Junior Year - Fall Semester**

EC xxx	Eco-Social Science Req	3 cr.
GEN XXX	General Elective	3 cr.
POSC 102	American National Government	3 cr.
SO 306/CJ 306	Disability and Mental Health Issues in Criminal Justice	3 cr.
SO 307	Qualitative Research Methods	3 cr.

**Subtotal: 15**

**Junior Year - Spring Semester**

GEN XXX	General Elective	1 cr.
GEN XXX	General Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.
SO 309	Deviance	3 cr.
SO 322	Social Theory	3 cr.
WIC 3xx-4xx	Writing Intensive Course	3 cr.

**Subtotal: 16**

**Senior Year - Fall Semester**

GEN XXX	General Elective	3 cr.
GEN 3XX/4XX	General Elective	3 cr.
CS XXX	Computer Competence Requirement	3 cr.
PH XXX	Ethical Perspective	3 cr.
SO 342/CJ 342	Juvenile Delinquency	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

**Senior Year - Spring Semester**

ART XXX	Aesthetic Perspective	3 cr.
GEN 3XX/4XX	General Elective	3 cr.
GEN 3XX/4XX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
SO 3XX/4XX	Sociology Elective	3 cr.

**Subtotal: 15**

Subtotal: 122

Total Credit Hours: 122

## College of Business

Dean Julie Siciliano

Assistant Dean for Graduate Studies Janelle Goodnight

Assistant Dean for Undergraduate Studies Kara Kapinos

### College of Business Mission and Vision Statement

#### Mission

The mission of the Western New England University College of Business is to provide excellent academic preparation toward the development of ethical, responsible, and resourceful business professionals through challenging and relevant learning experiences.

#### Vision

The College of Business will be recognized among peer institutions and the business community for preparing students with the teamwork, communication, technology, decision making, and leadership skills to achieve effective business solutions, successful careers, and contributions to the community in a constantly changing global environment.

#### Degree Learning Goals

The undergraduate curriculum for students in the College of Business includes the following learning goals.

1. To solve business problems by thinking critically and applying principles of effective decision making.
2. To generate, evaluate, and select alternatives consistent with standards of ethical behavior.
3. To perform well on teams, to provide leadership, to contribute and collaborate to achieve team goals.
4. To communicate professionally, to present analyses, recommendations, and plans clearly, both orally and in writing.
5. To apply information technology concepts and tools to support business problem solving and decision making.
6. To recognize the dynamic domestic and international factors that shape and transform the global business environment.
7. To understand the fundamental concepts from the business disciplines.

#### Career Preparation

In order to guide students in selecting an appropriate career path, faculty in each department in the College of Business designed to a variety of classroom and outside of the classroom activities to guide the students through the process of a) Career Exploration in the freshman year, b) Career Investigation in the sophomore year, c) Career Determination in the junior year and finally d) Career Implementation in the senior year. In these progressive exercises student will link their interests and skills with career paths culminating with activities designed to help the student to enter the field of choice.

#### Special Academic Opportunities (p. 103)

#### Requirements

Most majors in the College of Business lead to the Bachelor of Science in Business Administration degree. Complete requirements for each of the majors in the College of Business are specified under a separate section of this catalogue devoted to major programs. They are accounting, arts & entertainment management, business analytics and information management, entrepreneurship, finance, general

business, international business, management and leadership, marketing, marketing communications/advertising, pharmaceutical business, and sport management. Each undergraduate major in the College of Business includes a general education component that normally comprises at least 50 percent of the student's four-year program. Requirements common to all majors are:

1. Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206 Business Writing in the sophomore year.
2. Complete at least 33 credit hours of course work at the 300-400 level.
3. Complete at least 12 credit hours of course work at the 300-400 level in the major at Western New England University. The identification of these upper-level courses are listed under each major.
4. Apply no more than 12 credit hours of ROTC courses towards the graduation requirements.
5. Meet all of the requirements specified under Academics, Undergraduate Policies, Procedures, Requirements, and General University Requirements in this catalogue.

#### College of Business Department Chairs and Faculty

##### *Accounting and Finance Faculty*

#### Department of Accounting and Finance

Professor: John Coulter, Chair

Professors: William Bosworth, May Lo

Associate Professors: Yong Wang, Lori Holder-Webb

Assistant Professors: George Gu, Ausher M.B. Kofsky, Bryan Schmutz

Professional Educator: Stephen Sugermeier

##### *Business Information Systems Faculty*

Department of Business Information Systems

Professor: Anil Gulati, Chair

Professors: Tuncay Bayrak, Jerzy Letkowski, Marilyn Pelosi

Associate Professor: Bahadir Akcam

Professional Educator: Richard Willis

##### *Management Faculty*

#### Department of Management

Associate Professor: Melissa Knott, Chair

Professors: Jeanie Forray, Lynn Bowes-Sperry, William Ferris, Julie Siciliano

Associate Professor: Lynn Walter

Assistant Professors: Joseph Gerard, Stacie Chappell

Professional Educator: John P. Greeley

##### *Marketing Faculty*

#### Department of Marketing

Professor: Paul Costanzo, Chair

Professors: Elizabeth Elam, Janelle Goodnight, Harlan Spotts

Assistant Professor: Mary Schoonmaker

*Sport Management and Business Law Faculty*

**Department of Sport Management and Business Law**

Professor: Sharienne Walker, Chair

Professors: Daniel Covell, Harvey Shrage

Associate Professors: Curt Hamakawa, James Masteralexis

College of Business Special Academic Opportunities

**Special Academic Opportunities**

**Business Honors Program**

The College of Business provides academically qualified and motivated students with the opportunity to distinguish their academic career through participation in the Business Honors Program. Business Honors courses are distinguished by the type of work required, pace of study, and opportunities for broader consideration of core course themes. In addition, Business Honors courses emphasize critical and independent thinking to produce creative applications of ideas.

*Admission*

Entering College of Business freshmen with a minimum high school GPA of 3.5 and SAT scores of 1100 (or an ACT score of 24) are automatically eligible for the College of Business Honors Program. These students will receive an invitation from the Director of the Honors Program. Admission decisions will be made by the Honors Committee so that students may be registered for the first honors course during Summer Orientation and Registration Program (SOAR).

*Requirements*

To receive the College of Business Honors designation on their transcript, a student must:

1. Complete 18 credits of honors courses: 12 of these 18 credits must be taken from honors courses in the College of Business; 6 of these 12 Business honors credits must be at the 300 or 400 level.
2. Complete an honors project (HONB 495) as approved and overseen by the Honors Committee in the College of Business. **Global Scholars Program**

Recognizing the importance of a global perspective to the conduct of business today, the College of Business provides enhanced opportunities for its students to develop both intercultural competence and an expanded worldview. The Global Scholars program, which integrates intercultural course work and experiences, is open to students in any business major. Those students who satisfactorily complete all requirements will receive the Global Scholar designation on their University transcript and at Commencement.

To receive the College of Business Global Scholar designation, a student must complete:

1. The Intercultural Development Inventory™ (IDI). The IDI is offered twice, once in BUS 101 Freshman Seminar and once in BUS 211 (see below).
2. BUS 210 Living and Learning Abroad (1 credit) – a course (generally taken in the sophomore year) designed to prepare students to meet the challenges of studying or working abroad. May be taken concurrently with #4 below.

3. BUS 211 Developing Intercultural Competence (2 credits) - a course designed to continue the intercultural competence development process begun in BUS 210, and generally taken following the international study experience.
4. A minimum of 6 credits of academic course work taken outside the United States in one or more international study experiences. This may be accomplished through participation in the Sophomore Experience Abroad program, a semester abroad via one of the College’s exchange programs or those offered through the University’s Study Abroad Office, or a combination of Seminar Abroad courses involving travel/study opportunities completed during summer or winter breaks.
5. Introductory-level foreign language study either through 6 credits of language course work at the university level or supervised completion of a similar level of non-credit language learning (i.e., a self-study program or non-credit foreign language immersion experience). Students who choose to satisfy the language requirement via non-credit means, or those able to demonstrate fluency in a language other than English, must substitute 6 credits of international/global course work to satisfy this requirement.
6. BUS 411 Global Scholars Capstone Seminar (1 credit) in the senior year, which includes a Global Scholars presentation to members of the College of Business Advisory Board. This requirement may be aligned with the Honors Program and/or major program requirements.

Students interested in participating in the Global Scholars Program should contact the Global Scholars Coordinator for more information.

**Dual Majors**

With just two additional courses, students can pursue a dual major in these disciplines:

- Accounting/Finance
- Arts & Entertainment Management/Marketing
- International Business/Finance
- International Business/Marketing
- Sport Management/Marketing

**SAP Certificate**

Students can earn a SAP certificate by taking three SAP core courses. This can be done within the normal College of Business requirements.

**College of Business Core Requirements (83 credits)**

The following courses are required of all business majors and include University-wide requirements. All are three credit courses unless otherwise noted.

**Degree Requirements**

**Business Courses (39 credits)**

BUS 101	First Year Business Seminar	3 cr.
BIS 102	Problem Solving with Business Tools	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.
BUS 326	Business Planning for New Ventures	3 cr.
	or	
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
BUS 423	Product Development and Innovation	3 cr.
	or	
BUS 450	Business Strategy	3 cr.
		<b>Subtotal: 39</b>

\*BUS 101: Required of all entering freshman and transfer students with fewer than 27 credit hours. Transfer students with 27 or more credit hours take a general elective in its place.

\*\*BL 201: For Sport Management majors, BL 360 replaces this requirement. For Arts and Entertainment majors, BL 350 replaces this requirement.

#### Non-Business Courses (44 credits)

ENGL 132	English Composition I	3 cr.
ENGL 133	English Composition II	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
	And	
QR 112	Quantitative Reasoning for Business	3 cr.
EC 111	Principles of Microeconomics	3 cr.
Lab xxx	One Lab Science	6 cr.
EC 112	Principles of Macroeconomics	3 cr.
PSY 101	Introduction to Psychology	3 cr.

	or	
SO 101	Introduction to Sociology	3 cr.
HIST XXX	Historical Perspective	3 cr.
COMM 100	Principles of Communication	3 cr.
PH 211	Business Ethics	3 cr.
CUL XXX	Cultural Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 44**

ENGL 132-133: Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206 Business Writing in the sophomore year

Lab Science: Natural Sciences one lab choice of: Biology, Chemistry, Geology, Meteorology, or Physics (6 cr.)

PEHR: 151, 153-159: Not required for off-campus location or BBA degree programs

Note: MATH 100 Algebra Fundamentals is available for students who have a math deficiency. This course is accepted as nonbusiness elective credit counted toward graduation.

Students in BBA program may substitute two Business Math courses (above Algebra) for Math 111-112 or 123-124; one non-lab science for the two lab sciences; and one humanities elective for CUL XXX.

If CUL XXX does not include the aesthetic perspective (CA), a nonbusiness elective must be selected to satisfy that requirement. Subtotal: 83

Nonbusiness majors may apply no more than 25% of business coursework to their graduation requirements.

Total Credit Hours: 83

### Five-year Bachelor/MBA Program

This program allows full-time undergraduate students in the College of Business to accelerate the completion of the bachelor's and master's degrees in business. Students can earn the popular and valuable Master of Business Administration degree with just one additional year of study. A detailed program of study can be found at Five-year Bachelor/MBA Program (p. 307).

#### Program Prerequisites:

Satisfied by completing the undergraduate business core (BIS 220, EC 111, AC 201, and FIN 214) courses with a "B" average or better with no grade below a C.

#### Program Application and Admission Requirements:

This program seeks students who have excelled in their undergraduate studies. Applicants must:

1. Earn an overall GPA of 3.0.
2. Complete the College of Business Graduate Studies application, and essays for the MBA program. All application materials should be submitted to the Admissions Office.
3. Forward scores for the Graduate Management Admission Test (GMAT) to the Admissions Office. Students should seek to score

500 or higher on the GMAT. Students may also apply for a GMAT waiver based on a cumulative GPA of 3.3 or higher at the time of graduation.

Applicants may take up to two graduate courses in their senior year prior to admission. A third graduate course may be taken during the senior year after a student has been admitted.

### Five-year Bachelor/MSA Program

This program allows undergraduate full time accounting majors in the College of Business to accelerate the completion of both the bachelor's and master's degrees in Accounting. Students can earn the Master of Science in Accounting degree within five years of entry as an undergraduate. A detailed program of study can be found at Five-year Bachelor/MSA Program (p. 308).

#### Program Prerequisites:

Satisfied after completing the following undergraduate courses: AC 201, AC 202, AC 305, AC 306, AC 309, AC 330, AC 413, AC 419 AND FIN 214, with a "B" average or better and no grade below a "C". Program Application and Admission Requirements:

1. Earn an overall GPA of 3.0.
2. Complete the College of Business Graduate Studies application and essays for the MSA program. All application materials should be submitted to the Admissions Office.
3. Forward scores for the Graduate Management Admission Test (GMAT) to the Admissions Office. Students should seek to score 500 or higher on the GMAT. Students may also apply for a GMAT waiver based on a cumulative GPA of 3.3 or higher at the time of graduation.

Applicants may take up to two graduate courses in their senior year. A third graduate course may be taken during the senior year after a student has been admitted.

### Five-year Bachelor/MBA and Five-year Bachelor/MSA Programs – Early Acceptance

Students who have achieved a high level of success in their high school academic performance may apply for conditional early acceptance into either program as freshmen. To qualify for this opportunity, applicants typically have earned a high school GPA of 3.5 or higher, and a combined verbal and quantitative sections score of 1200 or higher on the SAT. Once admitted, students must

1. Maintain an overall GPA of 3.3 or higher, after freshman year.
2. Successfully complete an undergraduate degree.
3. Earn a "B" average or better with no grade below a "C" in the prerequisite courses.

A detailed program of study can be found at Five-year-Bachelor MBA Program-Early Acceptance (p. 308), or Five-year Bachelor MSA Program-Early Acceptance (p. 309).

Accounting

## Accounting Major

### General Information

The course of study for accounting majors is designed to provide the professional education needed for careers in private industry, government, public accounting, or not-for-profit organizations. The combination of training in accounting, business subjects, and the arts

and sciences prepares the student for potential advancement to positions of managerial responsibility.

Students desiring to prepare for the CPA examination are advised to consult the Accountancy Board of the state of their choice to ensure that they will be able to meet the educational requirements of that jurisdiction. Students have the opportunity to continue in a Master of Science in Accounting program designed to meet the 150-hour academic requirement that has been adopted by most states. Accounting majors who desire preparation to meet the requirements of a particular state may, if necessary, modify their program of study in conference with, and approval of, their department chair.

### Career Preparation

In order to help students understand careers available to Accounting majors, faculty in the Accounting department designed activities to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year is accomplished in First Year Seminar where students are introduced to accounting career opportunities.
2. Career Investigation in the sophomore year courses includes classroom assignments in AC 201 and AC 202 and Meet the Firms Night.
3. Career Determination in the junior year engages students in résumé and cover letter writing and mock interviews.
4. Career Implementation in the senior year includes examination of professional certifications.

### Career Opportunities

Accounting majors find positions in national and regional public accounting, corporate and financial accounting, taxation, internal audit, and governmental and nonprofit accounting. The major provides an excellent foundation for legal careers and advanced business degrees.

**Accounting and Finance Faculty** (p. 102)

### Program Learning Goals

Having completed a major in Accounting, the student will have the ability to:

1. Understand the accounting conceptual framework as it relates to the measurement and reporting of financial information.
2. Understand the use of accounting information in the planning, controlling, and decision-making processes in organizations.
3. Understand internal control objectives and auditing standards and practices.
4. Understand the basic concepts of federal taxation.
5. Understand issues associated with the design and implementation of accounting information systems.

See Core Requirements for all Business Majors (p. 103) and General University Requirements (p. 27)

## Degree Requirements

Required Accounting courses (21 credit hours)

AC 305                      Financial Reporting II                      3 cr.

AC 306	Financial Reporting III	3 cr.
AC 309	Cost Accounting	3 cr.
AC 330	Accounting Information Systems	3 cr.
AC 407	Financial Reporting IV	3 cr.
AC 413	Fundamental of Individual Tax	3 cr.
AC 419	Auditing and Assurance Services	3 cr.

**Subtotal: 21**

## Other required courses (6 credit hours)

EC 311	Money and Banking	3 cr.
COMM 320	Small Group Communication	3 cr.
	or	
COMM 340	Business Communication	3 cr.

**Subtotal: 6**

## Electives (12 credit hours)

BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Electives	9 cr.

**Subtotal: 12**

Subtotal: 39

Total Credit Hours: 39

## Accounting Suggested Sequence of Courses

## Degree Requirements

## Freshman Year - Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
HIST XXX	Historical Perspective	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 16**

## Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
COMM 100	Principles of Communication	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
	And	
MAN	Management and Organizational	3 cr.

101/HONB 101	Behavior	
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
	And	
PSY 101	Introduction to Psychology	3 cr.
	or	
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

## Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.

**Subtotal: 15**

## Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.
MAN 240	Business and Society	3 cr.
	or	
PH 211	Business Ethics	3 cr.

**Subtotal: 15**

## Junior Year - Fall Semester

AC 305	Financial Reporting II	3 cr.
AC 309	Cost Accounting	3 cr.
LAB XXX	Natural Science Perspective	3 cr.
BUS 326	Business Planning for New Ventures	3 cr.
	or	
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
	And	
COMM 320	Small Group Communication	3 cr.
	or	
COMM 340	Business Communication	3 cr.

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<b>Subtotal: 15</b>		
Junior Year - Spring Semester		
EC 311	Money and Banking	3 cr.
AC 419	Auditing and Assurance Services	3 cr.
AC 306	Financial Reporting III	3 cr.
CUL XXX	Cultural Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

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<b>Subtotal: 15</b>		
Senior Year - Fall Semester		
AC 330	Accounting Information Systems	3 cr.
NBEL XXX	Non-business Electives	9 cr.
BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.

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<b>Subtotal: 15</b>		
Senior Year - Spring Semester		
AC 413	Fundamental of Individual Tax	3 cr.
BUS 423	Product Development and Innovation	3 cr.
	or	
BUS 450	Business Strategy	3 cr.
AC 407	Financial Reporting IV	3 cr.
BUS XXX	Business Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.

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**Subtotal: 15**

Subtotal: 122

Total credit hours required for graduation—122.

Students earning less than a B- in ENGL 132 (p. 220) or ENGL 133 (p. 220) will be required to take ENGL 206 (p. 220), Business Writing in sophomore year.

Students must take 33 credit hours of course work in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way to ensure that all “perspectives of understanding” requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows: all AC courses as well as FIN 214 (p. 227).

Total Credit Hours: 122

Arts and Entertainment Management

## Arts and Entertainment Management Major

### General Information

The Arts and Entertainment Management program emphasizes the business side of this creative industry. Students majoring in Arts and

Entertainment Management engage in a course of academic study that prepares them for a management career in creative and cultural organizations. The Arts and Entertainment Management major appreciates the unique blend of creative aesthetics and business sensibilities requisite to success in this industry and is able to mobilize resources to meet the mission, goals, and objectives of both the arts or entertainment organization and its stakeholders. The Arts and Entertainment Management program provides opportunities for students to develop the knowledge and skills they need to manage in for-profit or nonprofit creative and cultural environments. Students are provided with industry-based learning opportunities and are actively involved in industry-based projects both in the classroom and beyond.

### Career Preparation

In order to help understand careers available to Arts and Entertainment Management majors, faculty in the Department of Management design activities to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year is accomplished through a speaker series.
2. Career Investigation in the sophomore year includes classroom assignments in AEM 250 that look at opportunities in arts and entertainment industry segments.
3. Career Determination in the junior year is accomplished using projects in AEM 350.
4. Career Implementation in the senior year is addressed through instruction in networking and arts and entertainment job search skills in AEM 465 combined with internships and field experiences.

### Career Opportunities

The Arts and Entertainment Management major is prepared to assume positions of responsibility in a wide variety of arts and entertainment organizations in the private and public sectors. Graduates may work in the following settings: arts festivals, arts foundations, art galleries and historical museums, community arts centers or community theaters, dance companies, educational institutions, film and television companies, opera companies, orchestra companies, regional theaters, and television stations.

### Management Faculty (p. 102)

### Program Learning Goals

Having completed a major in Arts and Entertainment Management, the student will have the ability to:

1. Apply managerial competencies to arts and entertainment organizations.
2. Understand internal and external factors that shape arts and entertainment in a culture.
3. Achieve competency in arts and entertainment marketing including fundamental aspects of arts and entertainment products, markets, consumer research, sponsorship, and promotion.
4. Achieve competency in arts and entertainment finance including key elements of budgeting, accounting, public/private financing, and revenue development.

5. Achieve competency in legal aspects of arts and entertainment including state/federal legislation, liability, risk management, contracts, intellectual property, and collective bargaining.
6. Achieve competency in the economics of arts and entertainment including fundamental concepts of supply and demand, economic forecasting, and economic impact assessment.
7. Understand the governance and regulation of arts and entertainment organizations.
8. Understand the key elements of ethical behavior in arts and entertainment organizations including consideration of both personal and professional ethical systems in arts and entertainment organization management.

**Practicum, Internship, and Nonprofit Board Field Experience Options**

Students majoring in Arts and Entertainment Management are afforded three different kinds of opportunities to apply their classroom learning to field experiences.

All Arts and Entertainment Management majors complete a three-credit Practicum course that provides students with the opportunity to plan, organize, and lead various elements of on-campus arts or entertainment-related programming. This may include productions of the Stageless Players, exhibitions at the campus Art Gallery, or similar. Students gain hands-on experience in project management, event operations, personnel management, promotion, and communications while working directly under the supervision of Western New England University staff. The course combines classroom instruction with on-campus arts or entertainment experience.

Arts and Entertainment Management majors who meet the University’s academic requirements for internships (junior standing and grade point average of 2.5 or above overall and in the major) are eligible for the three-credit Internship in Arts and Entertainment Management.

Arts and Entertainment Management majors with a grade point average of 3.0 and above are eligible to apply for the Nonprofit Board Field Experience program. The Nonprofit Board Field Experience is a two-semester activity designed to provide outstanding business students with exposure to the types of decisions made by boards of directors in non-profit organizations. Placement for Arts and Entertainment Management majors is with non-profit arts or entertainment organizations.

See Core Requirements for All Business Majors (p. 103) and General University Requirements (p. 27) (83 credit hours)

**Major Requirements**

Required Arts and Entertainment Management, Management, and Business Law Courses (24 credit hours)

AEM 250	Introduction to Arts & Entertainment Organizations	3 cr.
BL 308	Labor Management Relations	3 cr.
BL 350	Business Law for Arts and Entertainment	3 cr.
MAN 201	Interpersonal Skills for Leading	3 cr.
MAN 323	Human Resource Management	3 cr.
AEM 350	Arts and Entertainment Practicum	3 cr.

AEM 355	Arts and Entertainment Venue Operations	3 cr.
AEM 465	Seminar in Arts and Entertainment Management	3 cr.
		<b>Subtotal: 24</b>

Other required courses (3 credit hours)

EC 350	Economics of Arts and Entertainment	3 cr.
		<b>Subtotal: 3</b>

Electives (15 credit hours)

AEM 480	Internship in Arts and Entertainment Management	3 cr.
or		
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	12 crs.
		<b>Subtotal: 15</b>

Subtotal: 42

Total Credit Hours: 42

**Arts and Entertainment Management Suggested Sequence of Courses**

**Degree Requirements**

Freshman Year - Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
HIST XXX	Historical Perspective	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
or		
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
or		
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
COMM 100	Principles of Communication	3 cr.
PSY 101	Introduction to Psychology	3 cr.
or		
SO 101	Introduction to Sociology	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.

MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
AEM 250	Introduction to Arts & Entertainment Organizations	3 cr.

**Subtotal: 15**

Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
BL 350	Business Law for Arts and Entertainment	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Junior Year - Fall Semester

MAN 201	Interpersonal Skills for Leading	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
BUS 326	Business Planning for New Ventures	3 cr.
	or	
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
MAN 240	Business and Society	3 cr.
	or	
PH 211	Business Ethics	3 cr.

**Subtotal: 15**

MAN 240: preferred for Arts and Entertainment majors

Junior Year - Spring Semester

NBEL XXX	Non-business Elective	3 cr.
MAN 323	Human Resource Management	3 cr.
AEM 350	Arts and Entertainment	3 cr.

	Practicum	
CUL XXX	Elements of Culture Requirement	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

BL 308	Labor Management Relations	3 cr.
AEM 355	Arts and Entertainment Venue Operations	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

BUS 450	Business Strategy	3 cr.
EC 350	Economics of Arts and Entertainment	3 cr.
NBEL XXX	Non-business Elective	3 cr.
AEM 465	Seminar in Arts and Entertainment Management	3 cr.
AEM 480	Internship in Arts and Entertainment Management	3 cr.
	or	
BUS XXX	Business Elective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Subtotal: 122

Students who wish to specialize in Music, Television/Film, Theater, or Visual Arts should consult with their advisor in order to allocate non-business electives appropriately.

Total credit hours required for graduation - 122.

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way to ensure that all "perspectives of understanding" requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows:

All AEM and BL courses, MAN 201 and MAN 323, EC 350, and BUS 450.

Total Credit Hours: 122

### Arts and Entertainment Management Specialization

Arts and Entertainment Management students may elect to specialize in one of four areas by completing 12 credit hours of non-business elective courses exclusively in Music, Television/Film, Theater, or Visual Arts. Students interested in this option should consult with their advisor or the Management Department Chair.

Business – BBA Online

### Business – BBA Online Option for Part-Time Students

#### General Information

The Online Bachelor in Business Administration (BBA) is a part-time degree completion program for part-time students. The BBA degree program provides students with broad exposure to the functional areas of business administration. Students will develop functional competency necessary for career advancement.

In order to be considered for admission, students must transfer in at least 30 credit hours. Full-time Western New England University students are not eligible to enroll in this program.

#### Career Opportunities

BBA majors are equipped to advance into positions of increased responsibility in the business world. In addition to seeking career advancement, students are able later to specialize either by entering graduate school or, more typically, by participating in training programs provided by employers.

#### Faculty (p. 102)

Faculty in this major come from all departments in the College of Business.

#### Degree Program Learning Goals

Having completed the BBA, the student will have the ability to:

1. solve business problems by thinking critically and applying principles of effective decision making;
2. generate, evaluate, and select alternatives consistent with standards of ethical behavior;
3. perform well on teams, to provide leadership, to contribute and collaborate to achieve team goals;
4. communicate professionally, to present analyses, recommendations, and plans clearly, in writing;
5. apply information technology concepts and tools to support business problem solving and decision making;
6. recognize the dynamic domestic and international factors that shape and transform the global business environment; and
7. to understand the fundamental concepts from the business disciplines.

### Degree Requirements

Core Requirements (78 credit hours)

Business Courses: 42 Credits

BIS 102	Problem Solving with Business Tools	3 cr.
MAN	Management and Organizational	3 cr.

101/HONB 101	Behavior	
AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
AC 202	Managerial Accounting	3 cr.
FIN 214	Introduction to Finance	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
BUS 326	Business Planning for New Ventures	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
BIS 310	Quality and Operations Management	3 cr.
BL 424	Business Law for Human Resource Management	3 cr.
MAN 323	Human Resource Management	3 cr.
BUS 450	Business Strategy	3 cr.

**Subtotal: 42**

Non-Business Courses:36 Credits

ENGL 132	English Composition I	3 cr.
ENGL 133	English Composition II	3 cr.
HUM XXX	Humanities Elective	3 cr.
MATH XXX	College-level Math (above Algebra)	6 cr.
EC 111	Principles of Microeconomics	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
HIST XXX	History Requirement	3 cr.
COMM 100	Principles of Communication	3 cr.
SCI XXX	Science Requirement	3 cr.
PSY 101	Introduction to Psychology	3 cr.
	or	
SO 101	Introduction to Sociology	3 cr.
	And	
MAN 240	Business and Society	3 cr.
	or	
PH 211	Business Ethics	3 cr.

**Subtotal: 36**

Electives: 42 credit hours

BUS XXX	Business Electives	9 cr.
	Non-Business Electives	24 cr.
GEN XXX	General Electives	9 crs

**Subtotal: 42**

Subtotal: 120

Total Credit hours required for graduation – 120.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non Business Electives must be selected in such a way as to ensure that all "perspectives of understanding" requirements have been satisfied.

Total Credit Hours: 120

Business Analytics and Information Management

## Business Analytics and Information Management

### General Information

The BAIM curriculum empowers students with contemporary business analytics and business intelligence tools and techniques by making them better decision-makers in business. Business analytics and information management skills are applicable to all industries such as finance, retail, healthcare, sports and entertainment, to name a few. Different functions in an organization such as management, marketing, and sales need the business analytics capabilities. Business intelligence, data warehousing, competitive intelligence, and forecasting are some of the topics covered by the major.

### Career Preparation

To emphasize the careers available to BAIM majors, faculty in the BIS department will provide in-class activities to guide students from career exploration through career implementation. Examples of some of these include:

1. Career exploration in the freshman year is accomplished in the First Year Seminar and BIS 102 – Problem Solving with Business Tools course where students are introduced to business analytics career opportunities;
2. Career investigation in the sophomore year courses includes assignments to investigate business analytics jobs in BIS 202 – Introduction to Business Information Systems and BIS 221 – Business Statistics for Business Analytics and guest speakers;
3. Career determination in the junior year engages students in a mentor plan and interaction with local technology experts; and
4. Career implementation in the senior year includes internships. Students are exposed to tasks, tools and technology in professional job settings with internships.

### Career Opportunities

As an emerging field, there is a high demand for business professionals with business analytics skills. While Department of Labor forecasts “bright outlook” for the jobs in business analytics, McKinsey Global Institute estimates “a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts to analyze big data and make decisions” in the United States alone.

Banking, retail, insurance, manufacturing, healthcare, and telecommunications are some of the industries utilizing business analytics solutions. Since understanding, planning, managing, and predicting financial and operation performance is a common process, all industries need business professionals with business analytics

skills.

### Business Analytics and Information Systems Faculty (p. 102)

### Program Learning Goals

The Business Analytics and Information Management major has four goals. Graduates from BAIM will be able to do the following tasks to support decision making and problem solving in businesses:

1. Identify, collect and analyze data. Make business decisions based on the analysis.
2. Develop, deploy and improve decision-making and problem solving processes with models.
3. Utilize relevant techniques to address Business Analytics needs of organizations.
4. Use tools and technology to support decision-making and problem solving in businesses.

See Core Requirements for All Business Majors (p. 103) and General University Requirements (p. 27) (83 credit hours)

## Degree Requirements

### Required BA courses (18 credit hours)

BIS 230	Business Analytics Theory & Practice	3 cr.
BIS 321/IT 300	Database Management Systems	3 cr.
BIS 330	Applied Data Mining	3 cr.
	or	
BIS 3XX/4XX	Elective	3 cr.
BIS 412	Business Analytics with SAP	3 cr.
BIS 450	Multivariate & Big Data Analysis	3 cr.
BIS 455	Enterprise Portal Design with SAP	3 cr.

**Subtotal: 18**

### Electives (21 credit hours)

BIS 480	Internship in Business Information Systems	3 cr.
	or	
BUS XXX	Business Elective	3 cr.
	And	
BIS 3XX/4XX	Elective	3 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	12 crs.

**Subtotal: 21**

Subtotal: 39

Total Credit Hours: 39

## Business Analytics and Information Management Suggested Sequence of Courses

### Degree Requirements

#### Freshman Year- Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
HIST 1XX	Historical Perspective	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
	And	
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

#### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
COMM 100	Principles of Communication	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
	And	
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
	And	
PSY 101	Introduction to Psychology	3 cr.
	or	
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 16</b>

#### Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.

BIS 230	Business Analytics Theory & Practice	3 cr.
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**Subtotal: 15**

#### Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

#### Junior Year - Fall Semester

BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
BIS 321/IT 300	Database Management Systems	3 cr.
BUS XXX	Business Elective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.
MAN 240	Business and Society	3 cr.
	or	
PH 211	Business Ethics	3 cr.

**Subtotal: 15**

#### Junior Year - Spring Semester

BIS 330	Applied Data Mining	3 cr.
BIS 312	Quality and Operations Management with SAP	3 cr.
CUL XXX	Cultural Perspective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

#### Senior Year - Fall Semester

BIS 412	Business Analytics with SAP	3 cr.
BIS 445	Business Analytics Project	3 cr.
BUS 3XX	Business Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
NBEL XXX	Non-business Elective	3 cr.

**Subtotal: 15**

#### Senior Year - Spring Semester

BUS 423	Product Development and Innovation	3 cr.
	or	
BUS 450	Business Strategy	3 cr.
BIS 450	Multivariate & Big Data Analysis	3 cr.

BIS 480	Internship in Business Information Systems	3 cr.
	or	
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
<u>LBC 4XX</u>	<u>Learning Beyond the Classroom</u>	No cr.

**Subtotal: 15**

Subtotal: 122

Total credit hours required for graduation–123

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way to ensure that all “perspectives of understanding” requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows: all BIS courses or their equivalents.

Total Credit Hours: 122

Entrepreneurship

## Entrepreneurship Major

### General Information

The Entrepreneurship curriculum prepares students to develop and operate their own business organization or work as entrepreneurs within a larger organization. The principles and techniques students majoring in Entrepreneurship will learn will be equally applicable to entrepreneurial opportunities in business, government, social, and academic organizations. The Entrepreneurship major is best suited for students who have the ambition and aptitude to become involved in the activities and processes associated with business start-up and expansion. Students majoring in Entrepreneurship will learn the importance of the following skill sets: task commitment and determination, organizational leadership, team-building, problem solving and solution providing, tolerance for risk and uncertainty, creativity, self-reliance, and the ability to initiate change and improvement in the business environment. Entrepreneurship is a cross-disciplinary major based on student learning-by-doing, faculty team teaching, and the creation of innovations by small teams.

### Career Preparation

In order to help Entrepreneurship majors understand careers available to them, faculty design assignments and class projects to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year occurs in a First Year Seminar course where students are introduced to entrepreneurship career opportunities;
2. Career Investigation in the sophomore year courses include classroom assignments and projects in ENTR 251;
3. Career Determination in the junior year is accomplished in ENTR 260 and in MK 301 where students complete a career assignment; and

4. Career Implementation in the senior year includes a project in BUS 423 where students work on a multidisciplinary team, which simulates the work environment to create a new product.

### Career Opportunities

The Entrepreneurship major will help prepare students for entrepreneurial and intrapreneurial career paths. Specific job titles for students completing the Entrepreneurship curriculum would include marketing managers; product, brand or program managers; customer services managers; planning or innovation managers; and other positions involving the creation and management of innovation.

### Faculty (p. 102)

Faculty members in the Entrepreneurship major are from all departments in the College of Business.

### Program Learning Goals

Having completed a major in entrepreneurship, the student will have the ability to:

1. understand the challenges involved in the process of developing, improving and managing a new business;
2. demonstrate knowledge of the role of the entrepreneurial process in creating innovation, wealth and prosperity throughout the US private sector economy;
3. demonstrate knowledge on the construction of effective business plans;
4. understand the process of recognizing, creating, shaping, and selecting ideas into plausible business opportunities;
5. understand the characteristics, roles, and responsibilities of the founder and entrepreneurial team in establishing and managing the entrepreneurial organization;
6. demonstrate knowledge of the sources and the processes of determining, securing, and retaining the prerequisite resources (human, managerial, legal, technological, and financial resources) for successful ventures;
7. understand the management issues of entrepreneurial businesses beyond the start-up phase through the growth phase to the harvest phase; and
8. demonstrate knowledge of prerequisite communication, leadership, and teamwork skills integral to the selling of ideas.

See Core Requirements for All Business Majors (p. 103) and General College Requirements (p. 27) (83 credits hours).

## Degree Requirements

### Required Entrepreneurship courses

ENTR 251	Entrepreneurship and Innovation	3 cr.
ENTR 326	Venture Feasibility	3 cr.
MK 301	Buyer Behavior	3 cr.
FIN 330	Financing Entrepreneurial Ventures	3 cr.
BL 403	Business Law for Entrepreneurs	3 cr.
BUS 423	Product Development and Innovation	3 cr.

**Subtotal: 18**

Entrepreneurship Electives (6 credits)

Choose from the following courses:

AC 309	Cost Accounting	3 cr.
ENTR 260	Marketing for Entrepreneurs	3 cr.
ENTR 380	Global Entrepreneurship	3 cr.
ENTR 480	Internship in Entrepreneurship	1-3 cr.
MAN 430/ENTR 430	Family Business Management	3 cr.
		<b>Subtotal: 6</b>

Business Electives (6 credits)

BUS XXX	Business Elective	3 cr.
BUS XXX	Business Elective	3 cr.
		<b>Subtotal: 6</b>

Non-business Electives (9 credit hours)

NBEL XXX	Non-business Electives	9 cr.
		<b>Subtotal: 9</b>

Subtotal: 39

Total Credit Hours: 39

### Entrepreneurship Suggested Sequence of Courses

#### Degree Requirements

Freshman Year - Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
HIST XXX	Historical Perspective	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
or		
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
And		
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
or		
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
COMM 100	Principles of Communication	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
And		
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
or		

BIS 102	Problem Solving with Business Tools	3 cr.
And		
PSY 101	Introduction to Psychology	3 cr.
or		
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 16</b>

Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
		<b>Subtotal: 15</b>

Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 220	Introduction to Business Statistics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
PH 211	Business Ethics	3 cr.
or		
MAN 240	Business and Society	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Fall Semester

BUS 326	Business Planning for New Ventures	3 cr.
NBEL XXX	Non-business Elective	3 cr.
MK 301	Buyer Behavior	3 cr.
ENTR 251	Entrepreneurship and Innovation	3 cr.
LAB XXX	Laboratory Science Requirement	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Spring Semester

BIS 310	Quality and Operations Management	3 cr.
or		
BIS 312	Quality and Operations Management with SAP	3 cr.
ENTR 326	Venture Feasibility	3 cr.
CUL XXX	Cultural Perspective	3 cr.
ILP XXX	Integrated Liberal Professional	3 cr.

	Perspective	
BL 403	Business Law for Entrepreneurs	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Fall Semester

FIN 330	Financing Entrepreneurial Ventures	3 cr.
BUS 423	Product Development and Innovation	3 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Spring Semester

BUS 450	Business Strategy	3 cr.
NBEL XXX	Non-business Elective	3 cr.
BUS XXX	Business Elective	3 cr.
BUS XXX	Entrepreneurial Elective	3 cr.
ENTR 480	Internship in Entrepreneurship	1-3 cr.
		<b>Subtotal: 13-15</b>

Subtotal: 120-122

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way to ensure that all "perspectives of understanding" requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows: all ENTR courses or their equivalents.

Total Credit Hours: 120-122

Finance

**Finance Major**

**General Information**

Courses in Finance provide the professional education for a wide spectrum of careers in finance. Accounting, economics, quantitative analysis, and studies of the financial environment are integrated to form both the skills required for traditional financial functions and the ability to stay abreast of a rapidly evolving technological environment.

By judicious selection of elective courses, the student, with the assistance of an academic advisor, can chart a course of specialization in the areas of investment management, personal financial management, credit analysis, or corporate financial management.

Students are encouraged to participate in internships as part of the Finance major.

**Career Preparation**

In order to help students understand careers available to Finance majors, faculty in the Department of Finance designed activities to

guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year is accomplished in First Year Seminar where students are introduced to accounting career opportunities;
2. Career Investigation in the sophomore year courses includes classroom assignments in FIN 214;
3. Career Determination in the junior year engages students in résumé and cover letter writing and mock interviews; and
4. Career Implementation in the senior year includes examination of professional certifications.

**Career Opportunities**

Finance majors find positions in brokerage firms, personal financial planning, banking, corporate financial management, international finance, underwriting, portfolio management, and insurance. Students are encouraged to take professional exams after graduation and to earn advanced business degrees.

Faculty (p. 102)

**Program Learning Goals**

Having completed a major in finance, the student will have the ability to:

1. understand and synthesize the basic concepts and theories of finance;
2. use computer-based tools to perform financial analysis and assist with financial decisions;
3. understand the monetary system, monetary policy, and regulatory environment;
4. demonstrate knowledge of the investment environment, and the global and the domestic financial markets; and
5. demonstrate the ability to determine strategies for corporate decision-making based on an accurate assessment of risks and rewards.

See Core Requirements for All Business Majors (83 credit hours) and General University Requirements.

**Degree Requirements**

Required Finance courses (15 credit hours)

FIN 312	Financial Markets and Institutions	3 cr.
FIN 320	Intermediate Corporation Finance	3 cr.
FIN 350	Advanced Corporation Finance	3 cr.
FIN 417	Investments	3 cr.
FIN 418	Security Analysis	3 cr.
		<b>Subtotal: 15</b>

Other required courses (3 credit hours)

EC 311	Money and Banking	3 cr.
	or	
EC 215	Intermediate Macroeconomics	3 cr.

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		<b>Subtotal: 3</b>
Electives (21 credit hours)		
FIN or AC 3XX-4XX	Elective	6 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Electives	9 cr.
NBEL XXX	Non-business Elective	3 cr.

**Subtotal: 21**

Subtotal: 39

Total Credit Hours: 39

**Finance Suggested Sequence of Courses****Degree Requirements****Freshman Year- Fall Semester**

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
HIST XXX	Historical Perspective	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 16****Freshman Year - Spring Semester**

ENGL 133	English Composition II	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
COMM 100	Principles of Communication	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PSY 101	Introduction to Psychology	3 cr.
	or	
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16****Sophomore Year - Fall Semester**

AC 201/HONB	Financial Reporting	3 cr.
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203

MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.

**Subtotal: 15****Sophomore Year - Spring Semester**

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
MAN 240	Business and Society	3 cr.
	or	
PH 211	Business Ethics	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15****Junior Year - Fall Semester**

BUS 326	Business Planning for New Ventures	3 cr.
	or	
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
FIN 312	Financial Markets and Institutions	3 cr.
FIN 320	Intermediate Corporation Finance	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.

**Subtotal: 15****Junior Year - Spring Semester**

FIN 350	Advanced Corporation Finance	3 cr.
FIN or AC 3XX-4XX	Elective	6 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
CUL XXX	Cultural Perspective	3 cr.

**Subtotal: 15****Senior Year - Fall Semester**

FIN 417	Investments	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
BIS 310	Quality and Operations Management	3 cr.
	or	

BIS 312	Quality and Operations Management with SAP	3 cr.
NBEL XXX	Non-business Elective	3 cr.
BUS XXX	Business Elective	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

BUS 423	Product Development and Innovation	3 cr.
	or	
BUS 450	Business Strategy	3 cr.
FIN 418	Security Analysis	3 cr.
EC 311	Money and Banking	3 cr.
	or	
EC 215	Intermediate Macroeconomics	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Subtotal: 122

Total credit hours required for graduation – 122

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

Students must take 33 credit hours of coursework in 300/400 level courses. All students must take 12 hours of upper level (300/400) courses in their major at Western New England University.

Non-business electives must be selected in such a way to ensure that all “perspectives of understanding” requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows:

All FIN and AC courses that are applied toward the degree.

Total Credit Hours: 122

General Business

**General Business Major**

**General Information**

The program in General Business provides students with a broad exposure to the functional areas of business administration while permitting wide latitude in the selection of additional courses according to individual interests. Students will develop the skills and competencies necessary for success across the broad spectrum of business organizations.

**Career Preparation**

In order to help students understand careers available to General Business majors, faculty design activities to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year is accomplished in MAN 101 through guest speakers from local businesses;
2. Career Investigation in the sophomore year courses includes personality assessment linked to career choices in MK 200;
3. Career Determination in the junior year engages students in resume review and mock interviews in MAN 323; and
4. Career Implementation in the senior year involves a required internship and participation in discussion of career requirements and insights from internship placements in BUS 480.

**Career Opportunities**

General Business majors are prepared to enter the business world in entry level positions in corporations, agencies, or small business. Since their background is broad, they are later able to specialize either by entering graduate school or, more typically, by participating in training programs provided by employers.

For students interested in teaching business at the secondary school level, see the program of study listed under the major entitled Secondary Education-General Business Major (p. 62).

**Faculty** (p. 102)

Faculty in this major come from all departments in the College of Business.

**Program Learning Goals**

Having completed a major in General Business, the student will have the ability to:

1. understand and synthesize the basic concepts and theories of each functional area of a business that contribute to its overall success;
2. understand the key elements of professionalism and ethical conduct in businesses and other organizations;
3. demonstrate skill and competency in problem solving, decision making, and managing conflict; and
4. demonstrate skill and competency in establishing goals and leading people to work together toward the attainment of those goals.

See Core Requirements for All Business Majors (p. 103) and General University Requirements (p. 27) (83 credit hours)

**Degree Requirements**

Required Management and Business Law courses (12 credit hours)

BL 308	Labor Management Relations	3 cr.
BL 424	Business Law for Human Resource Management	3 cr.
MAN 323	Human Resource Management	3 cr.
BUS 480	Internship in Business	3 cr.

**Subtotal: 12**

Electives (27 credit hours)

BUS XXX	Business Electives	12 cr.
NBEL XXX	Non-business Electives	15 cr.

**Subtotal: 27**

Subtotal: 39

Total Credit Hours: 39

## General Business Suggested Sequence of Courses

## Degree Requirements

## Freshman Year- Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
HIST XXX	Historical Perspective	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

## Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
COMM 100	Principles of Communication	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PSY 101	Introduction to Psychology	3 cr.
	or	
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 16</b>

## Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
		<b>Subtotal: 15</b>

## Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
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BUS 211	Developing Intercultural Competence	2 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
MAN 240	Business and Society	3 cr.
	or	
PH 211	Business Ethics	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 15</b>

## Junior Year - Fall Semester

BUS 301	Managing the Established Enterprise	3 cr.
	or	
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.
		<b>Subtotal: 15</b>

## Junior Year - Spring Semester

BL 308	Labor Management Relations	3 cr.
MAN 323	Human Resource Management	3 cr.
BUS XXX	Business Elective	3 cr.
CUL XXX	Cultural Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 15</b>

## Senior Year - Fall Semester

BL 424	Business Law for Human Resource Management	3 cr.
BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
		<b>Subtotal: 15</b>

## Senior Year - Spring Semester

BUS 423	Product Development and Innovation	3 cr.
	or	

BUS 450	Business Strategy	3 cr.
BUS 480	Internship in Business	3 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Subtotal: 122

Total credit hours required for graduation – 122.

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way as to ensure that all “perspectives of understanding” requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows: All MAN and BL courses as well as BUS 450.

\*The General Business major is required to complete an internship in any of the areas represented by the College of Business.

Total Credit Hours: 122

### Concentration in Business Law and Human Resources

#### Degree Requirements

##### Freshman Year- Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
HIST XXX	Historical Perspective	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 16**

##### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.

COMM 100	Principles of Communication	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PSY 101	Introduction to Psychology	3 cr.
	or	
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

##### Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.

**Subtotal: 15**

##### Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
PH 211	Business Ethics	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

##### Junior Year - Fall Semester

BUS 326	Business Planning for New Ventures	3 cr.
	or	
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
BUS 3XX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

##### Junior Year-Spring Semester

BL 308	Labor Management Relations	3 cr.
MAN 323	Human Resource Management	3 cr.

BUS XXX	Business Elective	3 cr.
CUL XXX	Cultural Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

## Senior Year - Fall Semester

BL 424	Business Law for Human Resource Management	3 cr.
BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

## Senior Year - Spring Semester

BUS 423	Product Development and Innovation	3 cr.
	or	
BUS 450	Business Strategy	3 cr.
BUS 480	Internship in Business	3 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Subtotal: 122

\*Business Law and Human Resources Electives: MAN 422, PSY 214, PSY 216, PSY 301

\*\*Recommended ILP: ILP 225, ILP 317, ILP 353

Total Credit Hours: 122

General Business Major Secondary Education

## Secondary Education General Business Major

## Degree Requirements

## Freshman Year - Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
HIST XXX	Historical Perspective	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
	And	
MATH 111	Analysis for Business and Economics	3 cr.

	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.

And

BIS 102	Problem Solving with Business Tools	3 cr.
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or

MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
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**Subtotal: 16**

## Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
COMM 100	Principles of Communication	3 cr.
PSY 101	Introduction to Psychology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
ED 120	Introduction to Education	1 cr.

And

or

MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.
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And

BIS 102	Problem Solving with Business Tools	3 cr.
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or

MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
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**Subtotal: 17**

## Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
ED 260	Teaching English Language Learners I	1 cr.

**Subtotal: 16**

## Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
ED 301	Principles and Problems of	3 cr.

	Education	
ED 270	Teaching English Language Learners II	2 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 17</b>

Junior Year - Fall Semester

BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
	or	
BUS 326	Business Planning for New Ventures	3 cr.
MAN 323	Human Resource Management	3 cr.
PH 211	Business Ethics	3 cr.
CUL XXX	Cultural Perspective	3 cr.
LAB XXX	Laboratory Science Requirement	3-4 cr.
		<b>Subtotal: 15</b>

Junior Year - Spring Semester

PSY 304	Educational Psychology	3 cr.
BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.
BIS 210/IT 240	Foundations of Web Systems	3 cr.
BL 308	Labor Management Relations	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
		<b>Subtotal: 15</b>

Senior Year - Fall Semester

ED 380	Secondary Education Topics	1 cr.
ED 403	Methods of Teaching in Secondary Schools	3 cr.
ED 409	Practicum in Secondary Teaching	9 cr.
ED 410	Secondary Practicum Seminar	3 cr.
		<b>Subtotal: 16</b>

Senior Year - Spring Semester

BL 424	Business Law for Human Resource Management	3 cr.
BUS 450	Business Strategy	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
CUL XXX	Elements of Culture Requirement	3 cr.
BUS XXX	Business Elective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 15</b>

Subtotal: 127

This program requires 123 credit hours.

Total Credit Hours: 127

International Business

International Business Major

General Information

The International Business curriculum is designed for students interested in globally-focused careers in business. The program is intended to develop business knowledge and skills that specifically address the challenges and opportunities of the international context. The International Business major includes all of the core areas of business as well as directed attention to the multi-national elements of business practice including communication, economics, finance, management, and marketing. *International Business majors are encouraged to complete a dual major or minor program as the basis for enhanced entry-level opportunities.*

Career Preparation

In order to help students understand careers available to International Business majors, faculty design assignments and class projects to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year occurs in the First Year Seminar (BUS 101) where students are introduced to international business career opportunities;
2. Career Investigation in the sophomore year includes classroom assignments and projects in INTB 251, Introduction to International Business;
3. Career Determination in the junior year is accomplished in MAN 311, MK 311 and FIN 322 where students complete career assignments; and
4. Career Implementation in the senior year is addressed through instruction in networking and job search skills in INTB 465 Seminar in International Business, combined with the required internship and other field experiences.

Career Opportunities

Graduates will be prepared for entry into a variety of industries, with initial job placements in US firms doing business abroad; non-US firms doing business in the US; government agencies at the state, regional, or national level; or international trade or commerce associations.

Faculty (p. 102)

Faculty members in the International Business major are from all departments in the College of Business.

Program Learning Goals

Having completed a major in International Business, the student will have the ability to:

1. translate knowledge of the functional business areas to the international domain;
2. apply knowledge of environmental factors affecting international firms in order to make recommendations for business decisions or actions;
3. apply knowledge of international regulation and trade agreements in order to make recommendations for business decisions or actions; and

4. apply knowledge of the role of culture and communication in the management of international businesses in order to make recommendations for business decisions or actions.

See Core Requirements for All Business Majors and General University Requirements (83 credit hours)

## Major Requirements

### Required International Business courses (18 credit hours)

INTB 251	Introduction to International Business	3 cr.
INTB 465	Seminar in International Business	3 cr.
INTB 480	Internship in International Business	3 cr.
MAN 311	International Management	3 cr.
MK 311	Multinational Marketing	3 cr.
FIN 322	International Finance	3 cr.

**Subtotal: 18**

### Business Electives (3 credits hours)

BUS XXX	Business Elective	3 cr.
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**Subtotal: 3**

### Other Required Courses (9 credit hours)

COMM 348	Intercultural Communication	3 cr.
EC 371	International Monetary Economics	3 cr.
EC 372	International Trade	3 cr.

**Subtotal: 9**

### Non-business Electives (9 credit hours)

NBEL XXX	Non-business Electives	9 cr.
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**Subtotal: 9**

Subtotal: 39

Total Credit Hours: 39

## International Business Suggested Sequence of Courses

### Degree Requirements

#### Freshman Year- Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
HIST XXX	Historical Perspective	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	

BIS 102	Problem Solving with Business Tools	3 cr.
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PEHR 151	Personal Health and Wellness	1 cr.
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**Subtotal: 16**

#### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
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QR 112	Quantitative Reasoning for Business	3 cr.
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COMM 100	Principles of Communication	3 cr.
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MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
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or

BIS 102	Problem Solving with Business Tools	3 cr.
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PSY 101	Introduction to Psychology	3 cr.
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or

SO 101	Introduction to Sociology	3 cr.
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PEHR 153-199	Lifetime Activity	1 cr.
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**Subtotal: 16**

#### Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
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MK 200/HONB 200	Principles of Marketing	3 cr.
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BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
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EC 111	Principles of Microeconomics	3 cr.
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BIS 221	Statistics for Business Analytics	3 cr.
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**Subtotal: 15**

#### Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
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BIS 220	Introduction to Business Statistics	3 cr.
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FIN 214	Introduction to Finance	3 cr.
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EC 112	Principles of Macroeconomics	3 cr.
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MAN 240	Business and Society	3 cr.
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or

PH 211	Business Ethics	3 cr.
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LBC 2XX	Learning Beyond the Classroom	No cr.
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**Subtotal: 15**

#### Junior Year - Fall Semester

BL 201/HONB 201	Introduction to Business Law	3 cr.
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BUS 326	Business Planning for New Ventures	3 cr.
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or

BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
MAN 311	International Management	3 cr.
MK 311	Multinational Marketing	3 cr.
LAB XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester

FIN 322	International Finance	3 cr.
COMM 348	Intercultural Communication	3 cr.
CUL XXX	Cultural Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
NBEL XXX	Non-business Elective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

BIS 310	Quality and Operations Management or	3 cr.
BIS 312	Quality and Operations Management with SAP	3 cr.
EC 371	International Monetary Economics	3 cr.
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

BUS 450	Business Strategy	3 cr.
EC 372	International Trade	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Subtotal: 122

Total Credit Hours: 122

Management and Leadership

**Management and Leadership Major**

**General Information**

The Management and Leadership program emphasizes the knowledge, competencies, and characteristics necessary for effective leadership in meeting organizational objectives and challenges. Students undertake a wide range of academic and experiential learning opportunities to develop the proactive, critical, and creative thinking skills needed for problem-solving, communication, commitment to excellence, and personal integrity that enable them to provide effective management and leadership in work and community settings.

**Career Preparation**

In order to help students understand careers available to Management and Leadership majors, faculty in the Department of Management designed activities to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshmen year is accomplished in MAN 101 through guest speakers from local businesses;
2. Career Investigation in the sophomore year courses includes personality assessment linked to career choices in MAN 201;
3. Career Determination in the junior year is accomplished through resume review and mock interviews in MAN 323; and
4. Career Implementation in the senior year is addressed through participation in the "RealTest" Assessment Exercise. During this daylong event, students demonstrate their management and leadership abilities and are coached by local business people and alumni volunteers.

**Career Opportunities**

Management and Leadership majors are prepared to embark on a career path with the promise of increasing responsibility in a rapidly changing global environment.

Graduates work in a wide range of organizations and positions that include: manufacturing, corporate business, financial services, small business, hospitality industry, government, and public administration. Many enroll in graduate programs or law school. Our focus is on preparation for career-entry and our successful graduates typically enter businesses and organizations in entry-level professional positions.

**Management Faculty** (p. 102)

**Program Learning Goals**

Having completed a major in Management and Leadership, the student will have the ability to:

1. understand and synthesize the basic concepts and theories of management and leadership that serve as a basis for high performance;
2. apply theories and concepts of management and leadership to develop strategies for improving the performance of people and processes in organizations;
3. perform well on teams, provide leadership, contribute and collaborate to achieve team goals;
4. demonstrate skill and competency in developmental performance feedback; and
5. apply theories and concepts of management and leadership to develop strategies for dealing with organizational and interpersonal conflict.

See Core Requirements for All Business Majors (p. 103) and General University Requirements (p. 27) (83 credit hours)

**Degree Requirements**

Required Management and Business Law courses (18 credit hours)

BL 308	Labor Management Relations	3 cr.
BL 424	Business Law for Human Resource Management	3 cr.

MAN 201	Interpersonal Skills for Leading	3 cr.
MAN 323	Human Resource Management	3 cr.
MAN 370	Project Management	3 cr.
MAN 466	Seminar in Management and Leadership	3 cr.

**Subtotal: 18**

## Electives (21 credit hours)

MAN 480	Internship in Management	1-3 cr.
	or	
BUS XXX	Business Elective	3 cr.
MAN 3XX	Management Elective	3 cr.
	or	
MAN 4xx	Management Elective	3 cr.
NBEL XXX	Non-business Electives	15 cr.

**Subtotal: 21**

Subtotal: 39

Total Credit Hours: 39

## Management and Leadership Suggested Sequence of Courses

## Degree Requirements

## Freshman Year- Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
HIST XXX	Historical Perspective	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 16**

## Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
COMM 100	Principles of Communication	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	

BIS 102	Problem Solving with Business Tools	3 cr.
PSY 101	Introduction to Psychology	3 cr.
	or	
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

## Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.

**Subtotal: 15**

## Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
MAN 240	Business and Society	3 cr.
	or	
PH 211	Business Ethics	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

## Junior Year - Fall Semester

BUS 326	Business Planning for New Ventures	3 cr.
	or	
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
MAN 201	Interpersonal Skills for Leading	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

## Junior Year - Spring Semester

BL 308	Labor Management Relations	3 cr.
MAN 323	Human Resource Management	3 cr.
MAN 370	Project Management	3 cr.
CUL XXX	Elements of Culture Requirement	3 cr.

ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 15</b>
Senior Year - Fall Semester		
BL 424	Business Law for Human Resource Management	3 cr.
BIS 310	Quality and Operations Management	3 cr.
or		
BIS 312	Quality and Operations Management with SAP	3 cr.
MAN 3XX	Management Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
		<b>Subtotal: 15</b>
Senior Year - Spring Semester		
BUS 450	Business Strategy	3 cr.
MAN 466	Seminar in Management and Leadership	3 cr.
MAN 480	Internship in Management	1-3 cr.
or		
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 15</b>

Subtotal: 122

Total credit hours required for graduation – 122.

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way to ensure that all “perspectives of understanding” requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows: All MAN and BL courses as well as BUS 450.

Total Credit Hours: 122

Marketing

## Marketing Major

### General Information

Marketing is a dynamic force in today’s multinational economy. Given the highly competitive nature of business, it is essential that business organizations understand and respond to the wants and needs of multiple markets. In order to manage markets successfully, Marketing managers must employ a combination of good business

judgment, effective analytical techniques, and professional communication skills. The marketing program strives to provide students with abilities in each of these areas.

Students in the Marketing major learn how to develop their marketing skills to become efficient marketing managers. Course projects are designed to provide students with exposure to real world marketing management problems. Students often work in group projects where they meet with business clients, gather marketing information, and develop real-time marketing solutions.

### Career Preparation

In order to help students understand careers available to Marketing majors, faculty in the Department of Marketing design activities to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year is accomplished in First Year Seminar where students are introduced to marketing career opportunities;
2. Career Investigation in the sophomore year courses includes classroom assignments in MK 200 which could include visiting a Human Resource office or shadowing a marketing professional;
3. Career Determination in the junior year is accomplished using an assignment in MK 301 which is designed to help students become more knowledgeable about career options and to assist students with selecting an appropriate career path; and
4. Career Implementation in the senior year includes résumé writing and review of job descriptions and responsibilities in MK 421.

### Career Opportunities

Students majoring in marketing often pursue careers in marketing management, marketing research, sport marketing, sales and sales management, consumer management, and product/brand management.

Marketing Faculty (p. 102)

### Program Learning Goals

Having completed a major in Marketing, the student will have the ability to:

1. understand the interactions required for the effective design and execution of strategic and marketing plans;
2. apply marketing theories and concepts to the analysis and design of solutions for marketing-related business challenges;
3. demonstrate skills in quantitative and qualitative research techniques as they apply to marketing problems; and
4. produce effective marketing plans, research reports, and oral presentations.

See Core Requirements for All Business Majors (p. 103) and General University Requirements (p. 27) (83 credit hours)

### Degree Requirements

Required Marketing courses (18 credit hours)

MK 301	Buyer Behavior	3 cr.
MK 311	Multinational Marketing	3 cr.
MK 318	Marketing Research	3 cr.

MK 421	Marketing Management	3 cr.
		<b>Subtotal: 12</b>

And two of the following three courses

MK 317	Promotional Strategy	3 cr.
MK 320	Price and Product Strategy	3 cr.
MK 323	Distribution Strategy	3 cr.
		<b>Subtotal: 6</b>

Other required courses (3 credit hours)

COMM 340	Business Communication	3 cr.
		<b>Subtotal: 3</b>

Electives (18 credit hours)

MK 3XX/4XX	Marketing Elective	3 cr.
MK 480	Internship	3 cr.
		or
BUS XXX	Business Elective	3 cr.
NBEL XXX	Non-business Elective	12 crs.
		<b>Subtotal: 18</b>

Subtotal: 39

Total Credit Hours: 39

### Marketing Suggested Sequence of Courses

#### Degree Requirements

Freshman Year - Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
		or
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
HIST XXX	Historical Perspective	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
		or
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
COMM 100	Principles of Communication	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.

		or
BIS 102	Problem Solving with Business Tools	3 cr.
PSY 101	Introduction to Psychology	3 cr.
		or
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 16</b>

Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
		<b>Subtotal: 15</b>

Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
PH 211	Business Ethics	3 cr.
		or
MAN 240	Business and Society	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 15</b>

Junior Year - Fall Semester

BUS 326	Business Planning for New Ventures	3 cr.
		or
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
COMM 340	Business Communication	3 cr.
MK 301	Buyer Behavior	3 cr.
LAB XXX	Natural Science Perspective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
		<b>Subtotal: 15</b>

Junior Year - Spring Semester

MK 317	Promotional Strategy	3 cr.
		and/or
MK 320	Price and Product Strategy	3 cr.

	and/or		
MK 323	Distribution Strategy	3 cr.	
CUL XXX	Cultural Perspective	3 cr.	
MK 318	Marketing Research	3 cr.	
ILP XXX	Integrated Liberal Professional Perspective	3 cr.	
			<b>Subtotal: 15</b>

Senior Year - Fall Semester

MK 421	Marketing Management	3 cr.	
MK 311	Multinational Marketing	3 cr.	
BIS 310	Quality and Operations Management	3 cr.	
	or		
BIS 312	Quality and Operations Management with SAP	3 cr.	
LAB/NSP XXX	Natural Science Perspective	3 cr.	
NBEL XXX	Non-business Elective	3 cr.	
			<b>Subtotal: 15</b>

Senior Year - Spring Semester

BUS 423	Product Development and Innovation	3 cr.	
	or		
BUS 450	Business Strategy	3 cr.	
MK 3XX/4XX	Marketing Elective	3 cr.	
NBEL XXX	Non-business Elective	3 cr.	
NBEL XXX	Non-business Elective	3 cr.	
LBC 4XX	Learning Beyond the Classroom	No cr.	
MK 480	Internship	3 cr.	
	or		
BUS XXX	Business Elective	3 cr.	
			<b>Subtotal: 15</b>

Subtotal: 122

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way to ensure that all “perspectives of understanding” requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows: all MK courses, COMM 285, COMM 340, and COMM 348.

Total Credit Hours: 122

## Marketing Communication/Advertising Major

### General Information

New technology has enabled marketers to communicate in more effective ways. Such vehicles of marketing communication include interactive marketing, relationship marketing, video information systems, and the application of new technology in advertising. A better understanding of the role of communication in the marketplace is vital in helping businesses obtain a competitive edge. The major in Marketing Communication/Advertising prepares students to enter the work force with an understanding of how promotional strategies can be effectively used in executing and enhancing marketing messages. The Marketing Communication/Advertising major studies how marketers utilize and implement communication/promotional concepts when delivering the marketing message.

One of the unique features of the Marketing Communication/Advertising program is that our students produce actual advertising and promotional outputs that are evaluated by external business professionals. Students study all facets of the promotional mix including but not limited to; advertising, public relations/publicity, direct marketing, personal selling, Internet/interactive, and sales promotions.

### Career Preparation

In order to help students understand careers available to Marketing Communication/Advertising majors, faculty in the Department of Marketing design advertising activities to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year is accomplished in First Year Seminar where students are introduced to marketing career opportunities;
2. Career Investigation in the sophomore year courses includes classroom assignments in MK 200 which could include visiting a Human Resource office or shadowing a professional in the field of marketing communication/advertising;
3. Career Determination in the junior year is accomplished using an assignment in MK 301 which is designed to help students become more knowledgeable about career options and to assist students with selecting an appropriate career path; and
4. Career Implementation in the senior year includes a required internship and class assignments in MK 422.

### Career Opportunities

Students majoring in Marketing Communication/Advertising often pursue careers in promotional management, marketing communication, direct marketing, public relations, and advertising account management.

**Marketing Faculty** (p. 102)

### Program Learning Goals

Having completed a major in Marketing Communication/Advertising, the student will have the ability to:

1. understand the interactions of communication and promotional strategies and tactics within the context of an organization and its various publics and markets;
2. apply theories in marketing, sociology, and psychology to the analysis and design of solutions for promotional issues and challenges;
3. demonstrate creative and analytical skills as they apply to marketing communication and promotional strategy; and

4. design and produce creative and appropriate promotional materials.

See Core Requirements for All Business Majors (p. 103) and General University Requirements (p. 27) (83 credit hours)

### Degree Requirements

#### Required Marketing courses (15 credit hours)

MK 301	Buyer Behavior	3 cr.
MK 317	Promotional Strategy	3 cr.
MK 340	Promotion Design and Applications	3 cr.
MK 422	Campaign Planning and Management	3 cr.
MK 485	Marketing Communication/Advertising Internship	3 cr.
		<b>Subtotal: 15</b>

#### Other required courses (9 credit hours)

COMM 340	Business Communication	3 cr.
COMM 348	Intercultural Communication	3 cr.
COMM 285	Introduction to Public Relations	3 cr.
		<b>Subtotal: 9</b>

#### Electives (15 credit hours)

BUS XXX	Business Elective	3 cr.
MK 3XX/4XX	Marketing Elective	3 cr.
MK 3XX/4XX	Marketing Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
		<b>Subtotal: 15</b>

Subtotal: 39

Total Credit Hours: 39

### Marketing Communication/Advertising Suggested Sequence of Courses

#### Degree Requirements

##### Freshman Year - Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
		or
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
HIST XXX	Historical Perspective	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
		or

BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

##### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
COMM 100	Principles of Communication	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
		or
BIS 102	Problem Solving with Business Tools	3 cr.
PSY 101	Introduction to Psychology	3 cr.
		or
SO 101	Introduction to Sociology	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 16</b>

##### Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
BL 201/HONB 201	Introduction to Business Law	3 cr.
		<b>Subtotal: 15</b>

##### Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
PH 211	Business Ethics	3 cr.
		or
MAN 240	Business and Society	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 15</b>

##### Junior Year - Fall Semester

BUS 326	Business Planning for New Ventures	3 cr.
		or
BUS 312	Business Processes and Enterprise Resource Planning	3 cr.

	with SAP	
COMM 340	Business Communication	3 cr.
MK 301	Buyer Behavior	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LAB XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

Junior Year - Spring Semester

MK 317	Promotional Strategy	3 cr.
BUS XXX	Business Elective	3 cr.
CUL XXX	Cultural Perspective	3 cr.
MK 3XX/4XX	Marketing Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.
MK 422	Campaign Planning and Management	3 cr.
MK 340	Promotion Design and Applications	3 cr.
COMM 348	Intercultural Communication	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

BUS 423	Product Development and Innovation	3 cr.
	or	
BUS 450	Business Strategy	3 cr.
COMM 285	Introduction to Public Relations	3 cr.
MK 485	Marketing Communication/Advertising Internship	3 cr.
MK 3XX/4XX	Marketing Elective	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Subtotal: 122

Total credit hours required for graduation–122.

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in the sophomore year.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400)

courses in their major at Western New England University.

Non-business electives must be selected in such a way to ensure that all “perspectives of understanding” requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows: All MK courses, COMM 285, COMM 340, and COMM 348.

Total Credit Hours: 122

Pharmaceutical Business Major

### Pharmaceutical Business Major

#### General Information

The Pharmaceutical Business curriculum at Western New England University focuses on both business and science to provide a well-rounded education. It combines key elements of the pharmaceutical sciences with knowledge about how the industry operates. The Pharmaceutical Business major integrates the fields of pharmacy, healthcare and business, while delivering a firm foundation in the sciences. Students majoring in pharmaceutical business develop a knowledge base to prepare them for entry into the pharmaceutical, biotechnology, and medical diagnostic device industries.

#### Career Preparation

In order to help Pharmaceutical Business majors understand careers available to them, faculty design assignments and class projects to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year occurs in a First Year Seminar course where students are introduced to business career opportunities;
2. Career Investigation in the sophomore year is accomplished by taking a series of interdisciplinary courses in the sciences and pharmaceutical industry investigations;
3. Career Determination in the junior year is accomplished by completing a career assignment in the interdisciplinary course, Fundamentals of Pharmacy; and
4. Career Implementation in the senior year includes the opportunity to complete of an internship in the pharmaceutical, medical technology, or business-to-business industries.

#### Career Opportunities

The Pharmaceutical Business major is preparing for entry into a highly specialized and unique industry. Sales, marketing, and supply chain positions are the usual entry point into the industry. Once gaining experience at this level, it is possible to advance into marketing, brand management, information systems, and other management positions.

#### Faculty

In this multidisciplinary major, students will learn from faculty in many disciplines, including accounting, biology, business information systems, chemistry, economics, finance, management, and marketing. A Fundamentals of Pharmacy course will provide an overview of the industry from pharmacy faculty.

#### Program Learning Goals

Having completed a major in Pharmaceutical Business, the student will have the ability to:

1. apply science, marketing, management and information system knowledge to pharmaceutical business;
2. understand the marketplace factors that affect pharmaceutical business;
3. achieve competency in pharmaceutical business marketing including fundamental aspects of markets, consumer research, sales and promotion;
4. achieve competency in health care finance including key elements of budgeting, accounting, public/private financing, and revenue development;;
5. achieve competency in the economics of pharmaceutical business including fundamental concepts of industry structure, government policy, and legal/regulatory issues; and

See Core Requirements for All Business Majors and General University Requirements.

### Degree Requirements

Other courses 12 credit hours

BIO 101	Basic Biology: Organisms	3 cr.
CHEM 101	Modern Chemistry I	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
LAB/NSP XXX	Natural Science Perspective	3-4 cr.
		<b>Subtotal: 12-13</b>

Business Electives 6 credit hours

BUS XXX	Business Elective	6 cr.
		<b>Subtotal: 6</b>

Non business Electives 9 credit hours

NBEL XXX	Non-business Electives	9 cr.
		<b>Subtotal: 9</b>

Required Pharmaceutical Business courses 18 credit hours

BUS 345	Fundamentals of Pharmacy	3 cr.
FIN 382	Healthcare Finance	3 cr.
BIS 412	Business Analytics with SAP	3 cr.
MK 317	Promotional Strategy	3 cr.
MK 322	Sales and Sales Management	3 cr.
MK 323	Distribution Strategy	3 cr.
or		
BIS 336	Logistics/Physical Distribution	3 cr.
		<b>Subtotal: 18</b>

Subtotal: 45-46

Total Credit Hours: 45-46

### Suggested Sequence of Courses

#### Degree Requirements

Freshman Year - Fall Semester

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.

MATH 111	Analysis for Business and Economics	3 cr.
or		
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
BIO 101	Basic Biology: Organisms	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
or		
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 16**

Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
COMM 100	Principles of Communication	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
or		
BIS 102	Problem Solving with Business Tools	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
CHEM 101	Modern Chemistry I	3 cr.

**Subtotal: 15**

Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Junior Year - Fall Semester

BL 201/HONB	Introduction to Business Law	3 cr.
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201			
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.	
MK 317	Promotional Strategy	3 cr.	
BUS 345	Fundamentals of Pharmacy	3 cr.	
MAN 240	Business and Society	3 cr.	
	or		
PH 211	Business Ethics	3 cr.	
		<b>Subtotal: 15</b>	

Junior Year - Spring Semester

NBEL XXX	Non-business Elective	3 cr.	
MK 322	Sales and Sales Management	3 cr.	
ILP XXX	Integrated Liberal Professional Perspective	3 cr.	
HIST XXX	Historical Perspective	3 cr.	
PSY 101	Introduction to Psychology	3 cr.	
	or		
SO 101	Introduction to Sociology	3 cr.	
		<b>Subtotal: 15</b>	

Senior Year - Fall Semester

BIS 312	Quality and Operations Management with SAP	3 cr.	
MK 323	Distribution Strategy	3 cr.	
	or		
BIS 336	Logistics/Physical Distribution	3 cr.	
BUS XXX	Business Elective	3 cr.	
FIN 382	Healthcare Finance	3 cr.	
CUL XXX	Elements of Culture Requirement	3 cr.	
		<b>Subtotal: 15</b>	

Senior Year - Spring Semester

BUS 423	Product Development and Innovation	3 cr.	
	or		
BUS 450	Business Strategy	3 cr.	
BIS 412	Business Analytics with SAP	3 cr.	
NBEL XXX	Non-business Elective	3 cr.	
BUS XXX	Business Elective	3 cr.	
	or		
BUS 480	Internship in Business	3 cr.	
NBEL XXX	Non-business Elective	3 cr.	
LBC 4XX	Learning Beyond the Classroom	No cr.	
		<b>Subtotal: 15</b>	

Subtotal: 122

Total credit hours required for graduation = 122.

\*Students are strongly encouraged to supplement their coursework with the following courses: ILP 345 Pharmaceutical Business Environment, COMM 340 Business Communications, COMM 285 Public Relations, and MAN 201 Interpersonal Skills for Managing.

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way to ensure that all "perspectives of understanding" requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows: all BIS courses or their equivalents.

Sport Management

**Sport Management Major**

**General Information**

The Sport Management program emphasizes the business side of sports. Students majoring in sport management engage in a course of academic study that prepares them for a rewarding career in sport-related organizations. The Sport Management major understands the unique dynamics of the sport industry and is able to mobilize the resources available to meet the mission, goals, and objectives of both the sport organization and its stakeholders. The Sport Management program provides students with the opportunity to develop the knowledge and skills they need to manage within the sport industry. Students are also provided with industry-based learning opportunities and are actively involved in industry-based projects both in the classroom and beyond.

**Career Preparation**

In order to help students understand careers available to Sport Management majors, faculty in the Department of Sport Management designed activities to guide students from career exploration through career implementation. Examples of some of these include:

1. Career Exploration in the freshman year is accomplished through a speaker series, an alumni panel and Sport Management Association activities;
2. Career Investigation in the sophomore year includes classroom assignments in SPMN 250 which look at opportunities in sport industry segments;
3. Career Determination in the junior year is accomplished using projects in SPMN 355 and SPMN 366; and
4. Career Implementation in the senior year is addressed through instruction in networking and sport job search skills in SPMN 465 combined with internships and field experiences.

**Career Opportunities**

The Sport Management major is prepared to assume positions of responsibility in a wide variety of sport organizations in the private and public sectors. Graduates work in the following settings: professional sport, sport facility management, collegiate sport, sports clubs, health and fitness clubs, sports media, and the sporting goods industry.

**Sport Management and Business Law Faculty** (p. 103)

**Program Learning Goals**

Having completed a major in Sport Management, the student will have the ability to:

1. develop an ability to apply managerial competencies to sport organizations;
2. understand internal and external factors that shape sport in a culture;
3. achieve competency in sport marketing including fundamental aspects of sport products, markets, consumer research, sponsorship, and promotion;
4. achieve competency in the finance of sport organizations including key elements of budgeting, accounting, public/private joint financing, and revenue development;
5. achieve competency in legal aspects of sport including state/federal legislation, liability, risk management, contracts, and collective bargaining;
6. achieve competency in the economics of sport including fundamental concepts of supply and demand, economic forecasting, and economic impact assessment;
7. understand the governance and regulation of sport organizations; and
8. understand the key elements of ethical behavior in sport organizations including consideration of both personal and professional ethical systems in sport organization management.

**Practicum, Internship, and Advanced Field Experience Options**

Students majoring in Sport Management are afforded four different kinds of opportunities to apply their classroom learning to field experiences. All Sport Management majors must complete sport-industry based experiences as part of their curriculum.

Sport Management majors may complete a three-credit collegiate athletics course which provides students with the opportunity to plan, organize, and lead various elements of sport-related programming which may include intercollegiate athletic teams, intramurals, recreation, and health and wellness. Students gain hands-on experience in game operations, event management, sport promotion, and athletic communications while working directly under the supervision of Western New England University athletic department staff. The course combines classroom instruction with on-site sport industry experience.

Sport Management majors who meet the University's academic requirements for internships (junior standing and grade point average of 2.5 or above overall and in the major) are eligible for the 3 credit Internship in Sport Management.

Sport Management majors with a grade point average of 3.0 and above are eligible to apply for the Advanced Field Experience (SPMN 460/461) program. This program places students in semester-long, full-time intern positions within a sport organization. In place of the 6 credit hours of business electives, students in this program, earn 6 credit hours through a combination of the work they do at their placement site and a series of papers and presentations relating their field experience to the concepts and principles learned in their courses.

See Core Requirements for All Business Majors (p. 103) and General University Requirements (p. 27) (80 credit hours).

**Degree Requirements****Sport Management Degree Requirements**

SPMN 250	Managing Sport Organizations	3 cr.
SPMN 355	Sport Facility Planning and Management	3 cr.
EC 340	The Economics of Sports	3 cr.
SPMN 366	Sport Marketing	3 cr.
BL 360	Business Law for Sport Management	3 cr.
BL 388	Labor Management Relations in Sport	3 cr.
SPMN 420	International Sport Management	3 cr.
SPMN 465	Seminar in Sport Management	3 cr.
BUS 101	First Year Business Seminar	3 cr.
	And	
SPMN XXX	Sport Management Elective	3 cr.
	or	
SPMN 480	Internship in Sport Management	3 cr.
		<b>Subtotal: 30</b>

**Electives (12 credit hours)**

SPMN XXX	Sport Management Elective	3 cr.
NBEL XXX	Non-business Electives	9 cr.
		<b>Subtotal: 12</b>

Subtotal: 42

Total Credit Hours: 42

**Sport Management Suggested Sequence of Courses****Degree Requirements****Freshman Year - Fall Semester**

BUS 101	First Year Business Seminar	3 cr.
ENGL 132	English Composition I	3 cr.
MATH 111	Analysis for Business and Economics	3 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
HIST XXX	Historical Perspective	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 16</b>

**Freshman Year - Spring Semester**

ENGL 133	English Composition II	3 cr.
QR 112	Quantitative Reasoning for Business	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
	or	
BIS 102	Problem Solving with Business Tools	3 cr.
PSY 101	Introduction to Psychology	3 cr.
	or	
SO 101	Introduction to Sociology	3 cr.
COMM 100	Principles of Communication	3 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 16**

Sophomore Year - Fall Semester

AC 201/HONB 203	Financial Reporting	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
EC 111	Principles of Microeconomics	3 cr.
SPMN 250	Managing Sport Organizations	3 cr.

**Subtotal: 15**

Sophomore Year - Spring Semester

AC 202	Managerial Accounting	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
FIN 214	Introduction to Finance	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
MAN 240	Business and Society	3 cr.
	or	
PH 211	Business Ethics	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Junior Year - Fall Semester

BUS 301	Managing the Established Enterprise	3 cr.
	or	
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
EC 340	The Economics of Sports	3 cr.
SPMN 355	Sport Facility Planning and Management	3 cr.
LAB XXX	Natural Science Perspective	3 cr.

NBEL XXX	Non-business Elective	3 cr.
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**Subtotal: 15**

Junior Year - Spring Semester

BL 360	Business Law for Sport Management	3 cr.
SPMN 420	International Sport Management	3 cr.
CUL XXX	Cultural Perspective	3 cr.
SPMN 366	Sport Marketing	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 15**

Senior Year - Fall Semester

BIS 310	Quality and Operations Management	3 cr.
	or	
BIS 312	Quality and Operations Management with SAP	3 cr.
LAB/NSP XXX	Natural Science Perspective	3 cr.
SPMN XXX	Sport Management Elective	3 cr.
MAN 323	Human Resource Management	3 cr.
NBEL XXX	Non-business Elective	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

BL 388	Labor Management Relations in Sport	3 cr.
BUS 423	Product Development and Innovation	3 cr.
	or	
BUS 450	Business Strategy	3 cr.
SPMN 465	Seminar in Sport Management	3 cr.
XXX	Sport Management Industry Experience	3 cr.
NBEL XXX	Non-business Elective	3 cr.
LBC 4XX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Sport Industry Experience: Course requirement filled with approved sport management field experience offering such as SPMN 480 or SPMN 450.

Total credit hours required for graduation – 122.

Sport Management students must also take MAN 323 as part of their business core requirement.

Students earning less than a B- in ENGL 132 or ENGL 133 will be required to take ENGL 206, Business Writing in sophomore year.

This major offers the option of 6 credits of advanced field experience (using the two business electives above).

Students must take 33 credit hours of coursework in 300-400 level courses. All students must take 12 hours of upper level (300-400) courses in their major at Western New England University.

Non-Business electives must be selected in such a way to ensure that all “perspectives of understanding” requirements have been satisfied.

Courses to be included in computing the 2.0 minimum average in the major are as follows:

All SPMN and BL courses, EC 340, Sport in Society Elective and BUS 450.

## College of Engineering

Dean S. Hossein Cheraghi  
Assistant Dean Richard Grabiec Jr.

The College of Engineering has been preparing students for successful engineering careers for over 50 years. Over that time we have been guided by an operating philosophy that acknowledges that our graduates will play significant roles fundamental to the health of our nation and of our globe. Throughout their careers they and their professional colleagues will advance the technological basis of our nation's economic health, defend our nation, and our way of life with the products of our craft; provide for the improved health and welfare of our citizenry; and improve the quality of life for all humankind—as the engineering profession has always been charged to do. Our graduates assume serious obligations upon beginning their careers.

The faculty is committed to seeing students succeed, with overall excellence in the teaching/learning enterprise being the primary goal. It is the faculty of the College of Engineering that is primarily responsible for developing and maintaining the environment supportive of learning for each student and for encouraging each student to reach for and achieve the highest goals possible.

### The Mission of the College of Engineering

The College of Engineering's mission is to provide undergraduate and graduate students an outstanding education in engineering through an environment of individual attention and support, dedicated and qualified faculty who are recognized in their fields, and modern facilities. Our graduates will possess the education and learning skills that enable them to put theory into practice, be professionally responsible engineers, and be leaders within the global community.

### The Vision of the College of Engineering

The College of Engineering will be recognized as a premier engineering institution with an emphasis on a contemporary undergraduate education, preferred by undergraduate and graduate students, faculty, prospective employers, and graduate schools nationally and internationally.

### The Core Values of the College of Engineering

We support the core beliefs of Western New England University and in particular we value:

#### *Student Centered Learning*

Promoting a learning environment based on a student first approach to ensure the success of our students.

#### *Discovery*

Contributing to the research, development, dissemination, and application of engineering knowledge, integrating theory, and practice

#### *Holistic Engineering and Leadership*

Providing an active learning pedagogy integrating knowledge across disciplines to cultivate leadership and decision making in solving complex problems to better serve humanity

#### *Responsibility*

Demonstrating integrity and accountability in all of our dealings

#### *Ethics and Professionalism*

Leading by actions characterized by ethics and professionalism

#### *Teamwork*

Providing pedagogy and opportunity for the development of successful teaming skills

#### *Community*

Being an active and collaborative part of Western New England University and the local, national, and global community

#### *Diversity and Internationalism*

Respecting the diversity of humankind, including but not limited to cultural, gender, and nationality differences

#### *Continuous Improvement*

Demonstrating successful continuous improvement processes of our College and its programs

### Programs of Study

The College of Engineering offers curricula leading to the degrees:  
Bachelor of Science in Biomedical Engineering (BSBE)  
Bachelor of Science in Civil Engineering (BSCE)

Bachelor of Science in Computer Engineering (BSCPE)  
Bachelor of Science in Electrical Engineering (BSEE)  
Bachelor of Science in Industrial Engineering (BSIE)  
Bachelor of Science in Mechanical Engineering (BSME)

The undergraduate degree programs in Biomedical, Electrical, Industrial, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The faculty realizes the typical tentativeness with which an entering freshman declares a major upon entry. Accordingly, all of the curricula share a common set of courses during the first two semesters of study. Students utilize this time to explore potential career directions and make informed decisions, declaring a degree objective before beginning their second year studies.

All curricula are based on mathematics and the basic sciences coupled with engineering sciences, with specialization beginning in the second year. Each program is structured to build upon preceding coursework, with successively more challenging courses, culminating with a capstone design experience during the fourth year. Each program is intended to prepare students for either entry into professional practice, or advanced formal studies. With 40% of required coursework taught by faculty in the College of Arts and Sciences, each program also integrates liberal and professional learning to provide the balance needed by modern engineering practitioners.

The College of Engineering believes that engineering as a discipline is better learned than taught, and that much of the maturing of students into engineers comes through personal hands-on experiences acquired in laboratory, project, and formal internships at industry sites throughout the Northeast. Through these avenues modern practice plays vital roles in the student's education. Senior projects are very often suggested by, and sometimes conducted in association with, the technical community. The programs are quite flexible in arranging for joint industry-student efforts, and in accommodating the needs of full-time and part-time students. In addition, undergraduate research projects are arranged by the faculty of the College of Engineering.

While undergraduate courses are occasionally offered in the evenings, it is not possible to complete an entire degree program in the evening.

### Transfer Agreements

Recognizing the important role of community colleges in the overall system of higher education and of cooperation among four-year colleges and universities with different emphases, the College of Engineering is making every effort to coordinate its programs with those of other institutions offering programs, such as engineering science, that provide the first two years of engineering study.

To date, joint admission agreements and/or transfer advising guides have been developed with the following community colleges: Greenfield, Holyoke, Berkshire, Hudson Valley, Manchester Technical, Quinsigimond, Asnuntuck, and Springfield Technical. Other agreements are being developed.

College of Engineering Special Academic Opportunities

Accelerated Five-Year and Six-Year Engineering Programs (p. 19)

Grand Challenges

### **Honors: A Mark of Distinction**

The Honors distinction in the College of Engineering at Western New England University gives students added depth and breadth to their engineering education by taking introductory level courses with an Honors cohort of like-minded engineering students, then selecting interdisciplinary courses or research experiences in their engineering major. This distinction on your academic record is an ideal way to show graduate schools and potential employers that you are a person who takes the extra step to learn and excel.

### **Honors Program**

The College of Engineering Honors Program at Western New England University is not a major in itself, but is open to students in any engineering field. It provides academically qualified and motivated students with a challenging pace of study, opportunities for broader consideration of core course themes, and advanced work in their areas of interest, which can be done individually and/or with the cohort, and under mentorship of the faculty.

### **Admission**

Entering freshmen who have met the GPA and SAT and/or ACT recommendation will automatically be invited to apply to the College of Engineering Honors Program. Students who do not meet these criteria but still strongly wish to be considered for acceptance into the Program are also encouraged to apply. Qualified students will receive an invitation from the Honors Program Coordinator requesting confirmation of interest. Students accepting this invitation will subsequently be notified of admission to the College of Engineering Honors Program and then, be registered for the first engineering Honors course during Summer Orientation and Registration Program (SOAR).

### **Requirements**

Students who have been admitted to the College of Engineering Honors Program must complete a selection of HON or HONE courses to meet the 18 semester-hours minimum, plus an honors project/thesis in their senior year in order to graduate with the University Honors. All honors students will be part of the cohort taking the following core courses:

HONE 102 First Year Engineering Seminar

HONE 105 Computer Programming for Engineers

HONE 110 Data Acquisition and Processing

HONE 205 Circuits I- Electrical Engineering I

Students, sophomore status and above, also have the option of taking a faculty-directed research course (HONE 240, HONE 340) and/or Independent Study Course (HON 333/HONE 333) as two of their six honors courses, in addition to the honors-by-contract courses in their engineering major. Honors-by-contract courses are arrangements between the student and the sponsoring faculty, to allow the student to go above and beyond the regular topics covered in the standard course and increase their depth of knowledge in the subject area.

### **Senior Honors Project/Thesis**

Each College of Engineering Honors program senior works closely with a faculty advisor to develop a final project. Students must submit an Honors project as approved and overseen by the Honors Committee in the College of Engineering.

College of Engineering Department Chairs and Faculty

#### *Biomedical Engineering Faculty*

#### **Department of Biomedical Engineering**

Professor: Judy Cezeaux, Chair

Associate Professors: Anthony English, Robert Gettens, Michael Rust

Assistant Professor: Brent L. Ulrey

#### *Civil and Environmental Engineering Faculty*

#### **Department of Civil and Environmental Engineering**

Professor: Kenneth Lee, Chair

Assistant Professors: Behzad Behnia, Seunghee Kim, Moochul Shin

#### *Mechanical Engineering Faculty*

#### **Department of Mechanical Engineering**

Professor: Said Dini, Chair

Professors: Mohammed Khosrowjerdi, Bart Lipkens

Associate Professors: Richard Mindek, Glenn Vallee, Mary Bazan Vollaro

Assistant Professors: Jennifer Mallory, Jose Riofrio, Anthony Santamaria

Professors Emeriti: Robert Azar, Alan Karplus, Walter Presz, Henry Sundberg, Richard Veronesi

#### *Electrical and Computer Engineering Faculty*

#### **Department of Electrical and Computer Engineering**

Associate Professor: Neeraj Magotra, Chair

Professors: Steven Northrup, Kouros Rahnamai

Associate Professors: John Burke, James Moriarty

Assistant Professors: Stephen Adamshick, Ruolin (Jennifer) Zhou

Professors Emeriti: William Bradley, Stephen Crist, Rene Dube, James Masi, Ronald Musiak

#### *Industrial Engineering Faculty*

#### **Department of Industrial Engineering and Engineering Management**

Associate Professor: Julie Drzymalski, Interim Chair

Professors: S. Hossein Cheraghi, Richard Grabiec, Thomas Keyser

Associate Professor:

Assistant Professors: Zhaoujun (Steven) Li, Matthew Romoser, Christian M. Salmon

Professor Emeriti: Eric Haffner

### Pre-Engineering

#### Admission to the College of Engineering

The admission to any undergraduate program in the College of Engineering at Western New England University is based on the undergraduate admission criteria for the College. A student may be admitted to the College of Engineering in two ways: directly into a major or as a pre-engineering student. A student is admitted directly into a major only if all College of Engineering admission criteria are met.

#### Engineering Major

Incoming students who meet all admission criteria will be admitted into one of the following majors: Biomedical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Industrial Engineering, or Mechanical Engineering . A student who meets the requirements for entering into a major within the College of Engineering, but is unsure of which major to pursue, may be admitted as an undeclared (ENGR) engineering student. A common curriculum for the first two semesters is provided for all engineering majors. Since the actual time required for completion of the curriculum will depend on the individual student’s ability and prior preparation, personal consultations with engineering faculty advisors permit students to participate in both the determination of their current status and the planning and scheduling of further coursework.

#### Pre-Engineering Student

Students not admitted into one of the above majors may be admitted as pre-engineering students and should take the prescribed pre-engineering program of study specified by the College of Engineering. A student’s academic performance will be monitored by their engineering faculty adviser. Students can advance into an engineering major when the admissions criteria specified by the College of Engineering are satisfied. A pre-engineering student may not enroll in any College of Engineering courses except for ENGR 100 and ENGR 105 until they have been certified by the College of Engineering as meeting the qualifications for placement as an engineering major.

Conditions for placement into an engineering major include the following:

- a) A grade of “C-” or higher in both Calculus I and II (Math 133, and 134) with the average of the two grades being at least a “C”.
- b) A grade of “C” or higher in PHYS 133 or PHYS 132
- c) A minimum cumulative GPA of 2.0

Since the actual time required for completion of the curriculum will depend on the individual student’s ability and prior preparation, personal consultations with their engineering faculty advisor permit students to participate in both the determination of their current status and the planning and scheduling of further coursework.

### Degree Requirements

#### Pre-Engineering Student First-Year Course of Study

Based upon the results of a mathematics placement exam and demonstrated proficiency in the mathematics in high school or pre-calculus in College, a pre-engineering student could qualify to be placed into MATH 133, and PHYS 133 in the Fall semester and MATH 134, PHYS 134, and ENGR 105 in the Spring semester.

#### Freshmen Year - Fall Semester

ENGL 132	English Composition I	3 cr.
ENGR 100	Engineering Seminar & College Success Skills	2 cr.
MATH 109	Pre-Calculus Mathematics	3 cr.
PHYS 131	Elements of Mechanics I	3 cr.
ENGR 105	Computer Programming for Engineers	2 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 14**

#### Freshmen Year - Spring Semester

ENGL 133	English Composition II	3 cr.
MATH 130	Problem Solving in Calculus	1 cr.
MATH 133	Calculus I	4 cr.
PHYS 132	Elements of Mechanics II	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 13**

Subtotal: 27

Total Credit Hours: 27

### College of Engineering Requirements

A common curriculum for the first two semesters is provided for all engineering students. Since the actual time required for completion of the curriculum will depend on the individual student’s ability and prior preparation, personal consultations with engineering faculty advisors permit students to participate in both the determination of their current status and the planning and scheduling of further coursework.

Course prerequisites are used to identify the competencies required for enrollment in a course. As a result, enrollment in any course is contingent upon successful completion of all course prerequisites. A student may, however, petition the course instructor for a waiver of prerequisite(s). Applications for requesting an exception are available in the dean’s office. The application must be completed and signed by the student, faculty instructor, chair of the department that offers the course, and the Dean of Engineering.

Engineering majors can apply no more than 25% of business coursework to their graduation requirements.

#### Mathematical Analysis

MATH 133 (Calculus I) and MATH 134 (Calculus II) have been designated as the two mathematics foundation courses by the College of Engineering. A minimum grade of C- is required in MATH 133 in order to be allowed to continue into MATH 134. Furthermore, a minimum grade of C- is required in MATH 134 and an average grade of C or better is required in the mathematics foundation courses in order to proceed into the sophomore level engineering courses BME 201, ME 202, EE 205 and CEE 251.

## Degree Requirements

### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
ENGR 102	First Year Engineering Seminar	1 cr.
ENGR 103	Introduction to Engineering	4 cr.
MATH 133	Calculus I	4 cr.
PEHR 151	Personal Health and Wellness	1 cr.
PHYS 133	Mechanics	4 cr.

**Subtotal: 17**

### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
ENGR 105	Computer Programming for Engineers	2 cr.
ENGR 110	Data Acquisition and Processing	3 cr.
MATH 134	Calculus II	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.
PHYS 134	Electricity and Magnetism	4 cr.

**Subtotal: 17**

Individual curricula in Biomedical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering are given in the major programs section of the Catalogue.

### Design Experience

In the freshman year, students are introduced to engineering design, entrepreneurship, and product development and innovation in the Introduction to Engineering courses. Sophomore and junior courses and laboratories provide progressively more sophisticated design experiences within the student's discipline. All programs culminate in a capstone Senior Design Project course in which students work on projects under the supervision of a faculty advisor. Topics for some projects are supplied by industry. Students who select one of these topics have the opportunity to work with the industrial sponsor in an actual engineering setting.

### Electives (Undergraduate Programs)

General Education electives supplement the engineering student's technical program. These electives must be selected in such a way that all General Education "perspectives of understanding" requirements are covered. In addition, technical, design, and general electives provide the opportunity for specialization within a chosen field. An assigned departmental faculty advisor must approve selection of electives from Engineering, Arts and Sciences, or Business.

### Learning Beyond the Classroom (Undergraduate Programs)

The University is committed to making learning beyond the classroom (LBC) a significant element of every full-time undergraduate student's academic program and personal experience. It is envisioned that through the process of applying their classroom learning to their experiences in the workplace, in the community, on the playing fields, and across the campus, our students will not only enhance their learning, but will also begin to connect their learning more directly to the world in which they live. For these reasons, all students will be required to complete one LBC experience for every two years of full-time study.

## Biomedical Engineering

### Biomedical Engineering Major

#### General Information

Biomedical engineers have the unique ability to serve as a bridge between engineering and medicine. The rapid advancement of high technology into all medical specialties has increased the demand for engineers who have a depth of knowledge in both engineering and physiology. Biomedical engineers make significant contributions to society by improving patient care and ultimately improving the quality of life for others.

Western New England University provides Biomedical Engineering students with a solid engineering background and an in-depth understanding of human physiology, anatomy, and biology necessary to be a successful biomedical engineer. The curriculum is designed for maximum flexibility, allowing students to choose elective courses that are of most interest. In the junior and senior year, students choose four "sequence electives," two technical electives, as well as a series of five general education courses that fulfill the University's requirement for a perspective on ethics, history, aesthetics, integrated liberal and professional learning, cultural studies, and social and behavioral issues. Students are exposed to the major physiological systems during each of the final four semesters through laboratory work, courses, and through the capstone Senior Design Project.

The program leading to the B.S.B.E. degree is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>. Accreditation affirms our quality.

#### Career Opportunities

The Biomedical Engineering program at Western New England University is designed to prepare students for either immediate employment or for admission to graduate or medical school. Demand for biomedical engineers is growing as more and more technology is finding its way into all branches of medicine. Since the field of biomedical engineering is so broad, many of our graduates choose to specialize their knowledge in graduate or professional school by pursuing an M.S., Ph.D, or M.D. degree. Our graduates are working in the medical instrumentation and device industry, pharmaceutical companies, biotechnology companies, research facilities, and hospitals.

#### Biomedical Engineering Faculty (p. 136)

#### Mission

The mission of the Biomedical Engineering program is to provide students with a supportive environment that facilitates learning to solve engineering problems related to medicine and biology in an ethically responsible manner.

The Biomedical Engineering program is committed to excellence in student learning. Graduates of the program will be problem solvers, able to apply engineering principles to the interface between living and non-living systems. The faculty and staff of the BME program use their diverse background in teaching, research, and industry to prepare students to be successful leaders in biomedical engineering as they move into the workforce, graduate school, or professional school.

#### Defining Characteristics

The Biomedical Engineering program:

- provides students opportunities to learn and apply core engineering principles to solve problems related to medicine or biology, emphasizing the need for interdisciplinary approaches;
- gives students opportunities to apply theory with practice-oriented laboratory, industrial or clinical experiences;
- produces engineers who can communicate well at all levels within an organization;
- delivers a dynamic curriculum that is continuously updated with input from practitioners and researchers in the field of biomedical engineering;
- promotes biomedical engineering as a career choice; and
- serves both the biomedical engineering community and society.

**Program Educational Objectives**

Graduates of the Western New England University Biomedical Engineering Program will

- function successfully in a variety of environments including industry, hospitals/clinics, government, graduate school or professional school;
- function as productive team members and leaders to solve engineering problems, including those at the interface of medicine and engineering;
- have an awareness of safety, ethics, sustainability and/or societal concerns in their professional endeavors;
- communicate complex technical concepts, both in written and oral communication, to diverse audiences; and
- be actively engaged in life-long learning such as participating or leading in relevant professional societies, continuing their education, or attending relevant workshops, meetings, or seminars.

**Program Outcomes**

The outcomes for the Biomedical Engineering program were chosen so that graduates will be prepared to meet the program objectives. Thus, graduates of the Biomedical Engineering program will have:

- an ability to apply knowledge of mathematics, science, and engineering;
- an ability to design and conduct experiments, as well as to analyze and interpret data;
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- an ability to function on multidisciplinary teams;
- an ability to identify, formulate, and solve engineering problems;
- an understanding of professional and ethical responsibility;
- an ability to communicate effectively;
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
- a recognition of the need for, and an ability to engage in life-long learning;
- a knowledge of contemporary issues; and

- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

See College of Engineering Requirements (p. 137) and General University Requirements (p. 27).

**Degree Requirements**

**Freshman Year - Fall Semester**

ENGL 132	English Composition I	3 cr.
ENGR 102	First Year Engineering Seminar	1 cr.
ENGR 103	Introduction to Engineering	4 cr.
MATH 133	Calculus I	4 cr.
PEHR 151	Personal Health and Wellness	1 cr.
PHYS 133	Mechanics	4 cr.
		<b>Subtotal: 17</b>

**Freshman Year - Spring Semester**

ENGL 133	English Composition II	3 cr.
ENGR 110	Data Acquisition and Processing	3 cr.
MATH 134	Calculus II	4 cr.
ENGR 105	Computer Programming for Engineers	2 cr.
PEHR 153-199	Lifetime Activity	1 cr.
PHYS 134	Electricity and Magnetism	4 cr.
		<b>Subtotal: 17</b>

**Sophomore Year - Fall Semester**

BME 201	Foundations of Biomedical Engineering	3 cr.
BIO 107	General Biology I	3 cr.
CHEM 105	General Chemistry I	4 cr.
EE 205	Electrical Engineering I	4 cr.
MATH 236	Differential Equations	3 cr.
		<b>Subtotal: 17</b>

**Sophomore Year - Spring Semester**

BME 202	Biomedical Systems	3 cr.
BME 206	Biomedical Sophomore Laboratory	1 cr.
BME 240	Biomaterials	3 cr.
CHEM 106	General Chemistry II	4 cr.
IE 212	Probability and Statistics	3 cr.
MATH 235	Calculus III	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 17</b>

**Junior Year - Fall Semester**

BME 301	Engineering Physiology I	3 cr.
BME 305	Biomedical Engineering Laboratory I	1 cr.

BME 331	Bioinstrumentation	3 cr.
MATH 350	Engineering Analysis I	3 cr.
BME xxx	Sequence Elective	3 cr.
SBP XXX	Social/Behavioral Perspective	3 cr.
		<b>Subtotal: 16</b>

## Junior Year - Spring Semester

BME 302	Engineering Physiology II	3 cr.
BME 306	Biomedical Engineering Laboratory II	1 cr.
BME 350	Biomedical Thermal Systems	3 cr.
BME 351	Biomechanics I	3 cr.
BME xxx	Sequence Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.
		<b>Subtotal: 16</b>

## Senior Year - Fall Semester

BME 405	Biomedical Engineering Senior Laboratory	1 cr.
BME 437	Senior Design Projects I	3 cr.
BME 451	Biomechanics II	3 cr.
BME xxx	Sequence Elective	3 cr.
BME xxx	Technical Elective	3 cr.
PH XXX	Ethical Perspective	3 cr.
		<b>Subtotal: 16</b>

## Senior Year - Spring Semester

BME 440	Senior Design Projects II	4 cr.
xxx	Technical Elective	3 cr.
BME xxx	Sequence Elective	3 cr.
CUL XXX	Cultural Perspective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 16</b>

1. General Education courses must be selected in such a way to insure that all "perspective of understanding" requirements have been satisfied.

2. Premedical students and those students interested in upper-level biology courses need to take BIO 117 concurrently with BIO 107 and overload to 18 credit hours for this semester. See premedical students (p. 141) for additional requirements.  
Subtotal: 132

The 2.0 required minimum grade point average in the major is based upon all BME courses pursued as a part of the student's degree program.

**Biomedical Engineering Technical Elective**

Any course labeled BME xxx that is not part of the required curriculum may be used to fulfill the BME technical elective.

**Technical Elective**

Any 200-level or above math or science course or any 300-level or above engineering course may be used to fulfill the technical elective.

Total Credit Hours: 132

**Biomedical Engineering Sequence Electives**

In the junior and senior years, there are a series of four "sequence elective" courses for which the students may choose one of the following sequences of courses. Additional sequences are possible but must be made in consultation with the student's academic advisor.

**Sequence Electives****Bioinstrumentation Sequence**

BME 332	Biomedical Imaging	3 cr.
CPE 271	Digital Design	4 cr.
BME 431	Advanced Bioinstrumentation	3 cr.
BME 434	Biosensors, BioMEMS, and Nanomedicine	3 cr.

**Biomaterials Sequence**

CHEM 211	Analytical Methods	3 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
CHEM 317	Physical Chemistry I	3 cr.
CHEM 327	Physical Chemistry Laboratory I	1 cr.

Plus two of the following three courses:

BME 434	Biosensors, BioMEMS, and Nanomedicine	3 cr.
BME 443	Advanced Biomedical Materials and Medical Devices	3 cr.
ME 322	Manufacturing Processes	3 cr.

**Biomedical Micro and Nanodevices Sequence**

CHEM 211	Analytical Methods	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
BIO 203	Microbiology	4 cr.
BME 432	Lab on a Chip	3 cr.
BME 434	Biosensors, BioMEMS, and Nanomedicine	3 cr.

**Cell and Tissue Engineering Sequence**

CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 314	Biochemistry	3 cr.
BME 460	Cell and Tissue Engineering	3 cr.

**Computer Sequence**

CPE 305	Firmware Design for Embedded Systems	3 cr.
CPE 271	Digital Design	4 cr.
CPE 310	Microprocessors I	3 cr.

CPE 462	VHDL: Simulation and Synthesis	3 cr.
Entrepreneurial Sequence		
ENTR 251	Entrepreneurship and Innovation	3 cr.
ENTR 326	Venture Feasibility	3 cr.
BME 423	Product Development and Innovation	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
Management Sequence		
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
MAN 201	Interpersonal Skills for Leading	3 cr.
MAN 323	Human Resource Management	3 cr.
MAN 370	Project Management	3 cr.
	or	
MAN 422	Conflict Resolution	3 cr.
Manufacturing Sequence		
IE 326	Production Planning and Control	3 cr.
IE 312	Engineering Economic Analysis	3 cr.
ME 322	Manufacturing Processes	3 cr.
IE 315	Quality Control and Engineering Statistics	3 cr.
Marketing Sequence		
MK 200/HONB 200	Principles of Marketing	3 cr.
MK 301	Buyer Behavior	3 cr.
MK 317	Promotional Strategy	3 cr.
BME 423	Product Development and Innovation	3 cr.
Mechanics Sequence		
ME 322	Manufacturing Processes	3 cr.
ME 425	Design of Machine Elements	3 cr.
ME 449	Computer-Aided Engineering	3 cr.
IE 312	Engineering Economic Analysis	3 cr.
Medical Imaging Sequence		
EE 314	Fields and Waves	3 cr.
PHYS 301	Optics	3 cr.
BME 332	Biomedical Imaging	3 cr.
BME 335	Medical Image Processing	3 cr.
Public Policy Sequence		
POSC 102	American National Government	3 cr.
POSC 205	Public Administration	3 cr.
POSC 218	Public Policy in America	3 cr.

POSC 321	The U.S. Congress	3 cr.
POSC 322	The U.S. Presidency	3 cr.
Premedical Sequence		
BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 314	Biochemistry	3 cr.

**Premedical Students**

Biomedical Engineering students intending to apply to medical school are advised to select the premedical elective sequence and seek the advice of their BME advisor and the campus premedical advisor as soon as practical.

Additional courses in Genetics, Cellular Physiology, and Human Anatomy are available through the Cooperating Colleges of Greater Springfield (CCGS).

**University-Wide Requirements:** A total of five University-wide requirement courses are listed in the Biomedical Engineering curriculum. These courses will be used to satisfy the requirement that all Western New England University students attain a perspective on: Ethics, History, Aesthetics, Integrated Liberal and Professional Learning, Cultural Studies, and Social and Behavioral issues. In addition to these courses a student is required to have two “learning beyond the classroom” (LBC) experiences that have been summarized with two 1,000-word essays connecting the student’s experience to the student’s profession.

**Accelerated Six-year Engineering/Law Program**

Certain Biomedical Engineering students have the opportunity to accelerate their attainment of a BS in Biomedical Engineering and a Law degree. Entrance requirements and standards necessary to maintain a tentative acceptance to the School of Law can be found in the “Six-year Engineering/Law Program” section of this catalogue.

Students choosing this unique curricular path will need to closely follow a prescribed sequence of courses and should consult closely with their BME advisor. The first two years of study will remain the same as the BME curriculum. The third year will change slightly to accommodate the senior year when the student will take both Engineering and School of Law courses. Some summer School of Law courses will be necessary after the fourth year.

**Five-Year Bachelor/MBA Program**

This program allows undergraduate Biomedical Engineering majors in the College of Engineering to accelerate the completion of the bachelor’s degree in Biomedical Engineering (BSBE) and to earn the master’s degree in Business Administration (MBA) with just one additional year of study.

**Five-Year Bachelor/MSEM Program**

This program allows undergraduate Biomedical Engineering majors in the College of Engineering to accelerate the completion of the bachelor’s degree in Biomedical Engineering (BSBE) and to earn the

master's degree in Engineering Management (MSEM) with just one additional year of study.

### Civil and Environmental Engineering

## Civil Engineering Major

### General information

Our nation's success has been built on the foundation of our solid infrastructure. Today, thousands of public works projects in the United States are in desperate need of repair and many more new infrastructure developments are necessary to keep our country competitive in the global community. There has never been a greater need for talented civil and environmental engineers to plan, execute, and lead these important projects.

The College of Engineering's Civil Engineering major educates students to become leaders in this important and in-demand profession. The Civil Engineering major provides students with a broad and well-integrated background in the concepts, theories, and methodologies needed to plan, design, analyze, develop, organize, and manage civil and environmental engineering projects. Students work with state-of-the-art equipment in our new concrete/structures, transportation, environmental/water resources, and soil mechanics laboratories.

The Civil Engineering major focuses on the latest advances in the design, construction, and maintenance of society's infrastructure – roads, railroads, buildings, airports, seaports, tunnels, dams, bridges, pipelines, water treatment and supply networks, and environmental systems. Students study major areas of civil engineering: structural engineering, transportation engineering, geotechnical engineering, environmental engineering, water resources engineering, and construction engineering. Students also study alternative/renewable energy, sustainable materials, and green building laws.

Civil Engineering students select one of three concentrations starting their junior year. They can select the Civil Engineering concentration, the Environmental Engineering concentration, or the Reservoir Engineering concentration. The first two years of the curriculum are the same for all Civil Engineering students. The selection of courses for the last two years is moderately different depending on the concentration. Note that any concentration leads to a successful career in civil engineering and selection of concentration should be based on personal preference and in consultation of career goals with an academic advisor.

The Western New England University College of Engineering will request accreditation of the Civil Engineering program upon compliance with the criteria for accreditation set forth by the Engineering Accreditation Commission (EAC). The criteria states that "ABET accreditation can be granted only if at least one student has graduated from the designated program." It is anticipated that the initial accreditation visit of the Civil Engineering program will be held during the September-December time period of 2017. An action to accredit the Civil Engineering program at that time will result in a retroactive accreditation being granted to those students who graduated during the two academic years prior to the on-site accreditation visit.

### Career Opportunities

The Civil Engineering concentration provides a solid foundation in major sub-disciplines of civil engineering that leads to employment in both private and public sectors of industry or military. Examples of career opportunities include city/county/state organizations, federal agencies, and small to large private engineering firms. The career

outlook for civil engineers is bright as the Bureau of Labor Statistics projects an employment growth rate of 20% over the decade of 2012-2022.

The Environmental Engineering concentration provides a solid foundation in major sub-disciplines of civil engineering with an emphasis on environmental and water resources engineering. This concentration leads to employment in both private and public sectors of industry or military. Examples of career opportunities include state and federal agencies, water or wastewater treatment plants, environmental laboratories, and small to large private engineering firms. The career outlook for environmental engineers is bright as the Bureau of Labor Statistics projects an employment growth rate of 15% over the decade of 2012-2022.

The Reservoir Engineering concentration provides a solid foundation in major sub-disciplines of civil engineering with an emphasis on reservoir engineering. This concentration leads to employments in both private and public sectors of industry. Examples of career opportunities include state and federal agencies, private petroleum companies, and small to large private engineering firms.

### Electives

Electives supplement the engineering student's technical program. These electives must be selected in such a way that all General Education "perspective of understanding" requirements are covered. In addition, technical, design, and general electives provide the opportunity for specialization within a chosen field. An assigned departmental faculty advisor must approve selection of electives from engineering, mathematics, science, or business.

### Vision

The vision of the Department of Civil and Environmental Engineering is to be regionally, nationally and internationally recognized in providing civil engineering education, leading to well-qualified engineers who are innovative, immediate contributors to their profession and successful in advanced studies.

### Mission

The mission of the Civil Engineering program is to provide students with a supportive environment that facilitates learning to solve problems in civil and environmental engineering. The faculty and staff of the program use their background in teaching, research, and industry to prepare students to be successful as they move into the workforce or graduate school.

### Educational Objectives

Our graduates will:

- Demonstrate a strong fundamental scientific and technical knowledge base and critical thinking skills.
- Actively engage in lifelong learning related to the civil engineering profession.
- Plan, design, analyze, develop, organize and manage civil and environmental engineering projects.
- Demonstrate expertise in major sub-disciplines of civil engineering: structural engineering, transportation engineering, geotechnical engineering, environmental and water resources engineering.

### Program Outcomes

The outcomes necessary to achieve our program objectives are that our students will have:

- an ability to apply knowledge of mathematics, science, and engineering;
- an ability to design and conduct experiments, as well as to analyze and interpret data;

3. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
4. an ability to function on multidisciplinary teams;
5. an ability to identify, formulate, and solve engineering problems;
6. an understanding of professional and ethical responsibility;
7. an ability to communicate effectively;
8. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
9. a recognition of the need for, and an ability to engage in lifelong learning;
10. a knowledge of contemporary issues;
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Civil and Environmental Engineering Faculty (p. 136)

### Degree Requirements

#### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
ENGR 102	First Year Engineering Seminar	1 cr.
ENGR 103	Introduction to Engineering	4 cr.
MATH 133	Calculus I	4 cr.
PHYS 133	Mechanics	4 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 17</b>

#### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
ENGR 105	Computer Programming for Engineers	2 cr.
ENGR 110	Data Acquisition and Processing	3 cr.
MATH 134	Calculus II	4 cr.
PHYS 134	Electricity and Magnetism	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 17</b>

#### Sophomore Year - Fall Semester

CEE 251	Surveying	3 cr.
CEE 253	Surveying Laboratory	1 cr.
ME 202	Statics	3 cr.
CHEM 105	General Chemistry I	4 cr.
MATH 236	Differential Equations	3 cr.
SBP XXX	Social/Behavioral Sciences Perspective	3 cr.
		<b>Subtotal: 17</b>

#### Sophomore Year - Spring Semester

CEE 230	Engineering Geology	3 cr.
CEE 240	Strength of Civil Engineering Materials	3 cr.

CEE 242	Strength of Civil Engineering Laboratory	1 cr.
ME 203	Dynamics	3 cr.
CHEM 106	General Chemistry II	4 cr.
MATH 235	Calculus III	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 17</b>

### Civil Engineering Concentration

Starting junior year, a student may choose the Civil Engineering concentration, the Environmental Engineering concentration, or the Reservoir Concentration. The Civil Engineering concentration is well suited for students planning on a career in structural engineering, transportation engineering, geotechnical engineering, or water resources engineering.

### Degree Requirements

#### Junior Year - Fall Semester

CEE 341	Structural Analysis	3 cr.
CEE 351	Transportation Engineering	3 cr.
CEE 353	Transportation Engineering Laboratory	1 cr.
CEE 361	Engineering Fluid Mechanics	3 cr.
IE 212	Probability and Statistics	3 cr.
CUL XXX	Cultural/Aesthetic Perspective	3 cr.
		<b>Subtotal: 16</b>

#### Junior Year - Spring Semester

CEE 320	Environmental Engineering	3 cr.
CEE 322	Environmental Engineering Laboratory	1 cr.
CEE 330	Soil Mechanics	3 cr.
CEE 332	Soil Mechanics Laboratory	1 cr.
CEE 342	Steel & Reinforced Concrete Design	3 cr.
HIST XXX	Historical Perspective	3 cr.
xxx	Technical or Design Elective	3 cr.
		<b>Subtotal: 17</b>

#### Senior Year - Fall Semester

CEE 430	Geotechnical Engineering	3 cr.
CEE 451	Construction Materials	3 cr.
CEE 453	Construction Materials Laboratory	1 cr.
CEE 461	Water Resources Engineering	3 cr.
xxx	Technical or Design Elective	3 cr.
PH XXX	Ethical Perspective	3 cr.
		<b>Subtotal: 16</b>

#### Senior Year - Spring Semester

CEE 400	Ethical and Professional Issues	1 cr.
CEE 402	Capstone Design	3 cr.
CEE 470	Construction Engineering	3 cr.
IE 312	Engineering Economic Analysis	3 cr.
xxx	Technical or Design Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
<u>LBC XXX</u>	<u>Learning Beyond the Classroom</u>	<u>No cr.</u>
		<b>Subtotal: 16</b>

Subtotal: 65

1. Technical or design electives are engineering, math, science, or computer courses normally numbered 300 or above and approved by the advisor.

2. General Education courses must be selected in such a way to insure all "perspectives of understanding" (p. 34) requirements have been satisfied.

3. General elective. Selected on approval of the academic advisor.

Total credit hours required for graduation - 132.

The 2.0 required minimum grade point average in the major is based upon all CEE courses pursued as a part of the student's degree program.

Total Credit Hours: 65

### Environmental Engineering Concentration

The Environmental Engineering concentration is well suited for students planning on a career in environmental engineering, water resources engineering, or geotechnical engineering.

### Degree Requirements

#### Junior Year - Fall Semester

CEE 341	Structural Analysis	3 cr.
CEE 351	Transportation Engineering	3 cr.
CEE 353	Transportation Engineering Laboratory	1 cr.
CEE 361	Engineering Fluid Mechanics	3 cr.
IE 212	Probability and Statistics	3 cr.
CHEM 209	Organic Chemistry I	3 cr.
<u>CHEM 219</u>	<u>Organic Chemistry Laboratory I</u>	<u>1 cr.</u>
		<b>Subtotal: 17</b>

#### Junior Year - Spring Semester

CEE 320	Environmental Engineering	3 cr.
CEE 322	Environmental Engineering Laboratory	1 cr.
CEE 324	Groundwater Engineering	3 cr.
CEE 330	Soil Mechanics	3 cr.
CEE 332	Soil Mechanics Laboratory	1 cr.
CEE 342	Steel & Reinforced Concrete Design	3 cr.

<u>HIST XXX</u>	<u>Historical Perspective</u>	<u>3 cr.</u>
		<b>Subtotal: 17</b>
<b>Senior Year - Fall Semester</b>		
CEE 430	Geotechnical Engineering	3 cr.
CEE 461	Water Resources Engineering	3 cr.
ME 303	Thermodynamics I	3 cr.
xxx	Technical or Design Elective	3 cr.
<u>CUL XXX</u>	<u>Cultural/Aesthetic Perspective</u>	<u>3 cr.</u>
		<b>Subtotal: 15</b>

#### Senior Year - Spring Semester

CEE 400	Ethical and Professional Issues	1 cr.
CEE 402	Capstone Design	3 cr.
CEE 470	Construction Engineering	3 cr.
IE 312	Engineering Economic Analysis	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.
<u>PH XXX</u>	<u>Ethical Perspective</u>	<u>3 cr.</u>
		<b>Subtotal: 16</b>

Subtotal: 65

1. Technical or design electives are engineering, math, science, or computer courses normally numbered 300 or above and approved by the advisor.

2. General Education courses must be selected in such a way to insure all "perspectives of understanding" (p. 34) requirements have been satisfied.

3. General elective. Selected on approval of the academic advisor.

Total credit hours required for graduation - 133.

The 2.0 required minimum grade point average in the major is based upon all CEE courses pursued as a part of the student's degree program.

### Reservoir Engineering Concentration

The Reservoir Engineering concentration is well suited for students planning on a career in reservoir engineering or water resources engineering.

### Degree Requirements

#### Junior Year - Fall Semester

CEE 341	Structural Analysis	3 cr.
CEE 351	Transportation Engineering	3 cr.
CEE 353	Transportation Engineering Laboratory	1 cr.
CEE 361	Engineering Fluid Mechanics	3 cr.
IE 212	Probability and Statistics	3 cr.
<u>CUL XXX</u>	<u>Cultural/Aesthetic Perspective</u>	<u>3 cr.</u>
		<b>Subtotal: 16</b>

Junior Year - Spring Semester

CEE 320	Environmental Engineering	3 cr.
CEE 322	Environmental Engineering Laboratory	1 cr.
CEE 324	Groundwater Engineering	3 cr.
CEE 330	Soil Mechanics	3 cr.
CEE 332	Soil Mechanics Laboratory	1 cr.
CEE 342	Steel & Reinforced Concrete Design	3 cr.
HIST XXX	Historical Perspective	3 cr.

**Subtotal: 17**

Senior Year - Fall Semester

CEE 411	Petroleum Fluids & Reservoir Engineering	3 cr.
CEE 430	Geotechnical Engineering	3 cr.
CEE 461	Water Resources Engineering	3 cr.
xxx	Technical or Design Elective	3 cr.
PH XXX	Ethical Perspective	3 cr.

**Subtotal: 15**

Senior Year - Spring Semester

CEE 400	Ethical and Professional Issues	1 cr.
CEE 402	Capstone Design	3 cr.
CEE 412	Petrophysics and Reservoir Geomechanics	3 cr.
CEE 470	Construction Engineering	3 cr.
IE 312	Engineering Economic Analysis	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 16**

Subtotal: 64

1. Technical or design electives are engineering, math, science, or computer courses normally numbered 300 or above and approved by the advisor.

2. General Education courses must be selected in such a way to insure all "perspectives of understanding" (p. 34) requirements have been satisfied.

3. General elective. Selected on approval of the academic advisor.

Total credit hours required for graduation - 132.

The 2.0 required minimum grade point average in the major is based upon all CEE courses pursued as a part of the student's degree program.

Electrical and Computer Engineering

**Electrical and Computer Engineering Majors**

**General Information**

Electrical and Computer engineers are at the forefront of today's technological revolution and they continue to be in demand in all

types of public and private enterprises. The value added in today's products is primarily electronics and software. The Internet has filled our lives with their influences. Electrical and Computer engineering touch every aspect of today's modern world. Our graduates are uniquely qualified to become engineers, capable of designing hardware and software. Electrical and Computer engineers work in the communications, controls, signal and image processing, biomedical, aerospace, electronics, computer hardware, embedded systems, materials, energy, defense, data gathering / analysis and other diverse commercial sectors.

The Electrical and Computer Engineering programs provide the student with a thorough background in electronic/hardware and systems design. Individual students can tailor their program to his or her specific interests by selecting appropriate technical or design electives. Elective areas include electronics, and land-based wireless communications, VLSI, digital signal processing (DSP), power electronics, controls, robotics, image processing, and embedded systems. In all of our courses, we stress the balance of theory and practice. The theory, presented in class, is coupled with extensive, practical, hands-on laboratory projects and experiments.

Our laboratories are well equipped and all facilities are available for undergraduate use. Our laboratory equipment is updated on a rotating basis, allowing for a continued renewal and state-of-the-art technology in a rapidly changing world.

Electrical and Computer Engineering Laboratories:

- Embedded Systems Laboratory
- Controls and Artificial Intelligence Laboratory
- Robotics / Mechatronics Laboratory
- Circuits Laboratory
- Electronics Laboratory
- Energy / Power Laboratory
- RF / Wireless Laboratory
- Digital Signal/Image Processing and Communications Laboratory
- Projects Laboratory

Access is also provided to the following laboratories in other engineering departments as needed:

- Bioinstrumentation Laboratory
- Biomedical Engineering Physiology Laboratory
- Industrial Engineering Laboratory
- Mechanical Engineering Laboratory

Additionally, a fully equipped Machine Shop is available to students as well as a Rapid Prototyping STL machine.

The program leading to the BSEE degree is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

The Western New England University College of Engineering will request ABET accreditation of the Computer Engineering program

(leading to the BSCPE degree) upon compliance with the criteria for accreditation set forth by the Engineering Accreditation Commission (EAC). The criteria states that "ABET accreditation can be granted only if at least one student has graduated from the designated program." It is anticipated that the initial accreditation visit of the Computer Engineering program will be held during the September-December time period of 2016. An action to accredit the Computer Engineering program at that time will result in a retroactive accreditation being granted to those students who graduated during the academic year prior to the on-site accreditation visit

### **Design Experience**

Students in the Electrical Engineering program and Computer Engineering program are introduced to engineering design in the freshman year in the Introduction to Engineering courses. Sophomore and junior courses and labs provide progressively more sophisticated design experiences within the electrical engineering program and computer engineering program respectively. Both programs culminate in a year-long capstone Senior Design Project course in which each student works on an independent project under the supervision of a faculty advisor. Most of the projects are sponsored by industry. Students involved in these projects have the opportunity to work with the industrial sponsor in an actual engineering environment.

### **Electives**

Electives, in both programs, supplement the engineering student's technical program. These electives must be selected in such a way that all General Education "perspective of understanding" requirements are covered. In addition, technical, design, and general electives provide the opportunity for specialization within a chosen field. An assigned departmental faculty advisor must approve selection of electives from engineering, mathematics, science, or business.

### **Electrical and Computer Engineering Faculty (p. 136)**

### **Electrical and Computer Engineering Vision and Mission**

#### ***Vision***

The Electrical Engineering and Computer Engineering programs at Western New England University will become nationally recognized for graduating students that have experienced putting theory into practice and are also capable of succeeding in advanced studies.

#### ***Mission***

The mission of the Electrical Engineering and Computer Engineering programs is to provide students with a supportive environment that facilitates learning to solve problems in electrical engineering.

The Electrical and Computer Engineering programs are committed to excellence in student learning. Graduates of the programs will be problem solvers, able to apply engineering principles to electrical and computer systems. The faculty and staff of the programs use their background in teaching, research, and industry to prepare students to be successful as they move into the workforce or graduate school.

### **Program Educational Objectives**

In support of the program objectives for the College of Engineering, the Electrical Engineering and Computer Engineering programs will prepare our students to be proficient at putting theory into practice,

capable of lifelong learning, and be aware of the social, ethical, and environmental issues associated with their professional activities.

To ensure these goals, our specific expected accomplishments of our graduates during the first several years following graduation for the program are:

1. to be successful analyzing, designing, or testing electrical/computer systems;
2. to be a productive member of a team;
3. to be assuming leadership roles in their career;
4. to be contributing in professional and civic service; and
5. to be pursuing lifelong learning.

### **Student Outcomes**

The outcomes necessary to achieve our Electrical Engineering program and Computer Engineering program objectives are that our students will have:

- a. an ability to apply knowledge of mathematics, science, and engineering;
- b. an ability to design and conduct experiments, as well as to analyze and interpret data;
- c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- d. an ability to function on multidisciplinary teams;
- e. an ability to identify, formulate, and solve engineering problems;
- f. an understanding of professional and ethical responsibility;
- g. an ability to communicate effectively;
- h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
- i. a recognition of the need for, and an ability to engage in lifelong learning;
- j. a knowledge of contemporary issues;
- k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;
- l. an ability to model, analyze, simulate, and design circuits and systems;
- m. an ability to use computer and/or laboratory tools in the design of circuits and systems;
- n. an ability to build, test, and debug prototype circuits and systems and analyze results; and
- o. an ability to use the principles of design to solve open-ended engineering problems

### **Career Opportunities**

The application areas for electrical and computer engineering are fairly ubiquitous and our Electrical and Computer Engineering programs provide a broad based education that leads to employment

in a diverse spectrum of industries in both private and public sectors, for example, aerospace, defense, telecommunications, automotive, medical electronics, multimedia and consumer electronic industries, energy and power. In particular we offer courses in electronic communications, power electronics, robotics, artificial intelligence, controls, digital signal/image processing, hardware design, architecture, software and hardware design, and embedded systems, power generation and distribution, alternative energy sources and integrating renewable forms of energy into the grid.

To provide additional depth in some of these areas the department offers Program Sequence Options (p. 149) as listed below.

- Robotics/Mechatronics Sequence
- Digital Signal/Image Processing and Communications Sequence
- RF/Microwave Engineering Sequence
- Controls/Artificial Intelligence Sequence
- Energy/Green Sequence
- Flex Sequence

These Sequence Options have been described in detail following the Electrical Engineering program and Computer Engineering program degree requirements.

### Degree Requirements

#### Freshman Year- Fall Semester

ENGL 132	English Composition I	3 cr.
ENGR 102	First Year Engineering Seminar	1 cr.
ENGR 103	Introduction to Engineering	4 cr.
MATH 133	Calculus I	4 cr.
PHYS 133	Mechanics	4 cr.
PEHR 151	Personal Health and Wellness	1 cr.

**Subtotal: 17**

#### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
ENGR 105	Computer Programming for Engineers	2 cr.
ENGR 110	Data Acquisition and Processing	3 cr.
MATH 134	Calculus II	4 cr.
PHYS 134	Electricity and Magnetism	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.

**Subtotal: 17**

#### Sophomore Year - Fall Semester

CHEM 105	General Chemistry I	4 cr.
EE 205	Electrical Engineering I	4 cr.

ME 202	Statics	3 cr.
MATH 236	Differential Equations	3 cr.
SBP XXX	Social/Behavioral Perspective	3 cr.

**Subtotal: 17**

#### Sophomore Year - Spring Semester

CPE 271	Digital Design	4 cr.
EE 206	Electrical Engineering II	4 cr.
EE 285	Computational Techniques in C	3 cr.
MATH 235	Calculus III	3 cr.
PH XXX	Ethical Perspective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 17**

Subtotal: 68

### Electrical Engineering Program

Graduates of the Electrical Engineering Program have the ability to apply their knowledge and skills in a variety of professional electrical engineering positions dealing with research, design, manufacturing, and operation of equipment and services including power, control, communication, computer, optical and electro-optical systems, consumer electronics, household appliances, and electrical and electronic devices and materials. They can also apply for advanced graduate studies.

### Degree Requirements

#### Junior Year - Fall Semester

IE 212	Probability and Statistics	3 cr.
EE 301	Signals and Systems	3 cr.
EE 303	Introduction to Microelectronic Circuits I	3 cr.
EE 314	Fields and Waves	3 cr.
EE 319	Electrical Engineering Laboratory I	2 cr.
CUL XXX	Cultural Perspective	3 cr.

**Subtotal: 17**

#### Junior Year - Spring Semester

EE 302	Introduction to Digital Signal Processing	3 cr.
EE 312	Semiconductor Devices	3 cr.
EE 320	Introduction to Microelectronic Circuits II	3 cr.
EE 323	Electrical Engineering Laboratory IIa	1 cr.
EE 324	Electrical Engineering Laboratory IIb	1 cr.
xxx	Technical Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.

**Subtotal: 17**

#### Senior Year - Fall Semester

EE 422	Control Systems	3 cr.
EE 450	Power Electronics	3 cr.
EE 427	Electrical Engineering Laboratory III	2 cr.
EE 436	Project Research, Innovation and Development	2 cr.
EE 439	Professional Awareness	1 cr.
xxx	Design Elective	3 cr.
xxx	Technical Elective	3 cr.

**Subtotal: 17****Senior Year - Spring Semester**

EE 440	Senior Design Projects	3 cr.
GEN XXX	General Elective	3 cr.
xxx	Technical Elective	3 cr.
xxx	Design Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

1. Technical electives are engineering, math, science, or computer courses normally numbered 300 or above and approved by the advisor.
2. General Education courses must be selected in such a way to insure that all "perspective of understanding" requirements have been satisfied.
3. Design electives must be selected from a list published in each semester's course schedule and approved by the advisor.
4. General elective. Selected on approval of the academic advisor.

Subtotal: 66

Total credit hours required for graduation – 134.

The 2.0 required minimum grade point average in the major is based upon all CPE and EE courses pursued as a part of the student's degree program.

**Computer Engineering Program**

Graduates of the Computer Engineering Program have the ability to apply their knowledge and skills in a variety of professional engineering positions dealing with research, design, manufacturing, operation, and service of small or large computer hardware, software, and embedded systems. They can also apply for advanced graduate studies.

**Degree Requirements****Junior Year - Fall Semester**

IE 212	Probability and Statistics	3 cr.
CPE 310	Microprocessors I	3 cr.
EE 301	Signals and Systems	3 cr.
EE 303	Introduction to Microelectronic Circuits I	3 cr.

CPE 305	Firmware Design for Embedded Systems	3 cr.
EE 319	Electrical Engineering Laboratory I	2 cr.

**Subtotal: 17****Junior Year - Spring Semester**

CPE 355	Real Time Embedded Kernels	3 cr.
CPE 360	Microprocessors II	4 cr.
EE 302	Introduction to Digital Signal Processing	3 cr.
EE 320	Introduction to Microelectronic Circuits II	3 cr.
EE 323	Electrical Engineering Laboratory IIa	1 cr.
CUL XXX	Cultural Perspective	3 cr.

**Subtotal: 17****Senior Year - Fall Semester**

CPE 420	Computer Architecture	3 cr.
CPE 427	Computer Engineering Laboratory	2 cr.
CPE 436	Project Research, Innovation and Development	2 cr.
CPE 439	Professional Awareness	1 cr.
HIST XXX	Historical Perspective	3 cr.
xxx	Design Elective	3 cr.
CPE 462	VHDL: Simulation and Synthesis	3 cr.

**Subtotal: 17****Senior Year - Spring Semester**

CPE 470	Real-time Embedded Controls	3 cr.
CPE 440	Senior Design Projects	3 cr.
GEN XXX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
xxx	Technical Elective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

1. General Education courses must be selected in such a way to insure that all "perspective of understanding (p. 27)" requirements have been satisfied.
2. Design electives must be selected from a list published in each semester's course schedule and approved by the advisor.
3. Technical electives are engineering, math, science, or computer courses normally numbered 300 or above and approved by the advisor.
4. General elective. Selected on approval of the academic advisor.

Subtotal: 66

Total credit hours required for graduation – 134.

The 2.0 required minimum grade point average in the major is based upon all CPE and EE courses pursued as a part of the student's degree program.

## Program Sequence Options

There are several program sequence options within the Electrical Engineering and Computer Engineering programs as listed below.

- Robotics/Mechatronics Sequence
- Digital Signal/Image Processing and Communications Sequence
- RF/Microwave Engineering Sequence
- Controls/Artificial Intelligence Sequence
- Energy/Green Sequence
- Flex Sequence

The student can select a sequence option by appropriately tailoring their choice of electives during their junior and senior years. Each sequence option has been described below, along with a list of typical courses used to provide the required depth in the area. These lists are by no means exhaustive; the student makes his or her selection of sequence electives in consultation with their faculty advisor.

### ***Robotics/Mechatronics Sequence***

Robotics/Mechatronics represents an integrated technology approach for the design of intelligent systems and products. Intelligent systems driven primarily by human operator inputs are considered mechatronic systems; smart washing machines would be a good example. Intelligent systems driven primarily by automatic/sensor and adaptive inputs are robotic systems; the Google Driverless car would be a good example. The Robotics / Mechatronics sequence is intended for students who want to focus in this area while working on their BSEE degree. Students in the Electrical Engineering or Computer Engineering programs can elect to take this sequence by an appropriate selection of technical electives during their junior and senior years and completing their senior project in this area.

The sequence electives provide coverage of the following topics:

- embedded programming and computing
- sensors and actuators
- adaptive control and environmental interactions
- computer vision and navigation

Typical courses:

EE302 Introduction to Digital Signal Processing

CPE360 Microprocessors II

EE422 Control Systems

CPE470 Real-time Embedded Controls

CPE VHDL - Simulation and Systems

### ***Digital Signal/Image Processing(DSIP) and Communications Sequence***

Over the past couple of decades DSIP/Communication applications have become ubiquitous. Technical advances in this field have enabled cellular telephony, high definition television (HDTV), web-based applications like Facebook, Twitter, advanced medical devices,

digital instrumentation, remote sensor systems, software defined radio (SDR), and cognitive radio systems to name a few examples. The DSIP/Communications sequence is intended for students who want to focus in this area while working on their BSEE degree. Students in the Electrical Engineering or Computer Engineering programs can elect to take this sequence by an appropriate selection of technical electives during their junior and senior years and completing their senior project in this area. Students have access to a wide range of professional computer tools and labs.

The sequence electives provide coverage of the following topics –

- digital signal processing
- digital image processing
- digital communications
- software defined radio based cognitive radio
- sensor processing systems (e.g. radar, seismic, space probes)

Typical courses:

EE302 Introduction to Digital Signal Processing

EE411 Random Signals and Noise

EE423 Communications

EE432 Wireless Communications

EE425 Linear Systems Theory

### ***Controls and Artificial Intelligence Sequence***

*Modern Control Theory* Utilizing state-space analysis, where the dynamics of the processes are described by first-order differential equations in matrix form, has made an enormous impact on the analysis and design of controllers for complex systems. In recent years, modern control theory has advanced rapidly and is now recognized as an indispensable and practical technique for the design and analysis of feedback control systems in diverse areas such as aeronautics, autonomous vehicles, space craft systems design etc. *Artificial Intelligence* The field of artificial intelligence or soft-computing utilizes Neural Networks and Fuzzy Logic. In recent years, there has been an explosive growth in applications of neural networks, in part due to the advances in computational power. Neural networks, neurocomputing, or 'brain-like' computing is based on the hope that we can reproduce at least some of the flexibility and power of the human brain by artificial means. Similarly, Fuzzy logic tries to mimic the human cognitive processes. Applications of these technologies abound in many consumer products such as camcorders, air conditioners, refrigerators, automobiles etc. These technologies are applied in a variety of fields such as; signal processing, speech recognition, visual perception, control, robotics and many more.

Our controls and artificial intelligence sequence will give students expertise in the areas of industrial automation, aerospace control and artificial intelligence.

The sequence electives provide coverage of the following topics:

- Linear Systems Theory
- Fuzzy Logic
- Neural Networks
- Computer Controlled Systems

Typical courses:

EE422 Control Systems  
 EE445 Neural Networks  
 EE470 Computer Controlled Systems  
 EE435 Fuzzy Logic  
 EE425 Linear Systems Theory

### ***RF/Microwave Engineering Sequence***

RF/Microwave Engineering Sequence represents an integrated technology approach for the design of high frequency systems and products. The students in the RF/Microwave Engineering Sequence are exposed to different aspects of applied electromagnetics including antennas design, the design of high frequency passive and active circuits, the design high frequency systems, etc. This sequence is designed to meet the growing needs of companies for engineers skilled in high frequency circuit design. The RF/Microwave Engineering Sequence is intended for students who want to focus in this area while working on their BSEE degree. Students in the Electrical Engineering program can elect to take this sequence by an appropriate selection of technical electives during their junior and senior years and completing their senior project in this area.

The sequence electives provide coverage of the following topics:

- Fields and Waves
- Microwave Engineering
- RF & Microwave Wireless Systems
- RF & Microwave Active Circuit Design
- Wave Transmission and Reception
- Software Defined Radio

Typical courses:

EE314 Fields and Waves  
 EE414 Microwave Engineering  
 EE416 Electromagnetic Compatibility  
 EE455 RF and Microwave Wireless Systems  
 EE456 RF and Microwave Active Circuit Design  
 EE457 Wave Transmission and Reception

### ***Energy/Green Engineering Sequence***

The Energy/Green Energy sequence provides students in the Electrical Engineering program with an understanding of energy issues critical to our environment in addition to a solid background in electrical engineering. It offers electives such as power generation and distribution, energy management, and alternative energy sources. Focus is also provided on integrating renewable forms of energy into the grid. The Energy/Green sequence provides the necessary skills for a successful career in this field. The concentration includes three "green" electives that may be taken within or outside of EE major. The area topics covered by these electives are Power Electronics, Motor Control, and Energy Converter/Inverters. These electives can be selected from an approved list in consultation with the academic advisor.

In addition to electrical power stations where students gain experience in working with AC and DC electrical machines, they also

have access to a Renewable Energy laboratory, a shared resource with the ME department. That laboratory contains over a kilowatt of solar panels, a one-kilowatt conventional wind turbine, a weather station, and a geothermal heating and cooling system, all of which is fully instrumented.

The sequence electives provide coverage of the following topics:

- Power Transmission
- Power Generation
- Integration of power generated by alternative sources (wind, solar, etc.) into the grid
- Monitoring and Control
- Smart Grid
- Motors

Typical courses:

EE336 Electrical Energy Systems  
 EE338 Electrical Drives  
 EE434 Electrical Energy Convertors/Invertors  
 EE450 Power Electronics  
 CPE310 Microprocessors I

### ***Flex Sequence***

The Flex sequence is intended for students who want to obtain a basic degree in Electrical Engineering (BSEE) but also want to specialize in a related area of particular interest to them. The course of study for the Flex sequence is identical to that of the Electrical Engineering or Computer Engineering programs with the added flexibility of selecting in the junior/senior years, three electives to help diversify the student's area of interest.

In general, the sequence options could be from other engineering disciplines or from the College of Arts and Sciences, College of Business, or College of Pharmacy.

The three electives must represent a coherent set in areas such as entrepreneurship, mechatronics, marketing, computer science, audio, etc. They must be selected in consultation with the student's academic adviser and department chair in accordance with departmental guidelines.

## **Five-Year Bachelor/MSEE Program**

This program allows undergraduate Electrical Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Electrical Engineering (BSEE) and to earn the master's degree in Electrical Engineering (MSEE) with just one additional year of study.

## **Five-Year Bachelor/MBA Program**

This program allows undergraduate Electrical and Computer Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Engineering and to earn the

master's degree in Business Administration (MBA) with just one additional year of study.

### Five-Year Bachelor/MSEM Program

This program allows undergraduate Electrical and Computer Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Engineering and to earn the master's degree in Engineering Management (MSEM) with just one additional year of study.

Industrial Engineering

### Industrial Engineering Major

#### General Information

The Industrial Engineering curriculum prepares engineers to design, improve, install, and operate integrated systems of people, materials, and equipment needed by industry, commerce, and society. Industrial engineers prevent anticipated problems as well as solve current problems by applying the principles of engineering science, operations research, computer science, work analysis, product and process design and planning, human factors, quality assurance, and management. The curriculum is designed to provide strength in mathematics, basic science, and engineering science plus a carefully coordinated set of courses that are particularly relevant to the professional industrial engineer.

While providing Industrial Engineering students with a theoretical base, the IE program also emphasizes practical application of engineering principles to real problems and products. The program provides intensive laboratory and hands-on project work sponsored by local companies each year. Students obtain significant hands-on project experience before they graduate.

The program leading to the BSIE degree is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

#### Career Opportunities

Upon completion, students are prepared to pursue a wide variety of professional opportunities in industrial, commercial, and public service enterprises. The curriculum provides an excellent background for advanced study in industrial engineering, operations research, computer science, engineering management, business administration, law, and other fields.

#### Industrial Engineering Faculty (p. 136) (p. 136)

The Department of Industrial Engineering and Engineering Management's primary goal is to effectively teach industrial engineering at the undergraduate level and engineering management at the graduate level. The department is guided by our Advisory Board which consists of Alumni, Faculty from other Industrial Engineering programs, and working professionals from local, regional, and national companies. We are very proud of our students who continue to be very successful sought after individuals who constantly serve as ambassadors for our program. Industrial Engineering (IE) at Western New England University will be a regional and national leader in communicating engineering knowledge and innovation associated with designing, operating, and improving processes for producing and delivering products and services. Industrial Engineering will educate the utilization of resources, including people, equipment, capital, materials, information, and energy. This will be accomplished by the use of classroom, and laboratory instruction supplemented by repeated

exposure to actual industrial projects in "learning beyond the classroom" opportunities.

#### Program Mission

As a strategic partner in alliance with the mission of the University, we strive to educate engineers who have the ability to help their organizations make the most effective use of resources, including people, equipment, capital, materials, information, and energy. Our graduates will enable their organization to be productive, flexible, and customer oriented. They will apply engineering skills to design effective systems and to devise procedures with which to operate these systems. And, they will continuously strive to improve both themselves through continuous education, and their organizations through avoidance and elimination of harmful or wasteful practices. Specifically, IE seeks to:

1. educate engineers who will be successful in their professional careers;
2. educate engineers who understand the metrics of an organization and what it takes to be a successful member of that organization;
3. provide selected research and services to industry and government to meet their specific needs;
4. contribute to the advancement of the IE profession through faculty leadership; and
5. enhance the overall reputation of the College of Engineering and Western New England University.

#### Educational Objectives

The Educational Objectives of the Industrial Engineering program describe the expected achievements of graduates four to six years after graduation. Graduates of the BSIE program will achieve the following:

1. successful application of contemporary tools, knowledge, experience, and critical thinking to effectively solve engineering problems;
2. implementation of effective solutions which successfully integrate people, materials, information, equipment, capital, and energy;
3. effective collaboration and communication in individual and team settings;
4. contribute as well-informed, ethical, and dependable members of society; and
5. continually increase their knowledge and experience throughout their career.

#### Program Outcomes

The outcomes that we strive for our students to possess:

1. an ability to apply knowledge of mathematics, science, and engineering;
2. an ability to design and conduct experiments, as well as to analyze and interpret data;
3. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health, and safety, manufacturability, and sustainability;
4. an ability to function on multi-disciplinary teams;
5. an ability to identify, formulate, and solve engineering problems;

6. an understanding of professional and ethical responsibility;
7. an ability to communicate effectively;
8. an ability to apply their broad education toward the understanding of the impact of engineering solutions in a global, economic, environmental, and societal context;
9. a recognition of the need for, and the ability to engage in lifelong learning;
10. a knowledge of contemporary issues; and
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## Degree Requirements

### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
ENGR 102	First Year Engineering Seminar	1 cr.
ENGR 103	Introduction to Engineering	4 cr.
MATH 133	Calculus I	4 cr.
PEHR 151	Personal Health and Wellness	1 cr.
PHYS 133	Mechanics	4 cr.
		<b>Subtotal: 17</b>

### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
ENGR 105	Computer Programming for Engineers	2 cr.
ENGR 110	Data Acquisition and Processing	3 cr.
MATH 134	Calculus II	4 cr.
PHYS 134	Electricity and Magnetism	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 17</b>

### Sophomore Year - Fall Semester

CHEM 105	General Chemistry I	4 cr.
ME 202	Statics	3 cr.
EE 205	Electrical Engineering I	4 cr.
MATH 236	Differential Equations	3 cr.
SBP XXX	Social/Behavioral Perspective	3 cr.
		<b>Subtotal: 17</b>

### Sophomore Year - Spring Semester

AC 201/HONB 203	Financial Reporting	3 cr.
IE 212	Probability and Statistics	3 cr.
MATH 235	Calculus III	3 cr.
xxx	Mathematics or Basic Science Elective	3 cr.
PH XXX	Ethical Perspective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 15</b>

### Junior Year - Fall Semester

IE 308	Work Analysis and Design	3 cr.
IE 312	Engineering Economic Analysis	3 cr.
IE 318	Mathematical Programming for Engineers	2 cr.
IE 326	Production Planning and Control	3 cr.
IE 419	Industrial Engineering Computer Applications	3 cr.
CUL XXX	Cultural Perspective	3 cr.
		<b>Subtotal: 17</b>

### Junior Year - Spring Semester

ME 322	Manufacturing Processes	3 cr.
IE 315	Quality Control and Engineering Statistics	3 cr.
IE 328	Lean Six-Sigma for Engineers	2 cr.
IE 334	Computer Simulation and Design	3 cr.
xxx	Technical or Design Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.
		<b>Subtotal: 17</b>

### Senior Year - Fall Semester

IE 429	Design and Analysis of Experiments	3 cr.
IE 428	Facility Design & Material Handling	2 cr.
IE 439	Senior Design Projects I	3 cr.
xxx	Technical or Design Elective	3 cr.
GEN XXX	General Elective	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
		<b>Subtotal: 17</b>

### Senior Year - Spring Semester

IE 420	Industrial Engineering Operations Research	3 cr.
IE 440	Senior Design Projects II	3 cr.
xxx	Technical Elective	3 cr.
xxx	Design Elective	3 cr.
GEN XXX	General Elective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.
		<b>Subtotal: 15</b>

1. General Education courses must be selected in such a way to insure that all "perspective of understanding (p. 27)" requirements have been satisfied.
2. Mathematics or Basic Science Electives are biological, chemical, or physical sciences courses or mathematics course 300 level or above.

3. Technical or design electives are engineering, math, or science courses normally numbered 300 or above or courses approved by the department chair.

4. General Elective. Selected on approval of the academic advisor.  
Subtotal: 132

Total credit hours required for graduation –132.

The 2.0 required minimum grade point average in the major is based upon all IE courses pursued as a part of the student's degree program. In addition, a minimum grade of C is required in all IE design projects.

### Five-Year Bachelor/MSEM Program

This program allows undergraduate Industrial Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Industrial Engineering (BSIE) and to earn the master's degree in Engineering Management (MSEM) with just one additional year of study.

### Five-Year Bachelor/MBA Program

This program allows undergraduate Industrial Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Industrial Engineering (BSIE) and to earn the master's degree in Business Administration (MBA) with just one additional year of study.

Mechanical Engineering

## Mechanical Engineering Major

### General Information

Mechanical engineering is one of the broadest and most diverse of the engineering disciplines and affects all aspects of our lives. It involves the application of science and technology essential to industry, government, environment, and society. Mechanical engineers design, analyze, build, test, and control mechanical devices and systems. They are involved in the design and development of automobiles, airplanes, satellites, robots, power plants, machine tools, material handling systems, medical devices and instrumentation, communications equipment, semiconductor devices, heating and air-conditioning systems, consumer products, and alternative energy systems. Mechanical engineers contribute on interdisciplinary teams to work in emerging areas such as advanced manufacturing processes, mechatronics, nanotechnology and green engineering technology. Mechanical engineering is generally recognized as the engineering discipline that offers the broadest choice of technical career directions.

The Mechanical Engineering curriculum provides a thorough background in thermal and mechanical systems and mechanical design. By selecting an appropriate group of technical and design electives, a student can concentrate in either thermal and fluid science or mechanical design. Thermal and fluid science electives include courses related to energy conversion, aerodynamics, introduction to flight, and turbomachinery design. Mechanical design electives include courses in stress analysis and computer-aided design, material selection, and metrology. The coursework is coupled with extensive practical hands-on experience in modern well-equipped laboratories. The use of computers to aid in engineering analysis and design is emphasized throughout the curriculum.

Students can choose to study either the broad areas of thermal-fluid sciences or mechanical design or select from two concentrations: 1) Green Engineering Concentration with courses in renewable energy, alternative energy systems, and green engineering; and 2)

Mechatronics Engineering Concentration that is a blend of mechanical and electrical engineering. The program leading to the BSME degree is accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org>.

### Career Opportunities

Mechanical engineers are employed in all types of industry and government. They work in research, product development, product design, manufacturing, consulting, and sales. Our graduates are employed at Allston Power, UTC Aerospace Systems, Disney, FloDesign, Goodrich, Northrup Grumman, Pratt and Whitney, United Technologies Research Center, General Dynamics, Boeing, Lockheed-Martin, Otis, Carrier, Hasbro-Bradley, General Motors, NASA, Electric Boat, Andersen Consulting, General Electric, Smith and Wesson, American Saw, Northeast Utilities, Rolls Royce, Areva, Gerber Scientific Research, Spalding Sports Worldwide, Sikorsky, Westinghouse, BAE systems, and many others. Mechanical Engineering graduates have also become physicians and patent attorneys. Mechanical engineers occupy executive positions in many large corporations and others have gone on to become entrepreneurs and founded their own companies.

### Design Experience

Students are introduced to engineering design in the freshman year; sophomore, junior, and senior courses provide progressively more sophisticated design experiences within the student's discipline. All programs are culminated by a capstone Senior Design Project course in which a student works on an independent project under the supervision of a faculty advisor. A majority of the projects involve a collaboration with an industry partner. A student who selects one of these topics has the opportunity to work with the industrial sponsor in an actual engineering experience.

### Electives

Electives supplement the engineering student's technical program. These electives must be selected in such a way that all General Education "perspective of understanding" requirements are covered. In addition, technical, design, and general electives provide the opportunity for specialization within a chosen field. The student's departmental faculty advisor must approve the selection of electives from engineering, mathematics, science, or business.

### Vision

The vision of the Department of Mechanical Engineering is to be regionally, nationally, and internationally recognized in providing mechanical engineering education, leading to well qualified engineers who are innovative, immediate contributors to their profession and successful in advanced studies.

### Mission

The mission of the Department of Mechanical Engineering is to educate, prepare, inspire and mentor students to excel as professionals and to grow throughout their careers in the art, science, and responsibilities of engineering. This is accomplished by:

- providing the facilities and environment conducive to a high quality education, well grounding the students in the fundamental principles of engineering and preparing them for diverse careers; and
- engaging in academic and scholarly activities, which strengthen the program's regional, national, and international reputation.

### Educational Objectives

The objectives of the Mechanical Engineering program are to produce graduates whose careers and professional behavior are marked consistently by:

1. technical competency in solving engineering problems, consistent with the ethics of the profession, and serving the needs of local, national, and multinational communities and enterprises with concern for social, economic, and environmental constraints;
2. advancement in their professional careers, including increased technical or managerial responsibility, and the attainment of promotions and leadership positions;
3. successful management of engineering projects of varying scope;
4. effective technical and non-technical communication and teamwork; and
5. a commitment to continuing professional education.

#### Program Outcomes

Accordingly, the Program Outcomes of the Department of Mechanical Engineering are to educate graduates who by the time of graduation will be able to demonstrate:

1. an ability to apply knowledge of mathematics, science, and engineering;
2. an ability to design and conduct experiments, as well as to analyze and interpret data;
3. an ability to design a system, component, or process to meet desired needs;
4. an ability to function on multidisciplinary teams;
5. an ability to identify, formulate, and solve engineering problems;
6. an understanding of professional and ethical responsibility;
7. an ability to communicate effectively;
8. an ability to apply their broad education toward the understanding of the impact of engineering solutions in a global and societal context;
9. a recognition of the need for, and the ability to engage in life-long learning;
10. a knowledge of contemporary issues; and
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

#### Mechanical Engineering Faculty (p. 136)

#### Degree Requirements

##### Freshman Year - Fall Semester

ENGL 132	English Composition I	3 cr.
ENGR 102	First Year Engineering Seminar	1 cr.
ENGR 103	Introduction to Engineering	4 cr.
MATH 133	Calculus I	4 cr.
PHYS 133	Mechanics	4 cr.
PEHR 151	Personal Health and Wellness	1 cr.
		<b>Subtotal: 17</b>

##### Freshman Year - Spring Semester

ENGL 133	English Composition II	3 cr.
ENGR 105	Computer Programming for Engineers	2 cr.
ENGR 110	Data Acquisition and Processing	3 cr.
MATH 134	Calculus II	4 cr.
PHYS 134	Electricity and Magnetism	4 cr.
PEHR 153-199	Lifetime Activity	1 cr.
		<b>Subtotal: 17</b>

##### Sophomore Year - Fall Semester

CHEM 105	General Chemistry I	4 cr.
EE 205	Electrical Engineering I	4 cr.
MATH 236	Differential Equations	3 cr.
ME 202	Statics	3 cr.
SBP XXX	Social/Behavioral Perspective	3 cr.
		<b>Subtotal: 17</b>

##### Sophomore Year - Spring Semester

IE 212	Probability and Statistics	3 cr.
MATH 235	Calculus III	3 cr.
ME 203	Dynamics	3 cr.
ME 205	Measurement Computing	2 cr.
ME 208	Mechanics of Materials	3 cr.
LBC 2XX	Learning Beyond the Classroom	No cr.
PH XXX	Ethical Perspective	3 cr.
		<b>Subtotal: 17</b>

Subtotal: 68

#### Mechanical Engineering Course of Study

#### Degree Requirements

##### Junior Year - Fall Semester

MATH 350	Engineering Analysis I	3 cr.
ME 303	Thermodynamics I	3 cr.
ME 309	Materials Science	3 cr.
ME 311	Mechatronics	3 cr.
ME 313	Mechanical Laboratory I	2 cr.
CUL XXX	Cultural/Aesthetic Perspective	3 cr.
		<b>Subtotal: 17</b>

##### Junior Year - Spring Semester

ME 304	Thermodynamics II	3 cr.
ME 314	Mechanical Laboratory II	2 cr.
ME 316	Fluid Mechanics	3 cr.
ME 320	Mechanical Vibrations	3 cr.
	Engineering/Science Elective	3 cr.
HIST XXX	Historical Perspective	3 cr.

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<b>Subtotal: 17</b>		
Senior Year - Fall Semester		
ME 417	Heat Transfer	3 cr.
ME 425	Design of Machine Elements	3 cr.
ME 423	Product Development and Innovation	3 cr.
ME 439	Professional Awareness	1 cr.
ME 449	Computer-Aided Engineering	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.

**Subtotal: 16**

Senior Year - Spring Semester		
IE 312	Engineering Economic Analysis	3 cr.
ME 440	Senior Design Projects	3 cr.
GEN XXX	General Elective	3 cr.
xxx	Design Elective	3 cr.
xxx	Engineering Elective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

Subtotal: 65

1. *General Education courses must be selected in such a way to insure that all "perspectives of understanding (p. 27)" requirements have been satisfied.*
2. *An engineering, math, or science course usually numbered 300 or above selected from a list published by the Mechanical Engineering Department and approved by the faculty advisor.*
3. *A design elective is selected from a list published in each semester's course schedule.*
4. *An engineering course usually numbered 300 or above and approved by the faculty advisor.*
5. *General Elective selected on approval of the academic advisor.*

Total credit hours required for graduation– 133.

The 2.0 required minimum grade point average in the major is based upon all ME courses pursued in the student's degree program.

Total Credit Hours: 65

### Green Engineering Concentration

As the growth of the world's populations and economies puts an ever increasing strain on the social and physical environment, today's engineers are faced with developing solutions that use renewable energy sources, reduce waste energy, minimize the impact on the environment, reduce poverty in the world, and provide prosperity for all.

In the junior year, a student may choose to remain in the general mechanical engineering course of study or specialize with a concentration in Green Engineering.

The Green Engineering Concentration is designed to satisfy the need for mechanical engineers with a thorough knowledge of (1) renewable energy sources such as wind, water, solar, and geothermal energy, (2) power generation, distribution, and management, (3)

energy management, (4) principles of green engineering, and (5) life cycle analysis and materials selection for alternative energy systems.

### Degree Requirements

Junior Year - Fall Semester

MATH 350	Engineering Analysis I	3 cr.
ME 303	Thermodynamics I	3 cr.
ME 309	Materials Science	3 cr.
ME 311	Mechatronics	3 cr.
ME 313	Mechanical Laboratory I	2 cr.
CUL XXX	Cultural/Aesthetic Perspective	3 cr.

**Subtotal: 17**

Junior Year - Spring Semester

EE 336	Electrical Energy Systems	3 cr.
ME 314	Mechanical Laboratory II	2 cr.
ME 316	Fluid Mechanics	3 cr.
ME 318	Design of Solar Energy Systems	3 cr.
ME 320	Mechanical Vibrations	3 cr.
HIST XXX	Historical Perspective	3 cr.

**Subtotal: 17**

Senior Year - Fall Semester

ME 415	Wind/Water Turbine Fundamentals	3 cr.
ME 417	Heat Transfer	3 cr.
ME 425	Design of Machine Elements	3 cr.
ME 439	Professional Awareness	1 cr.
ME 423	Product Development and Innovation	3 cr.
xxx	Engineering Design Elective - Green	3 cr.

**Subtotal: 16**

Senior Year - Spring Semester

IE 312	Engineering Economic Analysis	3 cr.
ME 440	Senior Design Projects	3 cr.
ME 449	Computer-Aided Engineering	3 cr.
	Engineering Elective - Green	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

1. *General Education courses must be selected in such a way to insure that all "perspectives of understanding (p. 27)" requirements have been satisfied.*
2. *An engineering, math, or science course usually numbered 300 or above selected from a list published by the Department of Mechanical Engineering and approved by the faculty advisor.*

3. A green engineering course usually numbered 300 or above approved by the faculty advisor. At least one green elective must be a design course.
4. Select a senior design topic that contains a green engineering related component approved by the Department of Mechanical Engineering.

Total credit hours required for graduation -133.

The 2.0 required minimum grade point average in the major is based upon all ME and Green Engineering courses pursued in the student's degree program.

## Mechatronics Concentration

Mechatronics is a modern discipline that transcends the boundaries between Mechanical, Electrical, and Computer Engineering. It is defined as the science of intelligent systems in which engineers integrate mechanical, electrical and computer engineering to design, develop, fabricate and test smart systems that learn over time and become more intelligent. The evolution of this area is particularly a consequence of the tremendous growth in the area of Computers, intelligent sensors and Electronic controllers

Recent rapid growth of mechatronics as an area of engineering has given rise to a significant demand for mechatronics engineers. In the Mechanical Engineering Department at Western New England, our Mechatronics Concentration is helping meet this need by producing engineering graduates who are capable, well-rounded mechatronics designers and system integrators.

In the junior year, a student may choose to remain in the general mechanical engineering course of study or specialize with a concentration in Mechatronics and Systems Integration. The Mechatronics Concentration is designed to satisfy the need for mechanical engineers with a thorough knowledge of (1) transducers, smart sensors, and signal conditioners, (2) Modeling, Analysis and Control Techniques, (3) Pneumatic, Electric, hydraulic and smart actuators incorporating integrated controls, (4) Database management using SQL language (5) Design of Human Machine Interface (HMI), (6) PLC and Embedded Controllers.

## Degree Requirements

### Junior Year - Fall Semester

MATH 350	Engineering Analysis I	3 cr.
ME 303	Thermodynamics I	3 cr.
ME 309	Materials Science	3 cr.
ME 311	Mechatronics	3 cr.
ME 313	Mechanical Laboratory I	2 cr.
CUL XXX	Cultural Perspective	3 cr.

**Subtotal: 17**

### Junior Year - Spring Semester

EE 338	Electric Drives	3 cr.
ME 314	Mechanical Laboratory II	2 cr.
ME 316	Fluid Mechanics	3 cr.
ME 320	Mechanical Vibrations	3 cr.
ME 324	Design of Mechatronic Systems	3 cr.
HIST XXX	Historical Perspective	3 cr.

**Subtotal: 17**

### Senior Year - Fall Semester

ME 417	Heat Transfer	3 cr.
ME 423	Product Development and Innovation	3 cr.
ME 425	Design of Machine Elements	3 cr.
ME 427	Kinematics and Control of Electro-Mechanical Systems	3 cr.
ME 439	Professional Awareness	1 cr.
ME 455	Applications of Mechatronic Systems	3 cr.

**Subtotal: 16**

### Senior Year - Spring Semester

IE 312	Engineering Economic Analysis	3 cr.
ME 440	Senior Design Projects	3 cr.
xxx	Engineering Design Elective	3 cr.
ME 449	Computer-Aided Engineering	3 cr.
ILP XXX	Integrated Liberal Professional Perspective	3 cr.
LBC XXX	Learning Beyond the Classroom	No cr.

**Subtotal: 15**

1. General Education courses must be selected in such a way to insure that all "perspectives of understanding (p. 27)" (p. 34) requirements have been satisfied.
2. An engineering design elective, usually numbered 3xx or above, selected from a list published by the Department of Mechanical Engineering and approved by the faculty advisor.
3. Select a Senior Design Project topic that contains a mechatronic related component approved by the Department of Mechanical Engineering.

Total credit hours required for graduation – 133.

The 2.0 required minimum grade point average in the major is based on all ME and Mechatronics courses pursued in the student's degree program.

## Five-Year Bachelor/MSME Program

This program allows undergraduate Mechanical Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Mechanical Engineering (BSME) and to earn the master's degree in Mechanical Engineering (MSME) with just one additional year of study.

## Five-Year Bachelor/MBA Program

This program allows undergraduate Mechanical Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Mechanical Engineering (BSME) and to earn the master's degree in Business Administration (MBA) with just one additional year of study.

## Five-Year Bachelor/MSEM Program

This program allows undergraduate Mechanical Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree in Mechanical Engineering (BSME) and to earn the

master's degree in Engineering Management (MSEM) with just one additional year of study.

## DESCRIPTIONS OF MINOR PROGRAMS

### Minors

In addition to the academic major, which all students must take, students have the option of electing a minor.

To elect a minor or to obtain further information, students should consult the office of the dean of the College of Business for the following minors:

Business

Entrepreneurship

Integrated Marketing Communications

International Business

Interprise Resource Planning with SAP

Marketing

Management studies

— and the office of the dean of the College of Arts and Sciences for all others.

### Requirements

A student must successfully complete all courses specified for the minor and attain a minimum cumulative GPA of 2.00 in the minor.

Additionally, the number of transfer credits that may be used to satisfy course requirements for a minor shall not exceed six credit hours.

### African American Studies Minor

#### Degree Requirements

The minor requirement is 18 credit hours. The following three courses are required:

ENGL 223	African American Literature I	3 cr.
ENGL 224	African American Literature II	3 cr.
HIST 254	Civil War and Reconstruction	3 cr.
		<b>Subtotal: 9</b>

(Other electives at the discretion of the director)

And three courses from the following:

ENGL 341	Caribbean Writers	3 cr.
ENGL 345	Major African American Writers	3 cr.
ENGL 343	Literature of Africa and the African Diaspora	3 cr.
COMM 326	Race, Gender, and Ethnicity in the Media	3 cr.
CUL 210	Comparative Race Relations: U.S. and South Africa	3 cr.
HIST 260	The History of Pre-Colonial Africa	3 cr.
		<b>Subtotal: 9</b>

Subtotal: 18

Total Credit Hours: 18

### Art Minor

The minor requirement is 18 credit hours in Art. At least nine credit hours in studio art and six credit hours in Art History/Appreciation.

### Athletic Coaching Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

PEHR 201	Principles and Practices of Successful Coaching	3 cr.
PEHR 202	Care and Prevention of Athletic Injury/Sport First Aid	3 cr.
PSY 201	Developmental Psychology	3 cr.
PSY 321	Sports Psychology	3 cr.
PSY 313	Learning	3 cr.
or		
SPMN 450	Managing Collegiate/Scholastic Athletic Programs	3 cr.
PEHR 480	Internship in Athletic Coaching	3 cr.
or		
PEHR 481	Internship in Athletic Coaching	3 cr.
		<b>Subtotal: 18</b>

Subtotal: 18

The athletic coaching minor will be offered through the College of Arts and Sciences and be directly administered through the Physical Education program. The minor is interdisciplinary in nature and draws from courses in physical education, psychology, and sport management. The minor provides a cohesive and meaningful academic program for students wishing to pursue the formal study of athletic coaching.

Total Credit Hours: 18

### Biology Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
BIO 201	Plant Biology	4 cr.
BIO 213	Ecology	3 cr.
BIO 15X	Natural Science Perspective in Biology	3 crs.
		<b>Subtotal: 18</b>

Subtotal: 18

Total Credit Hours: 18

### Bio-Medical Physics Minor

The requirements for a minor in Bio-Medical Physics are 20 credit hours as follows:

#### Degree Requirements

Required PHYS courses 11 credits

PHYS 123	Physics of the Life Sciences 1	4 cr.
PHYS 124	Physics of the Life Sciences 2	4 cr.
	or	
PHYS 133	Mechanics	4 cr.
PHYS 134	Electricity and Magnetism	4 cr.
	And	
<u>PHYS 3XX</u>	<u>PHYS 3xx Requirement</u>	<u>3 cr.</u>

**Subtotal: 11**

Additional courses 9 credit hours from following

PHYS 301	Optics	3 cr.
PHYS 3XX	PHYS 3xx Elective	3 cr.
PHYS 3XX	PHYS 3xx Elective	3 cr.
	or	
<u>PHYS 390</u>	<u>Special Topics</u>	<u>1-3 cr.</u>

**Subtotal: 9**

6 credit hours of the Additional courses 9 credit hours can be substituted from following

BME 332	Biomedical Imaging	3 cr.
	or	
BME 350	Biomedical Thermal Systems	3 cr.
	or	
BME 451	Biomechanics II	3 cr.
	or	
BME 452	Biofluid Mechanics	3 cr.

Subtotal: 20

Total Credit Hours: 20

### Business Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

AC 201/HONB 203	Financial Reporting	3 cr.
AC 202	Managerial Accounting	3 cr.
BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
FIN 214	Introduction to Finance	3 cr.
MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
MK 200/HONB	Principles of Marketing	3 cr.

200

**Subtotal: 18**

The business minor is not available to students whose major is within the College of Business.

Subtotal: 18

Total Credit Hours: 18

### Chemistry Minor

#### Degree Requirements

The minor requirement is 20 credit hours, as follows:

CHEM 105	General Chemistry I	4 cr.
<u>CHEM 106</u>	<u>General Chemistry II</u>	<u>4 cr.</u>

**Subtotal: 8**

Plus any one of the two lectures and two labs sequences:

CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
	or	
CHEM 317	Physical Chemistry I	3 cr.
CHEM 327	Physical Chemistry Laboratory I	1 cr.
CHEM 318	Physical Chemistry II	3 cr.
<u>CHEM 328</u>	<u>Physical Chemistry Laboratory II</u>	<u>1 cr.</u>

**Subtotal: 8**

Plus any one of the following lecture and lab combinations:

CHEM 211	Analytical Methods	3 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
	or	
CHEM 314	Biochemistry	3 cr.
<u>CHEM 324</u>	<u>Biochemistry Laboratory</u>	<u>1 cr.</u>

**Subtotal: 4**

Subtotal: 20

The chemistry minor is open only to students who have completed one semester of college-level physics (PHYS 103 or PHYS 133) and one of the following mathematics courses: MATH 109, MATH 112, MATH 123, or MATH 133.

Note: CHEM 314/CHEM 324 has the Organic Chemistry sequence as a prerequisite. The Physical Chemistry sequence has CHEM 211/CHEM 221 as a prerequisite.

Total Credit Hours: 20

### Communication Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

COMM 100	Principles of Communication	3 cr.
COMM 102	Introduction to Public Speaking	3 cr.

COMM 340	Business Communication	3 cr.
COMM 320	Small Group Communication	3 cr.

**Subtotal: 12**

Plus any two of the following courses:

JRNL 101	Introduction to Journalism	3 cr.
COMM 205	Mass Communication	3 cr.
COMM 315	Language in Communication	3 cr.
COMM 321	Nonverbal Communication	3 cr.
COMM 324	Media Industries, Government, and Society	3 cr.
COMM 326	Race, Gender, and Ethnicity in the Media	3 cr.
COMM 348	Intercultural Communication	3 cr.
COMM 356	Global Communication	3 cr.

**Subtotal: 6**

Subtotal: 18

Total Credit Hours: 18

### Computer Forensics Minor

#### General Information

1. The rate of computer crime is increasing at a phenomenal rate and is receiving heightened attention by businesses and the media. There is a corresponding need for computing professionals who are also trained in the field of criminal justice. This minor provides students with a combination of criminal justice and computing skills to enable them to investigate computer crimes. The requirements for a minor in Computer Forensics are 19 credit hours as follows:

#### Degree Requirements

Required CS/IT courses (10 credit hours)

IT 101/CS 101	Introduction to Computing	4 cr.
CS 300	Computer Forensics, Tools and Processes	3 cr.
CS 310	Computer Crime Scene Investigation	3 cr.

**Subtotal: 10**

Required CJ courses (9 credit hours)

CJ 101	Introduction to Criminal Justice	3 cr.
CJ 231	Criminal Investigation	3 cr.
CJ 348	Introduction to Cyber Crimes	3 cr.

**Subtotal: 9**

Total Credit Hours: 19

### Computer Science Minor

#### Degree Requirements

The minor requirement is 22 credit hours, as follows:

IT 101/CS 101	Introduction to Computing	4 cr.
CS 102/IT 102	Introduction to Programming	4 cr.

CS 200/IT 200	Data Structures	4 cr.
CS 220	Software Development	4 cr.
MATH 251	Advanced Discrete Mathematics	3 cr.
CS 3xx-4xx	Computer Science	3 - 4 cr.

**Subtotal: 22-23**

Subtotal: 22-23

Total Credit Hours: 22

### Criminal Justice Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

A student must take CJ 101 prior to taking the remaining courses.

CJ 101	Introduction to Criminal Justice	3 cr.
CJ 210/SO 210	Criminology	3 cr.
CJ 211	Corrections	3 cr.
CJ 218	Police and Society	3 cr.
CJ 230	Criminal Law	3 cr.
CJ 232	Criminal Procedure	3 cr.

**Subtotal: 18**

Subtotal: 18

Total Credit Hours: 18

### Economics Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

EC 111	Principles of Microeconomics	3 cr.
EC 112	Principles of Macroeconomics	3 cr.
EC 215	Intermediate Macroeconomics	3 cr.
	or	
EC 311	Money and Banking	3 cr.
EC 216	Intermediate Microeconomics	3 cr.
	or	
ILP 317	Management Issues for Professionals	3 cr.

**Subtotal: 12**

Plus six additional credits at 200 level or higher, three of which could be ILP 230.

**Subtotal: 6**

Subtotal: 18

Total Credit Hours: 18

### Education Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

PSY 101	Introduction to Psychology	3 cr.
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PSY 201	Developmental Psychology	3 cr.
PSY 304	Educational Psychology	3 cr.
ED 301	Principles and Problems of Education	3 cr.
		<b>Subtotal: 12</b>

Plus any two of the following education or psychology courses:

ED 333	Independent Study in Education	1-3 cr.
ED 350	Teaching of Elementary Reading and Language Arts	3 cr.
ED 375	Elementary Curriculum and Methods	3 cr.
PSY 307	Psychological Assessment	3 cr.
PSY 313	Learning	3 cr.
PSY 317	Psychology of the Exceptional Person	3 cr.
PSY 322	School Psychology	3 cr.
		<b>Subtotal: 6</b>

Subtotal: 18

Total Credit Hours: 18

### English Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

ENGL 231	British Literature I	3 cr.
or		
ENGL 232	British Literature II	3 cr.
ENGL 251	American Literature I	3 cr.
ENGL 314	Shakespeare: Plays and Poems	3 cr.
or		
ENGL 315	Shakespeare: The Tragedies	3 cr.
or		
ENGL 316	Shakespeare: The Comedies and Histories	3 cr.
ENGL 3XX/4XX	English Elective	3 cr.
ENGL 3XX/4XX	English Elective	3 cr.
ENGL 3XX/4XX	English Elective	3 cr.
		<b>Subtotal: 18</b>

Subtotal: 18

Total Credit Hours: 18

### Enterprise Resource Planning Minor with SAP

#### Degree Requirements

The minor requirement is 21 credit hours as follows:

BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
BIS 221	Statistics for Business Analytics	3 cr.
BIS 312	Quality and Operations Management with SAP	3 cr.
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
BIS 412	Business Analytics with SAP	3 cr.
MAN 370	Project Management	3 cr.
BIS 340	Enterprise Resource Planning Systems	3 cr.
		<b>Subtotal: 21</b>

Subtotal: 21

The minor is not available to students majoring in BIS.

Total Credit Hours: 21

### Entrepreneurship Minor

#### Degree Requirements

The minor requirement is 18 credits hours, as follows:

Required Courses (9 credits):

AC 201/HONB 203	Financial Reporting	3 cr.
ENTR 251	Entrepreneurship and Innovation	3 cr.
MK 200/HONB 200	Principles of Marketing	3 cr.
		<b>Subtotal: 9</b>

Elective Courses (9 credits):

ENTR 260	Marketing for Entrepreneurs	3 cr.
BUS 423	Product Development and Innovation	3 cr.
ENTR 326	Venture Feasibility	3 cr.
FIN 330	Financing Entrepreneurial Ventures	3 cr.
ENTR 380	Global Entrepreneurship	3 cr.
		<b>Subtotal: 9</b>

Subtotal: 18

Not available to students majoring in Entrepreneurship.

Total Credit Hours: 18

### Film Studies Minor

#### Degree Requirements

The minor requirement is 18 credit hours as follows:

The following two courses are required:

FILM 102	The History of Film	3 cr.
FILM 103	The Art of Film	3 cr.
		<b>Subtotal: 6</b>

To fulfill the minor, students must take four courses from the following:

FILM 201	Studies in Mainstream Film Genres	3 cr.
FILM 202	The Haunted Screen	3 cr.
FILM 210	Mass Media in Film	3 cr.
FILM 212	Women and Film	3 cr.
FILM 290	Special Topics in Film	1-3 cr.
FILM 312	International Cinema	3 cr.
FILM 320	Introduction to Cinema Production	3 cr.
FILM 340	Director's Signature	3 cr.
FILM 390	Special Topics in Film	1-3 cr.

**Subtotal: 12**

Subtotal: 18

Total Credit Hours: 18

### Forensic Science Minor

#### Degree Requirements

The minor requirement is 30 credit hours as follows:

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
CHEM 106	General Chemistry II	4 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CJ 101	Introduction to Criminal Justice	3 cr.
FS 240	Scientific Evidence	3 cr.
FS 201	Introduction to Forensics	4 cr.

**Subtotal: 30**

Note: This minor is not open to Forensic Chemistry or Forensic Biology majors.

Subtotal: 30

Total Credit Hours: 30

### History Minor

#### Degree Requirements

Two of the following courses:

HIST 205	World History, Prehistory-1500CE	3 cr.
HIST 206	World History, 1500CE-Present	3 cr.
HIST 111	United States History to 1877	3 cr.
HIST 112	United States History, 1878 to the Present	3 cr.

**Subtotal: 6**

Nine credit hours of 300 or 400 level history courses.

**Subtotal: 9**

Plus three additional credits of history

**Subtotal: 3**

Within these course requirements, a student must take at least three credit hours each in non-Western, European, and American history.  
Subtotal: 18

Total Credit Hours: 18

### Information Technology Minor

#### Degree Requirements

The minor requirement is 19 credit hours, as follows:

Required IT courses (13 credit hours)

IT 102/CS 102	Introduction to Programming	4 cr.
IT 230	Introduction to Operating Systems and Script Development	3 cr.
IT 250/BIS 413	Data Communications and Networks	3 cr.
IT 300/BIS 321	Database Management Systems	3 cr.

**Subtotal: 13**

In addition to the required above four courses, students must complete two courses from the following courses.

IT 310	System Operation and Administration	3 cr.
IT 330	Network Security Concepts	3 cr.
IT 350	Web Systems Development	3 cr.
IT 360	Network Management and Operations	3 cr.
IT 410	Advanced Topics in System Administration	3 cr.
IT 430	Advanced Topics in Network Security	3 cr.
IT 450	Advanced Topics in Web Design and Development	3 cr.
IT 460	Advanced Topics in Network Administration	3 cr.

**Subtotal: 6**

IT 350 and IT 450: These two courses have additional prerequisites of CS 102/IT 102 and IT 240.

Subtotal: 19

Total Credit Hours: 19

### Integrated Marketing Communication (IMC) Minor

#### Degree Requirements

The minor requirement is 18 credit hours as follows:

MK 200/HONB 200	Principles of Marketing	3 cr.
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MK 301	Buyer Behavior	3 cr.
MK 317	Promotional Strategy	3 cr.
MK 340	Promotion Design and Applications	3 cr.
MK 422	Campaign Planning and Management	3 cr.
<u>COMM 285</u>	<u>Introduction to Public Relations</u>	<u>3 cr.</u>
		<b>Subtotal: 18</b>

Subtotal: 18

The IMC minor is not available to students whose major is in the College of Business.

Total Credit Hours: 18

### International Business Minor

#### Degree Requirements

The minor requirement is 15 credit hours - as follows:

INTB 251	Introduction to International Business	3 cr.
		<b>Subtotal: 3</b>

Plus two of the following

MAN 311	International Management	3 cr.
FIN 322	International Finance	3 cr.
<u>MK 311</u>	<u>Multinational Marketing</u>	<u>3 cr.</u>
		<b>Subtotal: 6</b>

Plus two of the following:

CUL 315/BUS 315	International Practicum	3 cr.
COMM 348	Intercultural Communication	3 cr.
EC 371	International Monetary Economics	3 cr.
EC 372	International Trade	3 cr.
POSC 203	International Relations	3 cr.
POSC 340	International Law and Organization	3 cr.
		<b>Subtotal: 6</b>

Students who do not take FIN 322 must select EC 371 or EC 372.

ILP 230 is recommended.

Subtotal: 15

Total Credit Hours: 15

### International Studies Minor

#### Degree Requirements

The minor requirement consists of seven courses (21 credit hours), as follows:

GEOG 102	World Regional Geography I:	3 cr.
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	Highly Developed Countries	
	or	
GEOG 103	World Regional Geography II: Less Developed Countries	3 cr.
	And	
HIST 206	World History, 1500CE-Present	3 cr.
	or	
INST 101/POSC 101	Introduction to Contemporary Global Issues	3 cr.
	And	
POSC 203	International Relations	3 cr.
		<b>Subtotal: 9</b>

Plus any one course from the International Studies Curriculum list Group B or foreign language

**Subtotal: 3**

Plus any three courses from the International Studies Curriculum list Group C or foreign language

**Subtotal: 9**

Subtotal: 21

Total Credit Hours: 21

### Journalism Minor

#### Degree Requirements

The minor requirement is 18 credit hours as follows:

COMM 205	Mass Communication	3 cr.
JRNL 101	Introduction to Journalism	3 cr.
JRNL 205	Journalism Ethics	3 cr.
<u>JRNL 250</u>	<u>Intermediate Journalism</u>	<u>3 cr.</u>
		<b>Subtotal: 12</b>

Plus any two 300-level or higher JRNL courses

JRNL 360/COMM 360	Sportswriting	3 cr.
JRNL 370/COMM 371	Advanced Radio Reporting	3 cr.
		<b>Subtotal: 6</b>

Subtotal: 18

Total Credit Hours: 18

### Latin American Studies Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

SPAN 101	Elementary Spanish I	3 cr.
	And	
SPAN 102	Elementary Spanish II	3 cr.
	or	
SPAN 203	Intermediate Spanish I	3 cr.

	And		
SPAN 204	Intermediate Spanish II	3 cr.	
CUL 250	Latin American Civilization	3 cr.	
HIST 170	Colonial Latin American History	3 cr.	
	or		
HIST 171	Modern Latin American History	3 cr.	
SO 211	Race and Ethnicity	3 cr.	
	or		
SO 326	Sociology of Culture	3 cr.	

**Subtotal: 18**

Subtotal: 18

A demonstrated proficiency in Spanish or Portuguese may allow one to waive certain language requirements and to add courses in Latin American government or history. These would require the approval of the dean.

Total Credit Hours: 18

### Management Minor

#### Degree Requirements

The minor requirement is 18 credit hours as follows:

Required courses (nine credit hours):

MAN 101/HONB 101	Management and Organizational Behavior	3 cr.
MAN 201	Interpersonal Skills for Leading	3 cr.
MAN 323	Human Resource Management	3 cr.

**Subtotal: 9**

Plus nine credit hours from among the following

AEM 250	Introduction to Arts & Entertainment Organizations	3 cr.
MAN 305	Managing for Sustainability	3 cr.
MAN 311	International Management	3 cr.
MAN 331	A Humanistic Approach to Leadership and Management	3 cr.
MAN 341	Leadership and Change	3 cr.
MAN 370	Project Management	3 cr.
MAN 422	Conflict Resolution	3 cr.

**Subtotal: 9**

Subtotal: 18

The Management minor is not available to students who are majoring in Management and Leadership, Sport Management, or Arts and Entertainment Management.

Total Credit Hours: 18

### Marketing Minor

#### Degree Requirements

The minor requirement is 18 credit hours as follows:

MK 200/HONB 200	Principles of Marketing	3 cr.
MK 301	Buyer Behavior	3 cr.
MK 318	Marketing Research	3 cr.
MK 421	Marketing Management	3 cr.
MK 3XX/4XX	Marketing Elective	3 cr.
	And	
BUS 423	Product Development and Innovation	3 cr.
	or	
MK 3XX/4XX	Marketing Elective	3 cr.

**Subtotal: 18**

Subtotal: 18

The minor is not available to students majoring in Marketing or Marketing Communication/Advertising.

Total Credit Hours: 18

### Mathematical Sciences Minor

#### Degree Requirements

The minor requirement is 18 or 21 credit hours, as follows:

MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
MATH 124	Calculus II For Management, Life, and Social Sciences	3 cr.
	or	
MATH 133	Calculus I	4 cr.
MATH 134	Calculus II	4 cr.
MATH 251	Advanced Discrete Mathematics	3 cr.
	or	
MATH 281	Foundations of Mathematics I	4 cr.

**Subtotal: 9-12**

Three additional courses numbered 282 or above, except for MATH 350, and at least one of which must be:

MATH 418	Introduction to Modern Algebra	3 cr.
	or	
MATH 421	Real Analysis	3 cr.
	or	
MATH 412	Introduction to Topology	3 cr.

**Subtotal: 9**

Subtotal: 18-21

Total Credit Hours: 18-21

**Media Minor**

**Degree Requirements**

The minor requirement is 18 credit hours, as follows:

COMM 100	Principles of Communication	3 cr.
COMM 205	Mass Communication	3 cr.
COMM 241	Video Production I: Introduction to Digital Editing	3 cr.
COMM 250	Video Production II	3 cr.

**Subtotal: 12**

Plus any two of the following courses:

JRNL 101	Introduction to Journalism	3 cr.
COMM 251	TV Broadcasting	3 cr.
COMM 285	Introduction to Public Relations	3 cr.
COMM 324	Media Industries, Government, and Society	3 cr.
COMM 352	TV Broadcasting II	3 cr.
COMM 356	Global Communication	3 cr.

**Subtotal: 6**

Subtotal: 18

Total Credit Hours: 18

**Music Minor**

**Degree Requirements**

Two required 3-credit MUS courses (6 credits)

MUS 101	Introduction to Music	3 cr.
MUS 201	Basic Music Theory and Composition	3 cr.

**Subtotal: 6**

Four credits in MUS performance selected from:

MUS 141-148	University Singers	1 cr.
MUS 151-158	Campus Chorus	1 cr.
MUS 161-168	Pep Band	1 cr.
MUS 181-188	Concert Band	1 cr.

**Subtotal: 4**

Eight additional credits in MUS performance selected from:

MUS 110	Beginning Guitar	3 cr.
MUS 141-148	University Singers	1 cr.
MUS 151-158	Campus Chorus	1 cr.
MUS 161-168	Pep Band	1 cr.
MUS 181-188	Concert Band	1 cr.
MUS 210	Intermediate Guitar	3 cr.
MUS 290	Special Topics in Music	1-3 cr.

**Subtotal: 8**

Subtotal: 18

Total Credit Hours: 18

**Philosophy Minor**

The minor requirement is 18 credit hours consisting of any six philosophy courses.

Total Credit Hours: 18

**Political Science Minor**

**Degree Requirements**

The minor requirement is 18 credit hours as follows:

POSC 102	American National Government	3 cr.
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**Subtotal: 3**

Plus 15 credit hours of 200, 300, or 400 level political science courses (POSC).

**Subtotal: 15**

Subtotal: 18

Within these course requirements, a student must take at least three credit hours in American politics, international relations, comparative government, and political thought.

Total Credit Hours: 18

**Psychology Minor**

The minor requirement is PSY 101 plus 15 additional credit hours in psychology.

**Degree Requirements**

Requirements List - PSY 101

PSY 101	Introduction to Psychology	3 cr.
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**Subtotal: 3**

Plus 15 credits in psychology courses

**Subtotal: 15**

Subtotal: 18

Note: internships, independent study, and undergraduate research may not be used to fulfill these requirements.

Total Credit Hours: 18

**Public Administration Minor**

**Degree Requirements**

The minor requirement is 18 credit hours selected from the courses listed below:

Required courses (nine hours):

POSC 102	American National Government	3 cr.
POSC 205	Public Administration	3 cr.
POSC 338	Challenges in Local Government Management	3 cr.

**Subtotal: 9**

Plus any three of the following (nine hours):

POSC 210	State Politics in America	3 cr.
POSC 322	The U.S. Presidency	3 cr.
POSC 325	Constitutional Law	3 cr.

POSC 218	Public Policy in America	3 cr.
POSC 338	Challenges in Local Government Management	3 cr.
POSC 340	International Law and Organization	3 cr.
POSC 350	American Foreign Policy	3 cr.
EC 351	Economics and Government	3 cr.
EC 355	Public Finance	3 cr.
SO 305	The Sociology of Urban Life	3 cr.

**Subtotal: 9**

Subtotal: 18

Total Credit Hours: 18

**Quantitative Economics Minor****Degree Requirements**

The minor requirement is 18 credit hours as follows:

MATH 133	Calculus I	4 cr.
	or	
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
EC 117	Principles of Quantitative Economics	3 cr.
EC 215	Intermediate Macroeconomics	3 cr.
EC 216	Intermediate Microeconomics	3 cr.
	or	
ILP 317	Management Issues for Professionals	3 cr.
EC 490	Seminar: Issues in Contemporary Economics	3 cr.
EC 2XX/3XX	Economics Elective	3 cr.

**Subtotal: 18**

Subtotal: 18

Total Credit Hours: 18

**Religious Studies Minor****Degree Requirements**

The minor requirement is 18 credit hours, as follows:

REL 101	Spirituality and Religion	3 cr.
REL 220	Western Religions	3 cr.
REL 221	Eastern Religions	3 cr.
REL 304/PH 304	Philosophy of Religion	3 cr.

**Subtotal: 12**

Plus 6 credits in 2xx or 3xx level REL courses:

**Subtotal: 6**

Subtotal: 18

Total Credit Hours: 18

**Social Justice Minor****Degree Requirements**

The minor requirement is 18 hours, as follows:

Required courses

SW 100	Introduction to Social Work	3 cr.
SW 303	Social Work Interventive Methods III	3 cr.
SW 313	Social Welfare and Social Policy	3 cr.

**Subtotal: 9**

Plus three of the following courses:

EC 106	The Economics of Poverty and Discrimination	3 cr.
POSC 101/INST 101	Introduction to Contemporary Global Issues	3 cr.
PH 230	Social and Political Philosophy	3 cr.
SW 320	Dynamics of Oppression and Empowerment	3 cr.
SO 410	Social Change	3 cr.
PSY 327	The Psychology of Tolerance, Social Justice and Hate Crimes	3 cr.
COMM 348	Intercultural Communication	3 cr.
BL 424	Business Law for Human Resource Management	3 cr.
ENGL XXX	English Elective	3 cr.
MAN 305	Managing for Sustainability	3 cr.
POSC 218	Public Policy in America	3 cr.
POSC 326	Civil Liberties	3 cr.
PSY 315	Cultural Psychology	3 cr.
SO 201	Social Problems	3 cr.
SO 413	Social Inequality	3 cr.
PSY 317	Psychology of the Exceptional Person	3 cr.
SW 314	Field Instruction in Macro Practice	3 cr.

**Subtotal: 9**

Subtotal: 18

Total Credit Hours: 18

**Social Work Minor****Degree Requirements**

The minor requires the following courses:

SW 100	Introduction to Social Work	3 cr.
SW 216	Human Behavior in the Social Environment	3 cr.
PH 210	Ethics for Social Workers	3 cr.
SW 301	Social Work Interventive	3 cr.

	Methods I	
SW 302	Social Work Interventive Methods II	3 cr.
SW 305	The Helping Relationship Project	2 cr.
SW 306	The Helping Relationship Practicum	1 cr.
SW 320	Dynamics of Oppression and Empowerment	3 cr.

**Subtotal: 21**

\*SW 320 prerequisites are SO 101, and junior standing. A similar course can be substituted with approval of chair.  
Subtotal: 21

Total Credit Hours: 21

### Social Work Minor for Criminal Justice Majors

#### Degree Requirements

The minor requires the following courses:

SW 100	Introduction to Social Work	3 cr.
SW 204	Social Work and Criminal Justice	3 cr.
SW 216	Human Behavior in the Social Environment	3 cr.
SW 301	Social Work Interventive Methods I	3 cr.
SW 302	Social Work Interventive Methods II	3 cr.
SW 305	The Helping Relationship Project	2 cr.
SW 306	The Helping Relationship Practicum	1 cr.

**Subtotal: 18**

Subtotal: 18

Total Credit Hours: 18

### Sociology Minor

#### Degree Requirements

The minor requirement is 18 credit hours, as follows:

SO 101	Introduction to Sociology	3 cr.
SO 201	Social Problems	3 cr.
SO 301/CJ 301	Research Methods	4 cr.
	or	
SO 307	Qualitative Research Methods	3 cr.
SO 2XX-4XX	Sociology Elective	3 cr.
SO 3XX-4XX	Sociology Elective	3 cr.
SO 3XX/4XX	Sociology Elective	3 cr.

**Subtotal: 18**

Subtotal: 18

Total Credit Hours: 18

### Spanish Minor

#### Degree Requirements

The minor requirement is 18 credit hours selected from the courses below:

Required four courses (12 hours):

SPAN 203	Intermediate Spanish I	3 cr.
SPAN 204	Intermediate Spanish II	3 cr.
SPAN 305	Advanced Conversational Spanish I	3 cr.
SPAN 306	Advanced Conversational Spanish II	3 cr.

**Subtotal: 12**

Choose between

CUL 250	Latin American Civilization	3 cr.
	or	
SPAN 101	Elementary Spanish I	3 cr.
	or	
SPAN 130	Spanish for Criminal Justice	3 cr.
	or	
SPAN 140	Spanish for Social Services	3 cr.
SPAN 102	Elementary Spanish II	3 cr.

**Subtotal: 6**

Subtotal: 18

Total Credit Hours: 18

### Theatre Minor

#### Degree Requirements

Requirements List

The minor requirement is 18 credit hours in THTR, with no more than 6 credits in THTR 151 - THTR 159 and THTR 160 (p. 291) - THTR 169.

**Subtotal: 6**

One from ENGL 310, ENGL 314, ENGL 315, ENGL 316 may be substituted for a 3 credit THTR course.

**Subtotal: 12**

Subtotal: 18

Total Credit Hours: 18

### Women's and Gender Studies Minor

The Women's and Gender Studies (WGST) minor involves 18 credit hours of coursework. Each student must take courses from a minimum of three different disciplines (Social Work, Sociology, and at least one other).

#### Degree Requirements

There are three required courses:

SW 100	Introduction to Social Work	3 cr.
SO 208	Gender	3 cr.

SW 33X	Independent Study - SW Internship in a setting servicing women	3 cr
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**Subtotal: 9**

Plus any three additional courses from the following list:

CJ 302	Women and the Criminal Justice System	3 cr.
COMM 326	Race, Gender, and Ethnicity in the Media	3 cr.
ENGL 358	Women in Literature	3 cr.
FILM 212	Women and Film	3 cr.
HIST 373	Women In Latin America	3 cr.
LSOC 230/POSC 230	When Cultures Collide	3 cr.
PSY 305	Psychology of Women	3 cr.
SW 320	Dynamics of Oppression and Empowerment	3 cr.

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**Subtotal: 9**

Subtotal: 18

Or any other course with a primary focus on women or gender, dependent upon the approval of the director of the WGST minor program.

\*Although Independent Study in Social Work is the default option, internship experiences housed in other departments can be used subject to the prior approval of the director of the WGST minor.

**Total Credit Hours: 18**

## DESCRIPTION OF CERTIFICATE PROGRAMS

### Certificate Program in Chemistry

Recognizing the need for qualified workers trained in chemistry to fill positions in the chemical industry, and in other areas such as hospital and environmental laboratories highly dependent upon chemical technology, the University offers a Certificate in Chemistry. The certificate requires the completion of 20 credit hours in chemistry courses and, in addition, the prerequisites to these courses.

#### Degree Requirements

Certificate requirements are as follows:

CHEM 209	Organic Chemistry I	3 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
CHEM 211	Analytical Methods	3 cr.
CHEM 221	Analytical Methods Laboratory	1 cr.
CHEM 312	Instrumental Analysis	3 cr.
CHEM 322	Instrumental Analysis Laboratory	1 cr.
CHEM 314	Biochemistry	3 cr.
CHEM 324	Biochemistry Laboratory	1 cr.

**Subtotal: 20**

Subtotal: 20

Total Credit Hours: 20

### Certificate Program in Communication

Recognizing that communication is a skill much needed today, the University offers a program that strengthens understanding, writing, and speaking.

#### Degree Requirements

Completion of the program requires 18 credit hours (plus any prerequisites).

COMM 100	Principles of Communication	3 cr.
COMM 102	Introduction to Public Speaking	3 cr.
COMM 320	Small Group Communication	3 cr.
COMM 340	Business Communication	3 cr.
COMM 3XX	COMM Elective	3 cr.
COMM 3XX	COMM Elective	3 cr.

**Subtotal: 18**

Subtotal: 18

Total Credit Hours: 18

### SAP Certificate

Complete three SAP University Alliance approved courses, with a grade of "C" or higher, and receive a signed certificate of completion from SAP University Alliance.

Select any three courses from: BIS 202, BUS 312, BIS 312, BIS 412, and BIS 455.

### Degree Requirements

Select any three courses from:

BIS 202/HONB 202	Introduction to Business Information Systems	3 cr.
BUS 312	Business Processes and Enterprise Resource Planning with SAP	3 cr.
BIS 312	Quality and Operations Management with SAP	3 cr.
BIS 412	Business Analytics with SAP	3 cr.
BIS 455	Enterprise Portal Design with SAP	3 cr.

Subtotal: 9

**Subtotal: 9**

## UNDERGRADUATE COURSES

In general, the number of each course is related to the level of the course. The 100 series indicates introductory courses and the higher numbers indicate courses of a more advanced nature. Courses in the 500- and 600-level series are restricted to graduate students. For further information about an academic area, consult the Dean of the college listed in parentheses.

### Notes

See Legend for Notes in Sequence of Courses (p. 31)

## AC - ACCOUNTING

### AC 201 - Financial Reporting (3 cr.)

Prerequisite: MATH 115, MATH 111, or MATH 123 or MATH 133.

Cross-Listed as: HONB 203

This course provides an introduction to the basic concepts and framework of financial accounting with an emphasis placed on the interpretation and use of the information contained in the primary financial statements. Key outcomes include an understanding of underlying accounting concepts and principles, the accounting information process, and the elements of the balance sheet, income statement, and the statement of cash flows.

Distribution: BUSR/MR

Offered: fall and spring semesters.

This course is a prerequisite.

### AC 202 - Managerial Accounting (3 cr.)

Prerequisite: AC 201 or HONB 203

This course provides an introduction to managerial accounting, with an emphasis on the planning, control, and decision-making functions of management. Key outcomes include an understanding of cost behavior, product costing, cost-volume-profit analysis, budgeting, and identification of relevant costs for decision-making purposes.

Distribution: BUSR/MR

Offered: fall and spring semesters.

### AC 305 - Financial Reporting II (3 cr.)

Prerequisite: AC 201.

This second course in financial reporting is the first of a three-course sequence that offers an in-depth examination of the financial reporting process. Emphasis is placed on the application of theory to the preparation and use of financial accounting information. Key outcomes include an understanding of the flow of information through the accounting cycle and the measurement and reporting requirements for cash, receivables, inventories, plant and equipment, intangible assets and current liabilities.

Distribution: MR

Offered: in the fall semester.

### AC 306 - Financial Reporting III (3 cr.)

Prerequisite: Grade of C or better in AC 305.

This is the third in a three-course sequence offering an in-depth examination of the financial reporting process. Similar to AC 305, emphasis is placed on the application of theory to the preparation and use of financial accounting information. Key outcomes include an

understanding of the measurement and reporting requirements for bonds, leases, pensions, investments, current and deferred income taxes, owners' equity, and earnings per share.

Distribution: MR

Offered: in the spring semester.

### AC 309 - Cost Accounting (3 cr.)

Prerequisite: AC 202, and BIS 202/HONB 202 or concurrent.

This course offers an in-depth examination of the basic principles of cost accounting with an emphasis on profit determination, planning, managerial control, and decision making. Key outcomes include an understanding of cost accumulation systems for both manufacturing and service organizations, budgeting processes, use of standard costing, determination of cost functions, and application of cost-volume-profit analysis to real-world business problems.

Distribution: MR

Offered: fall and spring semesters.

### AC 330 - Accounting Information Systems (3 cr.)

Prerequisite: AC 305 or permission of the instructor.

This course is designed to examine the relationship between a company's information system and its accounting information system (AIS). Key outcomes include an understanding of database management systems, the objectives and procedures of internal control, typical business documents and reports, proper system documentation, the general ledger and business reporting, and systems development.

Distribution: MR

Offered: fall and spring semesters.

### AC 333 - Independent Study in Accounting (1-3 cr.)

See "Independent Study (p. 24)".

### AC 334 - Independent Study in Accounting (1-3 cr.)

See "Independent Study (p. 24)".

### AC 390 - Special Topics in Accounting (3 cr.)

This is a study of advanced topics in accounting of special interest to accounting majors, but not carried in the catalog on a regular basis. The course may be repeated for credit if the topic varies.

### AC 407 - Financial Reporting IV (3 cr.)

Prerequisite: AC 306.

This course is the third in a three-course sequence offering an in-depth examination of financial reporting issues. The focus of this course is on accounting principles and practice related to business combinations as well as multinational accounting. Key outcomes include an understanding of intercorporate investments, business combinations, consolidated financial statements, intercompany transfers of assets, foreign currency transactions, and translation of foreign entity financial statements.

Distribution: MR

Offered: fall and spring semesters.

### AC 413 - Fundamental of Individual Tax (3 cr.)

Prerequisite: AC 202.

This course provides an introduction to the federal tax system, with an emphasis on the federal income taxation of individuals and unincorporated businesses. Key outcomes include an understanding of the fundamental concepts of income, deductions, and the determination of tax liability.

Distribution: MR

Offered: fall and spring semesters.

Formerly "Fundamental Concepts of Taxation"

### **AC 419 - Auditing and Assurance Services (3 cr.)**

Prerequisite: AC 305 or permission of instructor.

This course introduces students to the role of financial statement audits and other assurance services in enhancing the relevance and reliability of information. Key outcomes include basic knowledge of risk analysis, internal controls, information technology, sampling, legal liability, and professional conduct.

Distribution: MR

Offered: in the spring semester.

### **AC 480 - Internship in Accounting (3 cr.)**

See "Internships (p. 25)".

### **AC 481 - Internship in Accounting (3 cr.)**

See "Internships (p. 25)".

## **AEM - ARTS AND ENTERTAINMENT MANAGEMENT**

### **AEM 250 - Introduction to Arts & Entertainment Organizations (3 cr.)**

Prerequisite: MAN 101/HONB 101, PSY 101 or SO 101

This course introduces the field of arts and entertainment management with a focus on the essential nature of creative organizations and projects, including those that are nonprofit. Key learning outcomes focus on an understanding and recognition of the history and evolution of the arts and entertainment industry; the internal culture and structure of creative organizations; external influences on the arts and entertainment industry; vocabulary and themes unique to arts and entertainment concerns; research skills including data collection and analysis; and arts and entertainment career exploration and investigation.

Distribution: MR

Formerly "Managing Arts & Entertainment Organizations"

### **AEM 333 - Independent Study in Arts and Entertainment Management (1-3 cr.)**

See "Independent Study (p. 24)"

### **AEM 334 - Independent Study in Arts and Entertainment Management (1-3 cr.)**

See "Independent Study (p. 24)"

### **AEM 350 - Arts and Entertainment Practicum (3 cr.)**

Prerequisite: AEM 250 and Arts & Entertainment Management major.

This course focuses on the management process involved in producing events within the arts and entertainment domain. During the course, students will produce an arts and entertainment event on campus or in the local community. Key learning outcomes focus on the role that managers fulfill in the project management process including establishing project feasibility, planning, organizing, and leading artists and other technical personnel, scheduling, budgeting and post-event assessment, and the use of technology to support event management processes.

Distribution: MR

Open to Arts and Entertainment Management students only.

### **AEM 355 - Arts and Entertainment Venue Operations (3 cr.)**

Prerequisite: AEM 250.

The course provides an overview of arts and entertainment venue operations. Key learning outcomes focus on understanding managerial issues related to various arts/entertainment facilities including museums and performance venues, venue finance, project feasibility, economic impact of venues and events, outsourcing of operational services, application of management principles including budgeting, promotion, public relations, security and risk management, event planning, and operations.

Distribution: MR

### **AEM 465 - Seminar in Arts and Entertainment Management (3 cr.)**

Prerequisite: Arts and Entertainment Management Major and senior standing.

This capstone course examines contemporary issues and challenges for managers in the arts and entertainment industry. Key learning outcomes focus on understanding environmental forces shaping current practices in arts and entertainment organizations, maximization of arts and entertainment organization revenue streams including fundraising, grant writing, and membership development, and the nature and purpose of boards of directors. Strategies for arts and entertainment industry career determination and implementation are emphasized.

Distribution: MR

### **AEM 480 - Internship in Arts and Entertainment Management (3 cr.)**

See "Internships (p. 25)".

### **AEM 481 - Internship in Arts and Entertainment Management (3 cr.)**

See "Internships (p. 25)".

## **ART - ART**

All ART courses satisfy Aesthetic Perspective requirement.

### **ART 101 - Introduction to Art (3 cr.)**

An introduction to the "Art" of appreciating art, this course is designed to help students feel more confident viewing and discussing the visual arts. In addition to traditional learning tools, students will be challenged by hands-on creative projects, two museum visits,

DVD viewings, oral presentations, Western New England University art gallery visits, and ongoing online discussion questions. Exploring the various ways art has been created from pre-history up to the present will assist students in engaging their minds and imaginations to better understand the multiplicity of art movements that comprise the history of Western visual arts.

Offered: every semester.

Formerly "Art Appreciation"

### **ART 105 - Drawing I (3 cr.)**

This course is an introduction to drawing using a variety of mediums that could include pencil, charcoal, conte crayon, ink, and oil pastel. Since drawing entails direct communication from the eye to the hand, students work mainly from life, such as nature, the model and/or still life, as well as possible assignments using the imagination. The primary focus will be on building drawing skills with an emphasis on composition, so that volume, proportion, placement, value, and developing a strong inner color sense will be realized. Keeping a sketchbook during the semester and a museum visit may be offered in some courses.

Offered: every semester.

Art supply fees \$50.

### **ART 116 - Life Painting with Volumes of Color (3 cr.)**

This course focuses on capturing light and volume through relationships of color in still lifes and landscape painting.

Offered: every year.

Art supply fees \$50.

### **ART 117 - Painting with Volumes of Color II (3 cr.)**

Prerequisite: ART 116

This course allows students the opportunity to further develop their painting skills and understanding of painting undertaken in ART 116. An ongoing dialog between professor and students will occur regarding the formal visual problems being taught, enabling ideas to become focused and clear. Through observation, artists' learn through each other's problems and solutions, in group critiques, as well as from constant individual critiques and demonstrations. Each artist moves freely to develop his/her own inner personal expression, through the formal placement of point, line, plane and sets of planes that become spatially related, manipulated on paper through the colors that create volume. The search for an architectural structure while working directly from a life (model) is the compositional problem of drawing, in that drawing is a "where" thing, ('where' objects exist in space in relation to each other). Artists will rely upon the ability of color to move space through the volume that color creates through the mixing of colors for exact temperature ranges. Constant references are made to other artists' work, where applicable; in order to continuously expand approaches and ideas. Visiting museums and galleries will take the place of at least two of the sessions, as well as working outdoors 'en plein air.' Part of this course involves museum visits to study specific original paintings.

Offered: every year.

Art supply fees \$50.

### **ART 118 - Introduction to Jewelry Making (3 cr.)**

This course will provide students with the fundamental knowledge of jewelry-making through multiple hands-on projects. This course will

provide the skills of basic beading techniques with various materials into wearable pieces of art: necklaces, earrings, and bracelets.

Art supply fees \$50.

### **ART 120 - Art of Hand Papermaking I (3 cr.)**

Students learn about preparation of the pulp; dip, pour, and paint methods of sheet formation; and pressing and drying of formed sheets. Students will explore decorative sheet formation techniques such as laminating, embedding, and surface embellishment. Finally, students will learn ways to use this paper as a medium for constructing works in paper, such as collage assemblage, casting, weaving, or 2- and 3-D cards.

Art supply fees \$50.

### **ART 201 - Survey of Western Art I (3 cr.)**

A historical survey of Western art and architecture from ancient times to the beginning of the Renaissance.

Offered: every other year.

### **ART 202 - Survey of Western Art II (3 cr.)**

A historical survey of Western art and architecture from the middle of the Renaissance to the twentieth century.

Offered: every other year.

### **ART 212 - London through the Ages (3 cr.)**

Cross-Listed as: HIST 212

This three-week summer course taught in London in conjunction with CUL 270 covers the history and culture of the city from the Roman period to the present day, and features extensive exploration of the city and its historic sites.

Satisfies the aesthetic perspective or historical perspective requirements.

### **ART 215 - Drawing II (3 cr.)**

Prerequisite: ART 105.

This is a rigorous course that enables students to develop their personal vision further, and to explore the medium of drawing more deeply, based on the foundation acquired in ART 105. Emphasis is on expanding the drawing skills through confrontation with the formal visual problems, using imagination, new ideas, new materials, and new techniques. One goal is to bring out the expressive qualities in each student.

Offered: every spring.

Formerly "Intermediate Drawing"

Art supply fees \$50.

### **ART 218 - Paper as Fiber Art (3 cr.)**

This course focuses on the exploration of paper as a creative medium in the world of fiber art. The history of paper as fiber art is covered. The versatility and potential of paper as art is demonstrated through the use of paper and paper pulp. Techniques such as alteration and collage design, texturizing paper, surface decoration of paper, book binding, and dipped sculpture will be covered so students can then use these techniques to design other works: Sculpture, altered art, collage, illumination, and book art, for example. Fiber art is presented to and explored by students as a major and exciting movement in

contemporary art. This course will satisfy the aesthetic perspectives requirement of the GUR.

Art supply fees \$50.

### **ART 220 - Art of Hand Papermaking II (3 cr.)**

Prerequisite: ART 120.

This intermediate course focuses on sheet formation using plant fibers instead of recycled paper. The course will also cover testing paper for permanence, additives to the pulp (for sizing and permanence), mold making, coloring agents surface decoration, simple bookbinding, and watermarks. Finally, students will use this paper as a medium for constructing works of paper art: Collage, assemblage, personal watermarks, casting from self made molds, sewn and accordion books, and altered books are some of the possibilities.

Offered: every year.

Art supply fees \$50.

### **ART 225 - Impressionism (3 cr.)**

This course focuses on the development of Impressionism in art, a departure from realism. Representative figures, French, American, and British, will be studied, such as Monet and Renoir. Some attention will be paid both to the technique and philosophy of Impressionism, as well as to its cultural background.

Offered: in alternate years.

### **ART 240 - 2-D Art (3 cr.)**

This is a foundation level studio art course that explores different methods of solving two-dimensional visual problems based on the elements and principles of design. Hands-on projects involving a variety of mediums and materials encourage students to creatively strengthen their problem-solving skills while building communication skills through written and group critiques as well as a paper based on a museum visit. This course will satisfy the ethical perspectives requirement of the GUR.

Art supply fees \$50.

### **ART 242 - Chalk Pastels (3 cr.)**

The purpose of this course is to introduce you to the art of using chalk pastels. This delightful, richly colored medium is considered *apainting medium* even though it is a dry material and you are "drawing" with it. Your drawing and color handling skills will naturally improve as you work on a variety of projects that will help you experiment and practice using chalk pastels. Different paper colors and surfaces will be used to explore a range of pastel techniques with various subjects such as abstraction, still life, flowers and/or natural landscape. A sketchbook of outside assignments will be required to help you learn how to "see" the world around you. A museum visit may also be required. No Prerequisite required for this course.

Art supply fees \$50.

### **ART 243 - Chalk Pastels II (3 cr.)**

Prerequisite: ART 242

The purpose of this course is to continue the study of the art of using chalk pastels, further developing the knowledge and skills acquired in ART 242. Your drawing and color handling skills will naturally continue to improve as you work on a variety of more advanced and

personal projects. It is also expected that you will keep a sketchbook of outside assignments designed to further develop your ability to "see" the world around you. Different paper colors and surfaces will again be used to explore the range of pastel techniques learned in ART 242, with various subjects of a more personal choice, possibly including abstraction, still life, portraits, flowers and/or the natural landscape. A museum visit may also be required.

Art supply fees \$50.

### **ART 250 - 3-D Art (3 cr.)**

This is a foundation level studio art course that explores the manipulation of various 2-D and 3-D materials to create 3-D artworks through use of the Elements and Principles of Design. There may also be a museum visit, as well as visits to the Western New England University Art Gallery to view original 3-D artwork in a public, professional setting. Students will test and strengthen their problem-solving and communication skills through a series of hands on projects involving wire, plaster casting, found objects, and multiple recyclables, as well as written and group critiques.

Art supply fees \$50.

### **ART 290 - Special Topics in Art (1-3 cr.)**

Prerequisite: Sophomore standing.

Topics in art that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **ART 310 - Medieval Architecture and Society (3 cr.)**

Prerequisite: Junior standing.

Cross-Listed as: HIST 310

This course examines the monuments of medieval architecture in their historical context. We will study knightly castles and peasant cottages as well as the great Romanesque and Gothic abbeys and cathedrals, with the ultimate goal of learning not only about the buildings themselves but the society that created them.

Satisfies both the aesthetic perspective and historical perspective requirements.

### **ART 390 - Special Topics in Art (1-3 cr.)**

Prerequisite: Junior standing.

Topics in art that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

## **AS - AEROSPACE STUDIES**

### **AS 111 - Air Force Today I (1 cr.)**

Participative survey course designed to introduce students to the U.S. Air Force and Air Force Reserve Officer Training Corps. Featured topics include: mission and organization of the Air Force, leadership and followership, professionalism, military customs and courtesies, Air Force officer opportunities, military pay and benefits, and an introduction to communication skills. All textbooks and special reference materials are supplied by the department.

### **AS 112 - Air Force Today II (1 cr.)**

Continuation of AS 111. Additional study of the organizational structure of the Air Force with emphasis on leadership, interpersonal relationships, team building, leading diverse organizations, and

communication skills. All textbooks and special reference materials are supplied by the department.

### **AS 191 - Advanced Physical Fitness (1 cr.)**

Designed to encourage physical fitness and improve self-confidence. Warm-up exercises, calisthenics, running, various team sports. All exercises accomplished as a group.

### **AS 223 - Air Force Way (1 cr.)**

Participative survey course designed to facilitate the transition from Air Force ROTC cadet to Air Force ROTC officer candidate. Featured topics examine general aspects of air and space power through a historical perspective. Time periods covered range from the first balloons and dirigibles through the Korean War and into the Cold War era, Air Force heritage and leaders. All textbooks and special reference materials are supplied by the department.

### **AS 224 - Air Force Way II (1 cr.)**

Continuation of AS 223. Further study of air power from the Vietnam War through today's critical air and space components of national defense. Also included is Air Force support of civic actions, scientific missions, and space exploration. Effective communication techniques are emphasized. All textbooks and special reference materials are supplied by the department.

### **AS 335 - Air Force: Leadership and Management I (3 cr.)**

Concepts of management and leadership in relation to the role of the U.S. Air Force officer. Includes leadership, followership, military briefing techniques, critical thinking, problem solving, management functions, power and influence, leadership authority and responsibility, conflict management, feedback, counseling, corrective supervision, situational leadership, motivation, and effective writing.

### **AS 336 - Air Force: Leadership and Management II (3 cr.)**

Continuation of AS 335. Includes effective supervision, profession of arms, leadership accountability, teambuilding, military ethics, ethics, effective writing, professional relations, officer evaluating techniques, officer professional development, and communication skills.

### **AS 441 - National Security Policy I (3 cr.)**

U.S. Constitution, government and its impact on the military, civil-military relations, contemporary societal and global issues in the armed forces; supervision, discipline and military justice; other pre-commissioning topics.

### **AS 442 - Preparation for Active Duty (3 cr.)**

Continuation of AS 441. Advanced topics in preparation for U. S. Air Force service include effective supervision and feedback, military justice, and military law, Air Force policies and other pre-commissioning topics.

## **BIO - BIOLOGY**

### **BIO 101 - Basic Biology: Organisms (3 cr.)**

This is an introduction to the biology of organisms and their component parts. Intended primarily for nonmajors, the emphasis is on the structure and function of human cells and organs.

Distribution: GUR/MR

Two class hours, three-hour lab.

Laboratory fees \$100.

### **BIO 102 - Basic Biology: Populations (3 cr.)**

Prerequisite: BIO 101.

This is an introduction to the interactions of organisms. Intended primarily for nonmajors, the emphasis is on inheritance, evolution, and ecology.

Two class hours, three-hour lab.

Laboratory fees \$100.

### **BIO 103 - Life Sciences I (3 cr.)**

This course is an introduction to cells, plant biology and human anatomy and physiology.

Distribution: GUR/MR

Two class hours, three-hour lab.

Laboratory fees \$100.

### **BIO 107 - General Biology I (3 cr.)**

Prerequisite: One unit of secondary school chemistry or CHEM 101.

Corequisite: BIO 117.

Intended for science majors, this course focuses on evolution, biochemistry, cells, and genetics. Students learn the basic concepts of biology and write about them using the appropriate vocabulary. Students also use their new knowledge to practice problem solving.

Distribution: GUR/MR

This course is a prerequisite.

### **BIO 108 - General Biology II (3 cr.)**

Prerequisite: BIO 107/BIO 117; or permission of the instructor.

Corequisite: BIO 118.

Intended for science majors, the focus is on the diversity of life, the function of organs in animals, and evolution/ecology. Students learn the basic concepts of biology and write about them using the appropriate vocabulary. Students also use their new knowledge to practice problem solving.

Distribution: GUR/MR

### **BIO 117 - General Biology Laboratory I (1 cr.)**

Prerequisite: BIO 107 or concurrently.

Students apply scientific thinking and basic technical skills to the study of cells. Methods practiced include microscopy, spectroscopy, and chromatography as well as the collection, graphing, and interpretation of data.

Distribution: GUR/MR

This course is a prerequisite.

Three-hour lab.

Laboratory fees \$100.

**BIO 118 - General Biology Laboratory II (1 cr.)**

Prerequisite: BIO 108 or concurrently.

Students examine the difference between various types of organisms and dissect a typical mammal to study its internal structure. They also learn and use the applicable terminology.

Distribution: MR

Three-hour lab.

Laboratory fees \$100.

**BIO 151 - The Biology of Human Reproduction (3 cr.)**

Prerequisite: BIO 101.

This course is a study of the anatomical structure and biological function of the human reproductive system. It includes such topics as the menstrual cycle, puberty, fertilization, embryonic development, birth, contraception, and sexually transmitted diseases.

BIO 101, followed by this course, would meet the General University Requirements for the Natural Science Perspective.

This is a one semester course without a lab.

**BIO 152 - Human Heredity (3 cr.)**

Prerequisite: BIO 101.

This course introduces the student to an overview of hereditary issues in humans. Topics include inheritance patterns, DNA profiling uses in forensics, gene therapy, recombinant DNA technologies, and pedigree analysis.

BIO 101, followed by this course, would meet the new GUR requirements for the Natural Science Perspective.

This is a one semester course without a lab.

**BIO 153 - Principles of Environmental Science (3 cr.)**

Prerequisite: BIO 101 or CHEM 101/CHEM 105 or GEOL 101.

Finding effective solutions to most environmental problems requires an understanding of sound science and engineering, good public policy, an appreciation of political and economic reality, and an ethical sense of the relationship between humans and the natural world. The interrelationships among these principles provide the unifying theme for this course, which will be covered in five parts.

BIO 101 or CHEM 101, followed by this course, would meet the General University Requirements for the Natural Science Perspective.

Distribution: GUR/MR

This is a one semester course without a lab.

**BIO 156 - Biological Evolution (3 cr.)**

Prerequisite: BIO 101, GEOL 101, or permission of instructor.

An introduction to the historical development of the Theory of Evolution, the evidence for and mechanisms of evolution, and the major events in the history of life on Earth with emphasis on humans.

BIO 101 or GEOL 101 followed by this course fulfills the GUR requirement for the Natural Science Perspective.

**BIO 190 - Special Topics in Biology (1-3 cr.)**

Topics in biology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**BIO 201 - Plant Biology (4 cr.)**

Prerequisite: BIO 108.

Students examine various kinds of plants as well as their structure, internal workings, ecological relationships, and evolution. They learn basic concepts and write about them using the appropriate terminology. Data collecting, analysis, and interpretation are also practiced.

Distribution: MR

Three class hours, three-hour lab.

Formerly BIO 301.

Laboratory fees \$100.

**BIO 203 - Microbiology (4 cr.)**

Prerequisite: BIO 107, BIO 117, and CHEM 106.

This is an introduction to bacteria and viruses, and the techniques for working with bacteria and viruses, including their isolation, identification, and enumeration.

Distribution: MR

Three class hours, three hour lab.

This course is a prerequisite.

Formerly BIO 303 and BIO 313.

Laboratory fees \$100.

**BIO 213 - Ecology (3 cr.)**

Prerequisite: BIO 108, CHEM 105 or concurrently.

This is a study of the interaction of plants and animals and their relationship to the physical environment. Such topics as population dynamics, food chains, energy flow, and adaptations are included.

Distribution: MR

Three class hours.

3 to 4 crs Fall'11. back to 3 crs Fall'14.

**BIO 215 - Anatomy and Physiology I (4 cr.)**

Prerequisite: BIO 108/BIO 118 and CHEM 106.

This course offers a comprehensive study of human anatomy and physiology at the cell, tissue, and organ system levels of organization. Topics include anatomical terminology, the basic chemistry of life, structure and function of human cells and tissues, and the anatomy and physiology of integumentary, skeletal, muscular, nervous, and endocrine systems.

Distribution: MR

Three class hours, three-hour lab.

This course is a prerequisite.

Laboratory fee \$100.

**BIO 216 - Anatomy and Physiology II (4 cr.)**

Prerequisite: BIO 215.

A continuation of BIO 215, this course includes a study of the structure and function of the skeletal, muscular, cardiovascular, immune, digestive, respiratory, urinary, and reproductive systems.

Distribution: MR

Three class hours, three-hour lab.

This course is a prerequisite.

Laboratory fee \$100.

### **BIO 240 - Research Projects in Biology (1-3 cr.)**

Prerequisite: CHEM 106, BIO 108/BIO 118, sophomore standing, a minimum GPA of 3.30 in the BIO major, and permission of the instructor.

These courses provide students with an opportunity to explore, in the laboratory, topics that go beyond what is normally covered in their coursework as well as help develop good laboratory and research skills.

### **BIO 241 - Research Projects in Biology (1-3 cr.)**

Prerequisite: CHEM 106, BIO 108/BIO 118, sophomore standing, a minimum GPA of 3.30 in the BIO major, and permission of the instructor.

These courses provide students with an opportunity to explore, in the laboratory, topics that go beyond what is normally covered in their coursework as well as help develop good laboratory and research skills.

### **BIO 290 - Special Topics in Biology (1-3 cr.)**

Prerequisite: Sophomore standing.

Topics in biology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

Distribution: MR

### **BIO 304 - Histology (3 cr.)**

Prerequisite: BIO 108 and junior standing.

This is a microscopic study of tissues. The course discusses their origin, structure, and relationships to organs.

Offered: every three years.

Fall'15 change from 4 crs w/lab, to 3 crs w/o lab.

Three class hours.

### **BIO 306 - Genetics (4 cr.)**

Prerequisite: BIO 107, BIO 117 and CHEM 210.

A study of classical organismal heredity and its molecular basis.

Topics will include Mendelian principles, gene structure and function, and changes in genetic material.

Distribution: MR

Three class hours, three-hour lab.

Laboratory fees \$100.

### **BIO 310 - Cell Biology (4 cr.)**

Prerequisite: BIO 107, BIO 117 and CHEM 210.

Students examine cellular structure and function including the molecular organization of the various cell organelles. They learn

basic concepts and write about them using the appropriate terminology. An oral presentation is also required of every student. Data collecting, analysis, and interpretation are practiced in the laboratory.

Distribution: MR

Offered: in the spring semester.

Three class hours, three-hour lab.

Laboratory fees \$100.

### **BIO 312 - Developmental Biology (4 cr.)**

Prerequisite: BIO 108; CHEM 106 and junior standing.

Students examine the embryonic development of animals and its genetic control. They learn basic concepts and write about them using the appropriate terminology. Students practice the manipulation of sea urchin, salamander, and chicken embryos in the laboratory.

Offered: in alternate years in the spring semester.

Three class hours, three-hour lab.

Laboratory fees \$100.

### **BIO 333 - Independent Study in Biology (1-3 cr.)**

See "Independent Study (p. 24)".

Laboratory fees may be required.

### **BIO 334 - Independent Study in Biology (1-3 cr.)**

See "Independent Study (p. 24)".

Laboratory fees may be required.

### **BIO 340 - Research Projects in Biology (1-3 cr.)**

Prerequisite: CHEM 210/CHEM 220, BIO 201, BIO 213, junior standing, a minimum GPA of 3.30, in the BIO major and permission of the instructor.

Research Project courses provide students with an opportunity to explore, in the laboratory, topics that go beyond what is normally covered in their coursework as well as help develop good laboratory and research skills. May be a continuation of BIO 240-BIO 241.

### **BIO 341 - Research Projects in Biology (1-3 cr.)**

Prerequisite: CHEM 210/CHEM 220, BIO 201, BIO 213, junior standing, a minimum GPA of 3.30, in the BIO major and permission of the instructor.

Research Project courses provide students with an opportunity to explore, in the laboratory, topics that go beyond what is normally covered in their coursework as well as help develop good laboratory and research skills. May be a continuation of BIO 240-BIO 241.

### **BIO 390 - Special Topics in Biology (1-3 cr.)**

Members of the biology faculty offer selected topics in their areas of specialty. These courses are not offered on a regular basis and may be repeated for credit if the topic differs.

Laboratory fees may be required.

### **BIO 401 - Recombinant DNA/Fingerprinting (3 cr.)**

Prerequisite: BIO 306 or concurrently.

This course introduces the techniques and tools of isolating DNA, use of recombinant DNA techniques to move genes, to recognize genes, to understand the sequencing of DNA, and the use of bioinformatics to compare genetic sequences.

Distribution: MR

Two class hours, three-hour lab.

Laboratory fee \$100.

### **BIO 440 - Undergraduate Research (1-3 cr.)**

Prerequisite: Senior standing.

See "Undergraduate Research (p. 25)".

Laboratory fees may be required.

### **BIO 455 - Evolution (3 cr.)**

Prerequisite: BIO 306 and senior standing.

This is a study of organic evolution and its theoretical basis. This course develops three major themes: the history of evolutionary thought, the mechanisms of evolution, and highlights in the history of life.

### **BIO 480 - Internship in Biology (3 cr.)**

See "Internships (p. 25)".

## **BIS - BUSINESS INFORMATION SYSTEMS**

### **BIS 102 - Problem Solving with Business Tools (3 cr.)**

Prerequisite: College of Business students only or permission of department chair.

This is a hands-on course on business problem solving. The tools used are a spreadsheet and a database software. The objective of the first part of the course is to practice creating spreadsheet models. Applications are designed using built-in functions with special emphasis on financial functions. Charting concepts are introduced as presentation tools. Other skills include: working with Pivot tables, goal-seeking and what-if modeling. The second part of the course is an introduction to DBMS with emphasis on using and developing database applications for a business context. Topics include: Table design, Query design, Reports and Forms design. This course also includes the basics of Business Analytics.

Distribution: BUSR/CR/GUR/MR

This course is a prerequisite.

### **BIS 202 - Introduction to Business Information Systems (3 cr.)**

Prerequisite: BIS 102 or CS 131 and sophomore, junior or senior standing.

Cross-Listed as: HONB 202

This course is an introduction to Information Systems as a discipline including a survey and overview of the role and functions of IS in a business organization, IS job functions and career paths, and the nature and vocabulary of major information technologies. The course explores the role of IS in advancing the digital economy and as a competitive tool for business. The course includes hands-on work with SAP software to show the relationships between the different business functions. Hands-on work includes: navigation with SAP GUI, MD, ORG elements and transactions.

Distribution: BUSR/MR

This course satisfies the SAP Certificate requirement.

Laboratory fee \$100.

### **BIS 210 - Foundations of Web Systems (3 cr.)**

Prerequisite: IT 230 or permission of instructor.

Cross-Listed as: IT 240

This course provides students with the foundation for Web site development and maintenance. Students learn about web browsers, how URLs are resolved, and web pages are returned. They learn hypertext, self-descriptive text, webpage design, web navigational systems, and digital media. Students become proficient with common tools for authoring and publishing Web pages.

This course is equivalent to IT 240 (p. 244).

Lab fee \$100.

### **BIS 220 - Introduction to Business Statistics (3 cr.)**

Prerequisite: BIS 102 and MATH 112.

This is a comprehensive introduction to the use of statistics in business decision-making. This course provides the analytical tools needed for making informed business decisions using data. The focus is on decision-making using the tools of statistics. Topics include graphical and numerical summaries of data, probability distributions; hypothesis tests of mean and proportion, and simple linear regression. The use of computing tools in statistical analysis is emphasized heavily.

Distribution: BUSR/MR

Credit for both this course and MATH 120 or PSY 207 is not permissible.

### **BIS 221 - Statistics for Business Analytics (3 cr.)**

Prerequisite: QR 112 or MATH 120

This course will focus on the business analytics process. Topics will include problem definition, data preparation and statistical analysis. The course builds on descriptive statistics and probability topics taught in the QR 112. Students will learn how to design and conduct a statistical study, how to analyze collected data, as well as how to interpret and communicate the outcomes. Specific statistical methods taught include: estimation of the major population, hypothesis testing for single and multiple parameters, regression analysis, nonparametric statistics, decision analysis, and forecasting methods. A spreadsheet program and a professional statistical package are utilized.

### **BIS 230 - Business Analytics Theory & Practice (3 cr.)**

Prerequisite: BIS 221

This course will make theoretical introduction to decision theory, decision support systems, and business intelligence by exploring a wide range of business analytics tools and processes used to manage structured and unstructured data, make fact based decision, and solve complex business problems.

### **BIS 300 - Introduction to Programming (4 cr.)**

This is an introductory course to programming languages that focuses on the basic techniques of programming by introducing data types, declarations, assignments, loops, arrays, data structures, object-oriented programming, algorithms and problem solving, event-driven programming, and recursion.

Four class hours.

Laboratory fee \$50.

### **BIS 302 - Forecasting for Business (3 cr.)**

Prerequisite: BIS 221 and BIS 202.

This is an exploration of statistical forecasting techniques for business. The major focus is on the development and utilization of forecasting models to assist managers in decision-making. Students develop and explore several computer-based forecasting models. Topics include the business-planning environment for forecasting, basic concepts of forecasting, time series models, and regression models.

### **BIS 305 - Software Design for Business (3 cr.)**

Prerequisite: CS 102 or IT 102.

Corequisite: IT 240.

A study of the contemporary models, technologies, and best practices applied in design, development, and management of complex enterprise system software. The software modeling issues will center around modern CASE (Computer Aided Software Engineering) and graphical design methods and tools. Team based and distributed software design tools will be utilized, featuring management and utilization of data centers, [reusable] software repositories, and multi-user versioning systems. Modern software design patterns, frameworks, and languages will be demonstrated and discussed. Student teams will develop business software components, utilizing a state-of-the-art software design, development, and management IDE (Integrated Development Environment). Issues in software design within SAP (Systems, Applications and Products in Data Processing) and in collaboration with SAP components will be explored.

This course satisfies the SAP Certificate requirement.

### **BIS 310 - Quality and Operations Management (3 cr.)**

Prerequisite: BIS 221; MAN 101/HONB 101; MK 200/HONB 200; AC 202; BIS 202; FIN 214/HONB 214; BIS 202/HONB 202

This is the second quantitative methods course. Topics covered include: supply chain management, benchmarking, forecasting methods, inventory management, MRP, SPC, design of experiments, project management, Six Sigma methodology and linear programming. These topics are covered from the perspective of quality management and process improvement.

Distribution: BUSR

Cannot take both BIS 310 and BIS 312 for credit.

### **BIS 312 - Quality and Operations Management with SAP (3 cr.)**

Prerequisite: BIS 220; MAN 101/HONB 101; MK 200/HONB 200; AC 202; BIS 202; FIN 214/HONB 214; BIS 202/HONB 202

This is the second quantitative methods course. Topics covered include: supply chain\* management, benchmarking, forecasting methods, inventory management, MRP, SPC, project management, six sigma methodology and linear programming. This course includes introductory hands-on implementation of supply chain and project

management in SAP. These topics are covered from the perspective of qualitative management and process improvement.

Distribution: BUSR

This course satisfies the SAP certificate requirement.

Cannot take both BIS 310 and BIS 312 for credit.

### **BIS 321 - Database Management Systems (3 cr.)**

Prerequisite: IT 102 or CS 102.

Cross-Listed as: IT 300

Organizations increasingly rely on computerized database management as databases are an essential component of major information systems. This course provides students with an introduction to the analysis, design and implementation of relational databases. Students are introduced to the fundamental concepts and principles of database management, and gain practical experience by designing and deploying a database using a major DBMS.

Distribution: MR

### **BIS 330 - Applied Data Mining (3 cr.)**

Prerequisite: BIS 230

This course introduces students to the various tools, methods and processes used to analyze data and summarize it into useful information. Students will be able to extract raw data, analyze large data sets to discover existing or previously unknown behavior patterns and trends, and finally transform it into a useful format for managerial decisions.

Distribution: MR

### **BIS 333 - Independent Study in Business Information Systems (1-3 cr.)**

See "Independent Study (p. 24)".

Laboratory fees may be required.

### **BIS 334 - Independent Study in Business Information Systems (1-3 cr.)**

See "Independent Study (p. 24)".

Laboratory fees may be required.

### **BIS 336 - Logistics/Physical Distribution (3 cr.)**

Prerequisite: MK 200 and BIS 220.

This is a study of physical distribution functions and their relationships within an organization. Case studies and readings are utilized to study elements of distribution other than transportation: inventory control, warehousing and distribution centers, customer service, materials handling, industrial packaging, and international distribution. A quantitative analysis approach is emphasized.

### **BIS 340 - Enterprise Resource Planning Systems (3 cr.)**

Prerequisite: BIS 202/HONB 202

This course explores the interaction between operational processes and information systems in the context of Enterprise Resource Systems such as SAP. The course provides a system selection-to-implementation view of ERP systems. Upon completion of this course, students will have a deeper understanding of the evolution of

ERP systems, software design, software selection and implementation issues.

### **BIS 350 - Information Security (3 cr.)**

Prerequisite: BIS 321.

This course provides an overview of the concepts, principles and practice for information security as well as the threats to the security of information systems. Topics include encryption and decryption, public key infrastructure, digital signature, authentication, access control, network security, e-commerce security.

### **BIS 360 - Foundations of E-business (3 cr.)**

Prerequisite: BIS 321.

This course has two components. First, it provides an overview of the essentials of electronic commerce. Topics such as Internet retailing, EC models and applications, EC strategies, social and legal implications, security threats and payment systems are addressed. Second, this course focuses on online application development modules such as JavaScript for Internet applications, XML, MySQL, and Apache.

### **BIS 361 - Management of Information Systems (3 cr.)**

Prerequisite: BIS 202 and junior standing.

This course addresses information systems from a management perspective. Emphasis is placed on the potential role of information and information systems in organizations. It also examines the major problems and opportunities for organizations to exploit the power of information systems while recognizing the limitations of both technology and employees. The strategic use of information systems is emphasized.

### **BIS 372 - Information Systems for the Health Care Industry (3 cr.)**

Prerequisite: BIS 202

The course provides an overview of the IT functions and services for the healthcare industry. The systems that handle business operations, the promise of emerging technologies such as robotics and nanotechnology, and the relationship of IT infrastructure to the various modes of healthcare delivery organizations are some of the topics that will be analyzed and discussed. The course will also touch on privacy and ethical issues linked to IT use in healthcare.

### **BIS 390 - Special Topics in Business Information Systems (3 cr.)**

Prerequisite: Junior in BIS or permission of the instructor.

Topics offered depend upon student interests as well as particular interests of instructors. This course is offered as often as faculty time and student interest permit and may be repeated for credit if the topic differs.

Laboratory fees may be required.

### **BIS 412 - Business Analytics with SAP (3 cr.)**

Prerequisite: BIS 202/HONB 202

This course will introduce the topics of Business Intelligence and Business Information Warehousing. Topics covered will include: Data Mining, Corporate Information Factory, Association Analysis, Clustering, Decision Trees. Hands-on exercises will use SAP.

Distribution: MR

This course satisfies the SAP certificate requirement.

Formerly "Business Intelligence with SAP"

### **BIS 413 - Data Communications and Networks (3 cr.)**

Prerequisite: IT 102 or CS 102.

Cross-Listed as: IT 250

This course provides an overview of the concepts and principles of telecommunications systems and networks, blending technical with managerial topics. It also provides coverage of major operating systems including Microsoft Windows, Linux, and Novell NetWare. Students will examine network architectures, data communications software and hardware, as well as the array of facilities and resources available on the Internet. Students will complete a series of hands-on network projects, and will analyze network design cases throughout the semester. Students may sit for network certification following completion of the course.

Distribution: MR

### **BIS 417 - Systems Analysis and Design (3 cr.)**

Corequisite: BIS 321.

This is an introduction to the systems development life cycle with emphasis on the analysis and design phases. Structured methodologies utilizing CASE tools, as well as prototyping techniques, are covered. A substantial analysis and design project is required.

Distribution: MR

### **BIS 419 - Decision Support and Expert Systems (3 cr.)**

Prerequisite: BIS 202 and senior standing.

This course covers decision support systems and expert systems in roughly equal measure. Issues that integrate the two fields, such as executive information systems, are addressed briefly. This is a hands-on course primarily using spreadsheets as examples of DSS and expert systems generators when addressing ES. Students develop a comprehensive understanding and appreciation of the role of each class of system as well as an understanding of the limitations of technology.

### **BIS 422 - Advanced Database Management Systems (3 cr.)**

Prerequisite: BIS 321.

This course is an advanced practicum in database design, implementation, and administration, utilizing an enterprise database management system. Three areas of database topics will be explored: (1) Database design with modeling and meta-data management tools; (2) Database creation, utilization, and optimization, with a focus on SQL and connectivity; (3) Database administration, including installation, operations, security, and recovery. A completion of two major projects will be required.

Laboratory fee \$100.

### **BIS 428 - Systems Development Project (3 cr.)**

Prerequisite: BIS 417 and senior standing in BIS.

This is an integration of previous course work and an exploration of new issues in BIS. Topics include alternatives to the traditional life cycle methodology; analysis, design, coding, testing, and implementation of a system in a computer-aided software engineering (CASE) environment; the maintenance implications of the choices

made; and team development using modern management techniques. Presentations, demonstrations, reports, and a complete project are required.

### **BIS 430 - Enterprise Computing (3 cr.)**

Prerequisite: Pre- or corequisite: BIS 300/IT 102/CS 102, BIS 413, and BIS 417.

This is a capstone course, building on knowledge and skills acquired by the students in earlier courses. It covers issues and techniques in the design and programming of enterprise-wide applications. A use of distributed-computing objects and technologies is emphasized. The students are exposed to the complexities of integrating a multileveled and distributed infrastructure. In particular, client (end-user), middle-ware, and enterprise database systems and tools are explored. The students are required to develop projects for client-server computing in a multitier architecture. Highly productive development tools are utilized.

Laboratory fee \$100.

### **BIS 445 - Business Analytics Project (3 cr.)**

Prerequisite: BIS 230 and BIS 312

This course provides students with an integrated environment for predictive and descriptive modeling, experimental design, data mining, forecasting, optimization, and text analytics. Students are provided with a range of techniques and processes for the collection, classification, analysis and interpretation of data to reveal anomalies, behavior patterns and trends, new insights, and key variables and relationships.

### **BIS 450 - Multivariate & Big Data Analysis (3 cr.)**

Prerequisite: BIS 221 and BIS 230

This course introduces students to a set of techniques, tools, and models designed to analyze data sets with more than one variable. Student will be able to analyze both categorical and quantitative data sets with multiple factors to predict outcomes based on prior information.

Some multivariate analyses methods employed in this course include Analysis of Covariance (ANCOVA), Multivariate Analysis of Variance (MANOVA); Discriminant Function Analysis (DFA), Multiple Regression (MR), Principal Components/Factor Analysis (PCA/FA), and Reliability and internal consistency Analysis.

### **BIS 455 - Enterprise Portal Design with SAP (3 cr.)**

Prerequisite: BIS 412.

This course will introduce the concepts of Enterprise Portal design using Netweaver. The topics covered will include Web Application Server, Business Information, Exchange Infrastructure, Knowledge Management, Mobile Infrastructure, Master Data Management. Students will design sample applications in SAP.

This course satisfies the SAP Certificate requirement.

Laboratory fee \$100.

### **BIS 480 - Internship in Business Information Systems (3 cr.)**

See "Internships (p. 25)".

Distribution: MR

### **BIS 481 - Internship in Business Information Systems (3 cr.)**

See "Internships (p. 25)".

Distribution: MR

## **BL - BUSINESS LAW**

### **BL 201 - Introduction to Business Law (3 cr.)**

Cross-Listed as: HONB 201

The goal of this course is to identify and distinguish the different aspects of the State and Federal Court System, as well as alternative dispute resolution options; identify legal issues and apply legal principles related to the following areas of law: torts, negligence, defamation, and contracts. Key learning outcomes for these areas of law include students' ability to communicate the positions of the parties to a legal conflict; differentiate between the boundaries of law, ethics and sound business decision-making; and apply legal analysis in planning and decision-making to avoid legal conflicts in business decisions.

Distribution: BUSR

### **BL 308 - Labor Management Relations (3 cr.)**

Prerequisite: MAN 101/HONB 101 and junior standing.

The course explores the elements associated with the formalized relationship between labor and management with particular emphasis on the collective bargaining framework. Key learning outcomes focus on the understanding, recognition, and application of concepts associated with workplace factors that lead to union organizing; the elements of the organizing process; identification of unfair labor practices; the collective bargaining process, strike mechanisms, and mediation; the arbitration process; and the role of third parties in the labor-management relationship.

Distribution: MR

Cannot take both BL 308 and BL 388 for credit.

### **BL 309 - Business Law Simulation (1 cr.)**

Prerequisite: BL 201.

This is a simulation focusing on the legal process and use of alternative dispute resolution (adr). Key learning outcomes include students' ability to apply and use methods of alternative dispute resolution in resolving legal conflicts. This is an experiential course that requires active student participation in role plays and other high involvement roles.

### **BL 350 - Business Law for Arts and Entertainment (3 cr.)**

Prerequisite: AEM 250.

The goal of this course is to identify and distinguish the different aspects of the State and Federal Court System, identify legal issues, and apply legal principles related to torts, and contracts. Specific attention will be given to arts and entertainment law topics such as intellectual property, copyright, First Amendment, representing talent, provenance and authentication. Key learning outcomes for these areas of law include students' ability to apply and use the skills necessary to communicate the positions of the parties to a legal conflict, explain the differentiation between the boundaries of law and ethics in sound business decision making, and apply legal analysis in planning and decision making to avoid legal conflicts in business decisions.

Distribution: BUSR

Cannot take both BL 201 and BL 350 for credit.

### **BL 360 - Business Law for Sport Management (3 cr.)**

Prerequisite: SPMN 250.

Open to Sport Management students only. The goal of this course is to identify and distinguish the different aspects of the State and Federal Court System, identify legal issues, and apply legal principles related to torts, and contracts. Specific attention is given to legal issues related to the following areas of sport law: negligence law, anti-trust, defamation, disabilities, trademark, Title IX. Key learning outcomes for these areas of law include students' ability to apply and use the skills necessary to communicate the positions of the parties to a legal conflict, explain the differentiation between the boundaries of law and ethics in sound business decision-making, and apply legal analysis in planning and decision-making to avoid legal conflicts in business decisions. Cannot take BL 201 and BL 360 for credit.

Distribution: MR

Cannot take BL 201 and BL 360 for credit.

### **BL 388 - Labor Management Relations in Sport (3 cr.)**

Prerequisite: BL 360 or permission of instructor.

Students will acquire an understanding of the various phases of the labor-management relationship generally and in the sports industry. Specifically, this understanding will be achieved through an understanding of historical developments leading to the development of labor-management generally and labor-management relations in sports. In addition, the labor relations process will be studied including the union organizing process, the collective bargaining process, and the administration and interpretation of collective bargaining agreements.

Cannot take both BL 308 and BL 388 for credit.

### **BL 403 - Business Law for Entrepreneurs (3 cr.)**

Prerequisite: BL 201/HONB 201 and MAN 251/ENTR 251.

This course is designed to give students a familiarity of the various forms of organization and the rights and responsibilities of the officers, employees, and shareholders; taxation of the various organizational forms; patent and other forms of intellectual property issues; contract law particularly as it applies to licensing, leases, employees, and insurance; and ways to mitigate the various forms of risk.

Distribution: MR

### **BL 424 - Business Law for Human Resource Management (3 cr.)**

Prerequisite: BL 201 or BL 360, MAN 323.

The goal of this course is to identify legal issues related to the following areas of human resource law: negligent hiring, employment at-will, race discrimination, sex discrimination (including sexual harassment), disabilities discrimination. Key learning outcomes for these areas of law include students' ability to apply and use skills necessary to communicate the positions of the parties to a legal conflict, explain the boundaries between law and ethics in sound business decision-making, and apply legal analysis in planning and decision-making to avoid legal conflicts in business decisions.

Distribution: MR

## **BME - BIOMEDICAL ENGINEERING**

### **BME 201 - Foundations of Biomedical Engineering (3 cr.)**

Prerequisite: MATH 134

Corequisite: ENGR 103, PHYS 134, and CHEM 105.

This sophomore level course introduces the students to fundamental concepts in the field of biomedical engineering including engineering calculations and an in-depth study on conservation principles, in particular, conservation of mass, energy, and charge. The course introduces students to the concept of mathematical modeling of biological and physiological systems. The course incorporates one or more tours to clinical and/or industrial sites.

Distribution: MR

### **BME 202 - Biomedical Systems (3 cr.)**

Prerequisite: BME 201, EE 205, MATH 236

This sophomore level course introduces the students to concepts in systems theory as it relates to biomedical systems. Topics covered include time domain, Laplace domain, and Fourier domain analysis of systems, including impulse response, step response and system stability. Relevant physiological systems will be introduced and serve as a primer for deeper study of physiological systems in the junior year. The course will rely heavily on computer simulation.

Distribution: MR

### **BME 206 - Biomedical Sophomore Laboratory (1 cr.)**

Corequisite: BME 202

This laboratory course will allow students to apply the concepts learned in courses to the real world. Experiments include reaction time, center of pressure/balance, statics of human limbs, and 1st and 2nd order mechanical and electrical systems.

Distribution: MR

### **BME 210 - Introduction to Biomedical Engineering Research (1-3 cr.)**

Prerequisite: ENGR 103 or

Corequisite: ENGR 103.

This course allows first- and second-year biomedical engineering students to perform research with a biomedical engineering faculty member. Students are expected to work three hours per week for each credit hour attempted. Students will present a formal report on their research project at the end of the semester. Note: A maximum of 6 credit hours of research may be applied to complete BME degree requirements

### **BME 240 - Biomaterials (3 cr.)**

Prerequisite: CHEM 105, BME 201 and PHYS 134.

This is an introduction to the fundamental concepts of materials science with applications in biomedical engineering. Students analyze physical properties of biomaterials, understand the interaction of the biomaterial with the human body, examine material specifications and fabrication methods, and compare and contrast various materials for an application.

Distribution: MR

Formerly BME 340

**BME 301 - Engineering Physiology I (3 cr.)**

Prerequisite: BME 202; MATH 350 or concurrently.

Corequisite: BME 305.

This course combines the study of physiology, anatomy, and engineering. Students gain an in-depth understanding of specified physiological systems and additionally study appropriate engineering models and concepts associated with the various systems. The systems covered include introduction to cell physiology, skeletal and smooth muscle, blood, circulatory system, immunology, and the endocrine system.

Distribution: MR

**BME 302 - Engineering Physiology II (3 cr.)**

Prerequisite: BME 301 and BME 305.

Corequisite: Corequisite BME 306.

This is the second of a two-part course that combines the study of physiology, anatomy, and engineering. Students gain an in-depth understanding of specified physiological systems and additionally study appropriate engineering models and concepts associated with the various systems. The topics covered include neurophysiology, cardiovascular physiology, respiratory system, renal system, and gastrointestinal system.

Distribution: MR

**BME 305 - Biomedical Engineering Laboratory I (1 cr.)**

Corequisite: BME 301, BME 331, IE 212.

This laboratory will allow the student to apply the concepts learned in the classroom to the real world. Experiments and exercises will be relevant to and augment the topics covered in the classroom. Topics include data acquisition, amplifiers and filters, electromyography (EMG), electrocardiography (ECG), thermolulution, and ultrasound.

Distribution: MR

**BME 306 - Biomedical Engineering Laboratory II (1 cr.)**

Prerequisite: BME 305.

Corequisite: BME 302.

This laboratory will allow the student to apply the concepts learned in the classroom to the real world. Experiments and exercises will be relevant to and augment the topics covered in the classroom. Topics include viscometry, hemorheology, enzyme immunosorbent assay (EIA), mechanical testing of materials, ethics, humans as research subjects, animals as research subjects, and contemporary research in biomedical engineering. Additionally, students will be required to participate in the Interdisciplinary Project in collaboration with the Department of Marketing.

Distribution: MR

**BME 331 - Bioinstrumentation (3 cr.)**

Prerequisite: BME 202, ENGR 208 or EE 205.

This course introduces students to the principles and techniques of acquiring data from the human body. Topics include measurement terminology, conversion of analog and digital signals, transduction, sensors, and medical imaging. Students will learn how to measure a wide variety of physiologically relevant phenomena including:

temperature, pressure, flow, bioelectric signals, and concentration of biochemical analytes. Students explore the design features of instrumentation related to making measurements from the following physiological systems: cardiovascular system, nervous system, and respiratory system. Students design, build and validate biomedical amplifier circuits, specify off-the-shelf equipment, and study the latest advances in medical instrumentation.

Distribution: MR

**BME 332 - Biomedical Imaging (3 cr.)**

Corequisite: BME 301, BME 331, or permission of the instructor.

This course is a study of the underlying principles associated with medical imaging systems. Several medical imaging modalities will be studied including: x-ray, computed tomography, ultrasound, magnetic resonance imaging, and nuclear imaging. Topics will focus on clinical applications of the technology.

**BME 335 - Medical Image Processing (3 cr.)**

Prerequisite: ENGR 105, EE 205, and junior standing

This course introduces students to the fundamental processes and algorithms implemented as standard image processing techniques. The image analysis performed in the course will utilize only digital images and primarily grayscale images. The focus of the course is on medical image processing applications. Topics covered include spatial resolution and spatial frequency, image histograms, spatial filtering and image segmentation.

**BME 350 - Biomedical Thermal Systems (3 cr.)**

Prerequisite: CHEM 106, MATH 236, and BME 301.

This course is a study of the physical and mathematical concepts of thermodynamics, fluid mechanics, and heat transfer with an emphasis on physiological and biological examples. Students perform material balances and apply the first and second law of thermodynamics to biomedical systems. Additional topics include an introduction to biomedical fluid mechanics using the Bernoulli and energy equations and the study of heat transfer to and from the human body under various environmental conditions.

Distribution: MR

**BME 351 - Biomechanics I (3 cr.)**

Prerequisite: MATH 134 and PHYS 133

This course will introduce biomedical engineering students to statics and strength of materials related to the human body. Topics include musculoskeletal anatomy, force and moment vectors, statics of various joints, stress and strain, tension, compression, torsion, bending, combined loading, and material properties of biological tissues such as bone, tendons, ligaments, and articular cartilage.

Distribution: MR

Formerly BME 251

**BME 380 - Biomedical Engineering Practicum (3 cr.)**

Prerequisite: Junior standing and permission of instructor.

Projects in which engineering analysis and design are applied to practical engineering problems in the rehabilitation, instrumentation, biological, or medical fields. A written plan at the time of registration and a final oral and written report are required.

**BME 405 - Biomedical Engineering Senior Laboratory (1 cr.)**

Prerequisite: BME 302, BME 306, and BME 331.

This senior level course is designed to foster independent thinking in the laboratory. Students will conduct experiments on living systems and will develop fundamental skills in designing experiments.

Additionally, students will participate in a multidisciplinary team design project.

Distribution: MR

**BME 410 - Biomedical Engineering Research (1-3 cr.)**

Corequisite: BME 301.

This course allows third- and fourth-year biomedical engineering students to perform research with a biomedical engineering faculty member. Students are expected to work three hours per week for each credit hour attempted. Students will present a formal report on their research project at the end of the semester. Note: A maximum of 6 credit hours of research may be applied to complete BME degree requirements

**BME 423 - Product Development and Innovation (3 cr.)**

Prerequisite: Senior standing in engineering.

This course will cover new product innovation from both an entrepreneurship and intrapreneurship perspective. Students will learn about generating and identifying business opportunities, assessing concept ideas from technical, market, and financial perspectives; designing and developing new products; testing prototypes from technical and market perspectives; and developing a marketing plan including launch, monitoring, and measurement provisions. Interdisciplinary teams of business and engineering students will apply these principles to develop product concepts, prototype products, final designs, and marketing plans for a new consumer or business product. The final designs and plans will be presented to an expert panel of business executives, investors, and faculty.

Formerly BME 471.

Can not receive credit for taking BUS 423 and ME 423.

**BME 431 - Advanced Bioinstrumentation (3 cr.)**

Prerequisite: BME 331, BME 302, and senior standing or permission of instructor.

This course is a study of practical aspects of designing instrumentation for biomedical applications. The course will include topics such as semiconductor devices and applications, nonideal amplifiers and filters, noise in electrical circuits, data acquisition principles, and regulatory requirements. Students will learn to design and validate subsystems, focusing on critical performance parameters and the limitations of the devices for practical use.

**BME 432 - Lab on a Chip (3 cr.)**

Prerequisite: CHEM 105 and EE 205, or permission of the instructor.

This course studies the design, development, and application of Lab on a Chip systems in the biomedical and life sciences. Topics include fundamentals of miniaturization, microfluidics, sensors, fabrication, packaging, and system integration. Students will review current applications of miniaturized chemical/biological analysis systems and will investigate case studies through the preparation of a term paper

and oral presentation. Students will also design a basic microfluidic system that will be implemented in a hands-on laboratory project.

**BME 434 - Biosensors, BioMEMS, and Nanomedicine (3 cr.)**

Prerequisite: CHEM 105 and EE 205, or permission of the instructor.

This course studies the development and application of micro and nanotechnologies in medicine. Topics include biosensors, transduction mechanisms, and fundamentals of bio-microelectromechanical systems (BioMEMS). Recent progress in nano-scale sensors and systems will also be explored, including nanoparticle-based systems for targeted therapy, drug-delivery, and nanobiosensors.

**BME 437 - Senior Design Projects I (3 cr.)**

Prerequisite: Senior standing.

Corequisite: BME 405.

Working under the supervision of the biomedical engineering faculty, students select a capstone design project, thoroughly research solutions, and undergo formal design reviews. Students will learn and apply fundamental project management techniques to their projects. They are encouraged to work on clinically or industry relevant projects. The students will undergo formal design reviews with faculty, clinical, or industrial sponsors, and other students. Students are assessed with progress reports, design reviews, and the creation of a design history file. The project will be continued in BME 440 in the subsequent semester.

Distribution: MR

**BME 440 - Senior Design Projects II (4 cr.)**

Prerequisite: BME 437.

Working under the supervision of biomedical engineering faculty and project advisors, students complete the work on a capstone project that was proposed in BME 437. Students organize formal design reviews with faculty, other students, and industrial sponsors. Students are assessed with weekly progress reports, design reviews, a final written report, and an oral defense of the project. Additionally, students will prepare and submit a technical paper for external dissemination of their project results to a regional biomedical engineering conference.

Distribution: MR

**BME 443 - Advanced Biomedical Materials and Medical Devices (3 cr.)**

Prerequisite: BME 240/BME 340 or ME 309.

This course is designed to explore the field of biomaterials and medical devices. The basic science of metals, ceramics, polymers and biological materials used in medical and dental applications will be presented. Major concepts will focus on structure-property relationships and the physical and mechanical properties of these important classes of materials. Other topics will include modes of materials degradation and failure, including metallic corrosion, wear and fretting, and polymer degradation. Issues related to the biocompatibility of materials and the performance of medical devices will be presented. An emphasis is placed on surface and interfacial properties of biomaterials and the biological response of the human body to the presence of artificial materials. Examples of specific implants and medical devices will be presented and studied both through lecture materials and group projects.

**BME 451 - Biomechanics II (3 cr.)**

Prerequisite: BME 251/BME 351

This course will introduce biomedical engineering students to the dynamics of the human body. Topics include musculoskeletal dynamics, kinematics and kinetics of rigid bodies, and anthropometry.

Distribution: MR

**BME 452 - Biofluid Mechanics (3 cr.)**

Prerequisite: BME 251/BME 351

This course will cover the principles of fluid statics and dynamics and their application to the human circulatory system. Topics will include the rheological properties of blood, models of flow of blood in large and small vessels, flow through prosthetic devices (e.g. heart valves), and alterations in flow due to disease.

**BME 460 - Cell and Tissue Engineering (3 cr.)**

Corequisite: BME 302 and BME 306, or permission of the instructor.

This course will cover principles behind the rapidly advancing field of cell and tissue engineering. Topics include the culture of mammalian cells, the role of mechanical forces in cellular processes, and biomaterial-cell interactions. Example of the development of tissue-engineered devices for the replacement of blood vessels and heart valves, liver, kidney, and bone and cartilage will be studied.

**BME 480 - Internship in Biomedical Engineering (3 cr.)**

See "Internships (p. 25)".

**BME 490 - Special Topics in Bioengineering (3 cr.)**

This is a study of an advanced topic in bioengineering of special interest to engineering majors, but not offered on a regular basis.

**BUS - BUSINESS****BUS 101 - First Year Business Seminar (3 cr.)**

This is a course designed specifically for new college students in the College of Business. The emphasis, which is on personal development, focuses on an understanding of self and the habits necessary for personal effectiveness and for effective relationships with others. Key learning outcomes include: time management skills, listening skills, oral presentation skills, critical thinking skills, and information literacy skills. The course includes a term project and exposure to the range of career options consistent with students' personal mission statements. There is a high level of interaction with the faculty and peers both inside and outside the classroom.

Distribution: BUSR/CR/GUR

This course is a prerequisite.

**BUS 210 - Living and Learning Abroad (1 cr.)**

Prerequisite: Sophomore standing.

This course focuses on intercultural concepts and skills necessary for business students to maximize study abroad experience. Readings, online class discussions, and course activities take place throughout the semester abroad. Topics include: country shock and culture

shock, values and culture, educational culture, stereotypes and generalizations, intercultural communication, global and self-awareness, empathy, perspective shifting, and re-entry.

**BUS 211 - Developing Intercultural Competence (2 cr.)**

Prerequisite: BUS 210

This course builds upon work undertaken in BUS 210 and during the study abroad experience by continuing to focus on strategies for developing intercultural competence. Readings, activities and discussions emphasize the concept of culture and the nature of intercultural competence, the relevance of intercultural competence to contemporary business, and the design of an individual intercultural competence development plan.

Lab Fee \$20

**BUS 290 - Special Topics in Business (3 cr.)**

This is a study of topics in business that are not offered on a regular basis.

**BUS 301 - Managing the Established Enterprise (3 cr.)**

Prerequisite: AC 202, BIS 202/HONB 202, BIS 221, BL 201/BL 360/BL 350/HONB 201, FIN 214 &amp; MK 200/HONB 200.

The course provides an intermediate integrative framework between BUS 101 and BUS 450 for continued development of analytical and decision-making skills in the business environment. Focused on the established firm, the course integrates core concepts from each functional area covered in introductory coursework as a means of understanding the impact of planning, operating, and control processes in firm performance. Students will analyze operational elements of existing firms through case analysis as an element of course pedagogy. Established learning outcomes include: applying financial and qualitative analyses to evaluate operational performance, explaining the nature and role of planning and control in enterprise success, and understanding the impact of functional decisions on multiple areas of the firm.

Cannot take BUS 301 and BUS 312 for credit

**BUS 312 - Business Processes and Enterprise Resource Planning with SAP (3 cr.)**

Prerequisite: AC 202, BIS 202/HONB 202, BIS 221, BL 201/BL 360/BL 350/HONB 201, FIN 214 &amp; MK 200/HONB 200.

This course provides the intermediate integrative framework between BUS 101 and BUS 450. It does so by using SAP ERP application software. Each student establishes a virtual business by configuring SAP to create the needed organizational elements and the Master Data. Students execute transactions for the procurement and sales cycles. Through these business process implementations students learn integration of core business functions at the operations level. Students are taught business process design concepts and vocabulary which can be implemented in any ERP system. This course may be used to satisfy the SAP certificate requirement.

Cannot take BUS 312 and BUS 326 for credit.

**BUS 315 - International Practicum (3 cr.)**

Prerequisite: Sophomore standing and consent of instructor.

Cross-Listed as: CUL 315

International Practicum involves pre-travel and/or post-travel study and travel of 10-14 days duration during school breaks that are chaperoned and supervised by a business faculty member. These trips take students outside the geographic borders of the U.S. and provide learning experiences beyond the classroom environment. Programs and activities enhance the ability of students to comprehend, analyze, and grasp different cultural aspects that impact successful management of organizations in the global work environment. The major goal of the International Practicum is to allow undergraduate students opportunities to enhance their understanding of cross-cultural differences and the globalization of the work environment.

The course may be repeated for credit if the location/topic varies.

### **BUS 326 - Business Planning for New Ventures (3 cr.)**

Prerequisite: AC 202, BIS 202/HONB 202, BIS 221, BL 201/BL 360/BL 350/HONB 201, FIN 214 & MK 200/HONB 200.

The course provides an intermediate integrative framework in the business curriculum for continued development of analytical and decision-making skills in the business environment. Focused on the development of a new business venture or a new product in an established firm, the course integrates core concepts from each functional area covered in introductory coursework as a means of understanding the dynamic interplay between functional areas. Students will develop a full business plan as an element of course pedagogy. Established learning outcomes include: understanding the principal elements of a business plan, describing the process of business plan development, recognizing the impact of a proposed product or venture on functional areas of a firm.

Cannot take BUS 326 and BUS 312 for credit.

### **BUS 345 - Fundamentals of Pharmacy (3 cr.)**

Prerequisite: Junior standing and BIO 101 and CHEM 101.

This survey course is intended to develop an appreciation for the three fundamental areas of pharmacy. Areas covered include pharmaceutical aspects, which focuses on the drug discovery and development process; clinical aspects, which focuses on drug utilization, evaluation and therapeutic patient/population management; and administrative/sociobehavioral aspects, which focuses on healthcare delivery - communication, outcomes, regulatory affairs and general business principles.

### **BUS 350 - Business Etiquette and Professionalism (3 cr.)**

Prerequisite: Junior Standing.

This course is designed to introduce students to elements of culture and behavior in a professional atmosphere that contribute to personal and professional success. Students will examine a variety of professional customs including communication norms, behavioral expectations, and professional appearance. In addition, students will be introduced to different norms for these areas in international settings.

\$25 Lab Fee.

### **BUS 361 - Industry Studies: Resort, Gaming, Hospitality (3 cr.)**

Prerequisite: MAN 101, MK 200, BL 201, or BL 360, Junior Standing.

This course is focused on the management of resort, gaming, and hospitality operations. This course will introduce students to the tourism industry as they explore the history as well as the current business considerations for the resort, gaming, and hospitality enterprise. Students will learn to apply business and management skills and tools based on regulations, financial requirements, human resource needs, marketing and sales strategies, accounting, and security technological innovations.

### **BUS 362 - Industry Studies: Health Services (3 cr.)**

Prerequisite: Sophomore standing.

This course explores the characteristics and components of the U.S. healthcare industry. This will include an examination of U.S. healthcare systems and how they are organized and financed, a review of the healthcare workforce, the role of research and technology, and exploration of the various components of healthcare delivery to include hospitals, ambulatory care, and long term care delivery models as well as some of the major challenges facing the healthcare industry in the U.S.

### **BUS 364 - Industry Studies: Golf (3 cr.)**

Prerequisite: Junior standing or permission of instructor.

This course is designed to introduce students to the business of the golf industry. Students will explore all aspects of golf operations including management of tournaments, golf manager-professional services, golf shop services, food and beverage, recreation facilities, club amenities, and the golf course/grounds itself. Students will examine golf industry specific business applications including marketing and sales strategies, revenue development, customer service, and the various owner/management work settings in golf. Current and future issues in golf management including environmental impact and sustainability, economic challenges, and technological applications will be explored. Students will also learn about employment requirements and career opportunities in the golf industry.

### **BUS 375 - Non Profit Board Field Experience (1 cr.)**

Prerequisite: Permission of instructor and junior standing in College of Business

This is the first semester of a two semester course sequence. Students must successfully complete BUS 375/BUS 376 in order to earn credit towards graduation. The goal of this two semester course is to provide students with the opportunity to gain exposure to the type of decisions made by nonprofit boards of directors. This involves membership on a board of directors as well as hands-on experience as a member of a subcommittee of the board. During the first semester students will attend board meetings and become oriented to the organization.

### **BUS 376 - Non Profit Board Field Experience (2 cr.)**

Prerequisite: BUS 375. Permission of instructor and junior standing in College of Business

This is the second semester of a two semester course sequence. Students must successfully complete BUS 375/BUS 376 in order to earn credit towards graduation. The goal of this two semester course is to provide students with the opportunity to gain exposure to the type of decisions made by nonprofit boards of directors. This involves membership on a board of directors as well as hands-on experience as a member of a subcommittee of the board. During the second semester students become involved with a member of the board in a project area.

**BUS 390 - Special Topics in Business (1-3 cr.)**

This is a study of advanced topics in business of special interest to business majors, but not offered on a regular basis.

Distribution: MR

**BUS 411 - Global Scholars Capstone (1 cr.)**

Prerequisite: Approval of Global Scholars Coordinator.

Global Scholars Capstone Seminar in the senior year includes a Global Scholars presentation to members of the College of Business Advisory Board. This requirement may be aligned with Honors Program and/or major program requirements.

**BUS 423 - Product Development and Innovation (3 cr.)**

Prerequisite: BUS 312 or BUS 326, and BIS 310 or BIS 312

This course will cover new product innovation from both an entrepreneurship and intrapreneurship perspective. The course will have three components: a theoretical, a practical or clinical, and an application. The theoretical will consist of generating and identifying business opportunities; assessing concept ideas from technical, market, and financial perspectives; designing and developing new products; testing prototypes from technical and market perspectives; and developing a marketing plan including launch, monitoring, and measurement provisions. The practical or clinical component will consist of business-engineering student teams identifying consumer or business new product ideas of their own, from a faculty-generated list, or from local corporations. Selection of ideas is on the basis of the importance of the need, the novelty, the challenge, and commercialization potential. Teams will develop marketing plan to market their new product designs. The application component will involve presenting the final designs and plans to an expert panel of business executives, investors, and faculty.

Can not receive credit for taking BME 423/BME 471 and ME 423.

Lab Fee \$15.

**BUS 450 - Business Strategy (3 cr.)**

Prerequisite: BUS 326 or BUS 312, and BIS 310 or BIS 312.

The course provides the framework for an overall integration of business perspectives in the development of an organization's strategies. Key learning outcomes include identification of the key elements of the strategic management process, explaining operational and strategic-level decisions, explaining environmental opportunities and threats, explaining a firm's strategic performance through financial statements, making decisions about a firm's chosen strategies, and the application of strategic management theories.

Distribution: BUSR

Not to be taken concurrently with BUS 312 (p. 184) or BUS 326 (p. 185)

Lab fee \$15.

**BUS 480 - Internship in Business (3 cr.)**

See "Internships (p. 25)".

Distribution: CR/MR

This course is a prerequisite.

**CEE - Civil and Environmental Engineering****CEE 230 - Engineering Geology (3 cr.)**

Prerequisite: Sophomore, Junior or Senior Standing.

This course is designed to provide students with a fundamental understanding of physical geology and geologic processes relevant to engineering. Emphasis is on origin and distribution of natural hazards (earthquakes, volcanoes, floods, winds, mass wasting) as they impact built infrastructure, and chemical and physical processes impacting contaminant transport in water.

Distribution: MR

**CEE 240 - Strength of Civil Engineering Materials (3 cr.)**

Prerequisite: or Co-Req: ME 202

This course is designed to provide students with a fundamental understanding of civil engineering materials and their strengths. In the first half of this course, students will learn material properties of metals and alloys, cements, ceramics, concrete, glass, steel, mineral aggregates, lumber and timber, plastics, and composites. Students will also learn corrosion and material selection process. The second half of this course will focus on stress and strain, bending and torsion of beams, principal and combined stresses, axial and lateral loads, elasticity, and energy principles. Students should concurrently take the laboratory component of this course.

Distribution: MR

**CEE 242 - Strength of Civil Engineering Laboratory (1 cr.)**

Corequisite: CEE 240

This is the laboratory course accompanying CEE 240. This course will allow students to apply theories and concepts learned in the classroom to hands-on laboratory testing and analysis of civil engineering materials.

Distribution: MR

**CEE 251 - Surveying (3 cr.)**

Prerequisite: Sophomore, Junior or Senior Standing.

This course is designed to provide students with a fundamental understanding of land surveying. Topics covered in this course include measurement of distances, angles, directions, elevations, and areas. Students will also learn computer aided design (CAD), global positioning system (GPS), and graphical information systems (GIS). Students should concurrently take the laboratory component of this course.

Distribution: MR

**CEE 253 - Surveying Laboratory (1 cr.)**

Corequisite: CEE 251

This is the laboratory course accompanying CEE 251.

This course will allow students to apply theories and concepts learned in the classroom to hands-on field training using professional surveying equipment.

Distribution: MR

**CEE 310 - Civil Engineering Research (1-3 cr.)**

Prerequisite: Junior or Senior CEE major

Distribution: MR

**CEE 320 - Environmental Engineering (3 cr.)**

Prerequisite: CEE 361 or equivalent

This course is designed to provide students with a fundamental understanding of environmental engineering. Topics covered in this course include water quality, water and wastewater treatment, solid and hazardous waste management, environmental law and regulations, air pollution, and remediation. A team design project is required. Students should concurrently take the laboratory component of this course.

Distribution: MR

**CEE 322 - Environmental Engineering Laboratory (1 cr.)**

Corequisite: CEE 320

This is the laboratory course accompanying CEE 320. This course will allow students to apply theories and concepts learned in the classroom to hands-on laboratory training of water and wastewater analysis. This laboratory course also includes hands-on laboratory demonstrations of fundamental concepts in engineering fluid mechanics.

Distribution: MR

**CEE 324 - Groundwater Engineering (3 cr.)**

Prerequisite: CEE 361 or equivalent

This course is designed to provide students with a fundamental understanding of groundwater engineering. Topics covered in this course include the hydrologic cycle, hydrogeology, unsaturated and saturated flow, confined and unconfined aquifers, well hydraulics, contamination, remediation, solute transport, mathematical modeling, and aquatic chemistry.

Distribution: MR

**CEE 330 - Soil Mechanics (3 cr.)**

Prerequisite: CEE 361 or equivalent

The course is designed to provide students with a fundamental understanding of soil behavior. Topics covered in this course include mechanics of soils, composition and classification, compaction and consolidation, shear strength, bearing capacity, stress and strain tensors, seepage, slope stability, retaining walls, and soil testing methods. Students should concurrently take the laboratory component of this course.

Distribution: MR

**CEE 332 - Soil Mechanics Laboratory (1 cr.)**

Prerequisite: CEE 330

This is the laboratory course accompanying CEE 330. This course will allow students to apply theories and concepts learned in the classroom to hands-on laboratory demonstration of soil behavior and training of various soil testing methods.

Distribution: MR

**CEE 341 - Structural Analysis (3 cr.)**

Prerequisite: CEE 240

This course is designed to provide students with a fundamental understanding of structural analysis with a focus on beams, trusses, and frames. Students will learn to analyze statically indeterminate structures, shear and moment diagrams, influence line diagrams, and vibrations. Student will also learn basic structural analysis using computer software. A team design project is required.

Distribution: MR

**CEE 342 - Steel & Reinforced Concrete Design (3 cr.)**

Prerequisite: CEE 341

This course is designed to provide students with a fundamental knowledge of steel design. Topics covered in this course include the design process for beams, columns, frames, trusses, connections, and other structures using the Load and Resistance Factor Design (LRFD) method.

A team design project is required.

Distribution: MR

Formerly Steel Design.

**CEE 351 - Transportation Engineering (3 cr.)**

Prerequisite: ME 203

This course is designed to provide students with a fundamental knowledge of steel design. Topics covered in this course include the design process for beams, columns, frames, trusses, connections, and other structures using the Load and Resistance Factor Design (LRFD) method.

A team design project is required.

Distribution: MR

**CEE 353 - Transportation Engineering Laboratory (1 cr.)**

Corequisite: CEE 351

This is the laboratory course accompanying CEE 351. This course will allow students to apply theories and concepts learned in the classroom to hands-on computer programming, simulations, and analysis of transportation topics.

Distribution: MR

**CEE 361 - Engineering Fluid Mechanics (3 cr.)**

Prerequisite: MATH 235 or MATH 236

This course is designed to provide students with a fundamental understanding of fluid behavior with an emphasis on liquids. Topics covered include fluid statics and dynamics, laminar and turbulent flow, pressure, forces, energy equation, dimensional analysis, drag,

incompressible and compressible flow, energy and hydraulic grade lines, and simple pumps. A team design project is required.

Distribution: MR

### **CEE 400 - Ethical and Professional Issues (1 cr.)**

Prerequisite: Senior Standing

This course is designed to provide students with a fundamental understanding of social, ethical, global, and professional issues facing civil and environmental engineers. Topics covered also include case studies of law, contracts, and liability issues.

Distribution: MR

### **CEE 402 - Capstone Design (3 cr.)**

Prerequisite: Senior Standing

This course is designed to provide students a comprehensive civil engineering design experience. Students will learn the entire process of executing a civil engineering project from initial design to project completion. Topics covered also include alternative solutions, cost analysis, and project management. Students are expected to complete a team design project and are expected to present project outcomes in a public setting.

Distribution: MR

### **CEE 406 - Green and Sustainable Civil Engineering (3 cr.)**

Prerequisite: Senior Standing

This course is designed to provide students with a fundamental understanding of modern green and sustainable technologies available to civil and environmental engineers. Topics covered include life cycle analysis, alternative energy and renewable fuels, building efficiency, sustainable materials, and green building certifications. An individual design project is required.

Distribution: MR

### **CEE 410 - Civil Engineering Research (1-3 cr.)**

Prerequisite: Senior CEE major

Distribution: MR

### **CEE 411 - Petroleum Fluids & Reservoir Engineering (3 cr.)**

Prerequisite: or Co-Req: CEE 361

This course is designed to provide students with a fundamental understanding on the chemical and physical behavior of petroleum fluids. Topics include fluid properties, phase behavior, gas-liquid equilibria calculations, mass balance calculations, and types of petroleum reservoir fluids. This course also covers classification of subsurface reservoirs, recovery mechanisms, and steady-state and transient fluid flow in permeable subsurface reservoirs.

Distribution: MR

This course is offered every other year.

### **CEE 412 - Petrophysics and Reservoir Geomechanics (3 cr.)**

Prerequisite: CEE 361

This course is designed to provide students with a fundamental understanding of petrophysics and reservoir geomechanics. Petrophysics topics include properties of rocks, measurement and interpretation of petrophysical properties, application of petrophysics to subsurface engineering problems, and interaction of resident fluids with rocks. Reservoir geomechanics topics include stress and strain analysis, pore pressure and in-situ stress estimation and measurement, deformation mechanisms in rock, wellbore stresses and failure, depletion-induced reservoir deformation, and hydraulic fracturing.

Distribution: MR

This course is offered every other year.

### **CEE 430 - Geotechnical Engineering (3 cr.)**

Prerequisite: CEE 330

This course is designed to provide students with a fundamental understanding of geotechnical engineering. Topics covered in this course include deep and shallow foundations, piles, earth structures, geoenvironmental engineering, groundwater, soil and structure interactions, earthquake engineering, and computer simulations. A team design project is required.

Distribution: MR

### **CEE 451 - Construction Materials (3 cr.)**

Prerequisite: CEE 341

This course is designed to provide students with a fundamental understanding of concrete and pavement designs. Concrete topics covered in this course include prestressed concrete, reinforced concrete, loading and stresses, shear and torsion, deflection, sensors, concrete canoe, and concrete inspection. Pavement topics covered in this course include design and construction, rigid and flexible pavements, loading, drainage, and pavement inspection.

Students should concurrently take the laboratory component of this course.

Distribution: MR

Formerly Concrete and Pavement

### **CEE 453 - Construction Materials Laboratory (1 cr.)**

Corequisite: CEE 451

This is the laboratory course accompanying CEE 451. This course will allow students to apply theories and concepts learned in the classroom to hands-on laboratory testing and analysis of different concretes and pavements. A team-designed concrete canoe is expected to be constructed.

Distribution: MR

Formerly Concrete and Pavement Laboratory

### **CEE 455 - Railroad Transportation Engineering (3 cr.)**

Prerequisite: ME 203

This course is designed to provide students with a fundamental understanding of railroad transportation engineering. Topics include railroad engineering efficiency, infrastructure, economics, energy, cost-benefit analysis, route selection, geometric design, alignment, high-speed rail, power, movement, materials characterization, subgrade design, construction, drainage.

Distribution: MR

This course is offered every other year.

### **CEE 456 - Railroad Track Structure Engineering (3 cr.)**

Prerequisite: CEE 341

This course introduces the concept of railroad track structure engineering. Topics include static, kinematic, and dynamic characteristics of trains, wheel/track interaction, characterization and design of railroad track components, turnouts and switches design, crossing, crossover, grade design, advanced track systems, special trackwork, track standards, inspection, condition assessment, and asset management.

Distribution: MR

This course is offered every other year.

### **CEE 461 - Water Resources Engineering (3 cr.)**

Corequisite: CEE 361

This course is designed to provide students with a fundamental understanding of water resources engineering. Topics covered in this course include hydrologic cycle, hydrology, water quantity, watershed analysis, dams, flow in closed conduits, pipeline networks, open channel flow, turbines and pumps, and computer simulations. A team design project is required.

Distribution: MR

### **CEE 470 - Construction Engineering (3 cr.)**

Prerequisite: Junior or Senior CEE standing

This course is designed to provide students with a fundamental understanding of construction engineering. Topics covered in this course include construction documents, procurement methods, project operation and delivery methods, scheduling, management, construction safety, and cost estimating.

Distribution: MR

### **CEE 480 - Internship in Civil Engineering (3 cr.)**

See Internships (p. 24)

Distribution: MR

### **CEE 490 - Special Topics in Civil Engineering (3 cr.)**

Distribution: MR

## **CHEM - CHEMISTRY**

### **CHEM 101 - Modern Chemistry I (3 cr.)**

This is an introductory course intended to help students with little background in the physical sciences to understand the material environment. Modern concepts of atomic and molecular structure are developed and used to explain the properties of familiar substances including solids, liquids, and gases. Laboratory work is designed to enhance understanding of fundamental concepts at the practical level

and may include field sampling and demonstrations as well as individual experiments.

Distribution: GUR/MR

Two class hours, three-hour lab.

This course is a prerequisite.

Laboratory fees \$100.

### **CHEM 102 - Modern Chemistry II (3 cr.)**

Prerequisite: CHEM 101 or one year of secondary school chemistry.

A study of basic chemical models is applied to topics in current technology. Topics include the chemistry of synthetic materials, of living systems, of energy sources, and of environmental pollution as well as the ethics of science and technology. Laboratory work includes polymer synthesis, sampling, and analysis of household products and foods, and environmental analysis.

Two class hours, three-hour lab.

Laboratory fees \$100.

### **CHEM 105 - General Chemistry I (4 cr.)**

Prerequisite: One unit of secondary school chemistry.

This is the first course of a two-semester sequence intended for science and engineering majors and students who wish a more in-depth study of chemical principles than is provided in CHEM 101.

The following topics are studied: physical measurements and chemistry data handling; states of matter and its properties; stoichiometry and reactions in aqueous solution; chemical reactions and energy relationships; atomic structure and periodic trends; and theories of chemical bonding and molecular structures. The laboratory experiments complement the topics covered in lecture and enable students to acquire basic chemistry laboratory skills.

Distribution: ER/GUR/MR

Three class hours, three-hour lab.

This course is a prerequisite.

Laboratory fee \$100.

### **CHEM 106 - General Chemistry II (4 cr.)**

Prerequisite: CHEM 105.

An extension of CHEM 105, this course illustrates and amplifies the principles developed previously. New topics include but are not limited to: properties of solutions and liquids; chemical equilibria; reaction kinetics; acid-base chemistry; chemical thermodynamics; and electrochemistry. The laboratory experiments complement the topics covered in lecture and enable students to acquire more advanced laboratory skills including the use of instrumentation to monitor reactions and the characterization of compounds.

Distribution: GUR/MR

Three class hours, three-hour lab.

This course is a prerequisite.

Laboratory fees \$100.

### **CHEM 151 - The Chemicals In Our Lives (3 cr.)**

Prerequisite: CHEM 101, BIO 101 or PHYS 101 or permission of the instructor.

This course examines the role that chemistry plays in our lives by studying some of the chemicals most widely used by human beings. After a brief review of some basic chemical concepts, one or more chemicals from the following areas will be studied: cosmetics, nutrition, plastics and fibers, cleaning agents, medicines, and drugs. In each case, the science underlying the chemical's mode of action, the history of its development, and its benefits and risks will be considered. This is a one semester course without a lab. This course would meet the General University Requirements for the Natural Science Perspective.

This is a one semester course without a lab.

This course would meet the General University Requirements for the Natural Science Perspective.

### **CHEM 152 - The Chemistry Of Fine Things (3 cr.)**

Prerequisite: BIO 101, PHYS 101, or CHEM 101.

In this course, students will explore the science behind the 'finer things of life.' The creation of paintings; perfume; wine; pieces of art, glass, and pottery; gourmet food; and other luxuries depend upon chemical, biological, and physical processes. Understanding these transformations and how they are used creatively is essential to both the development and preservation of works of art. In addition, a discussion of the biochemical processes that are central to the perception (and misperception) of these 'fine' things will be included.

This is a one semester course without a lab. Therefore, BIO 101, PHYS 101, or CHEM 101 followed by this course would meet the General University Requirements for the Natural Science Perspective.

### **CHEM 154 - Crime Scene Chemistry (3 cr.)**

Prerequisite: CHEM 101 or permission of instructor.

Crime scene chemistry will introduce students to the chemical, physical, and biological principles that contribute to successfully collecting, preserving, and analyzing evidence from criminal investigations. Students will gain a realistic view of the capabilities and limitations of the scientific techniques used in forensic examinations.

This course fulfills the natural science perspective.

### **CHEM 159 - Astrobiology (3 cr.)**

Prerequisite: CHEM 101, BIO 101, PHYS 101, or permission of the instructor.

The goal of this course is to introduce, to the non-science major, the main findings and ideas of astrobiology. Topics covered will include: the definition of living thing; the origin and early evolution of life on Earth; the conditions that make a planet habitable and the results of efforts to discover life elsewhere in the universe, as well as synthesize it or, Earth. An overriding theme in all of these topics will be the unity of all things, including human beings, in the universe.

This course fulfills the natural science perspective.

### **CHEM 190 - Special Topics in Chemistry (1-3 cr.)**

Topics in chemistry that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **CHEM 209 - Organic Chemistry I (3 cr.)**

Prerequisite: CHEM 106, CHEM 219, or concurrently.

This is an introduction to the basic principles of organic chemistry. Emphasis is on functional group recognition and how the structures are related to the substances' physical and chemical properties. The alkene, alkyne, and alkyl halide structural classes are studied, in detail including their nomenclature, stereochemistry, and reactions. A mechanistic approach to studying organic chemical reactions is emphasized.

Distribution: MR

This course is a prerequisite.

### **CHEM 210 - Organic Chemistry II (3 cr.)**

Prerequisite: CHEM 209, CHEM 219, CHEM 220, or concurrently.

This is a continuation of CHEM 209. The more complex structural classes are studied including but not limited to: the alcohols and ethers; aromatic compounds; carboxylic acids and derivatives; and the aldehydes and ketones. More complex reactions and their mechanisms are investigated. Synthesis design and spectroscopic methods used to determine chemical structure are emphasized.

Distribution: MR

This course is a prerequisite.

### **CHEM 211 - Analytical Methods (3 cr.)**

Prerequisite: CHEM 106, CHEM 221, or concurrently.

This is a study of the theory and methodology of classical and modern analytical chemistry. Topics include statistical treatment of data, errors, precipitation processes, the equilibria associated with gravimetric procedures, acid-base and redox titrations, and related items.

Distribution: MR

This course is a prerequisite.

### **CHEM 219 - Organic Chemistry Laboratory I (1 cr.)**

Prerequisite: CHEM 209 or concurrently.

Laboratory for CHEM 209. The laboratory exercises are designed to increase students' skills in planning, conducting, and interpreting the results of experimental work. Students are introduced to the basics of synthetic organic chemistry techniques.

Distribution: MR

This course is a prerequisite.

Four-hour lab.

Laboratory fee \$100.

### **CHEM 220 - Organic Chemistry Laboratory II (1 cr.)**

Prerequisite: CHEM 210 or concurrently.

Laboratory for CHEM 210. This course is a continuation of CHEM 219.

Emphasis is on the identification and synthesis of organic compounds including structural characterization by both chemical and spectroscopic methods.

Distribution: MR

This course is a prerequisite.

Four-hour lab.

Laboratory fees \$100.

**CHEM 221 - Analytical Methods Laboratory (1 cr.)**

Prerequisite: CHEM 211 or concurrently.

Laboratory for CHEM 211. The objective of the laboratory is the development of precise experimental techniques and organizational skills. Classical gravimetric and volumetric methods are applied in order to determine the percent composition of several samples of minerals, ores, or alloys, and to characterize qualitative aspects of selected systems.

Distribution: MR

This course is a prerequisite.

Four-hour lab.

Laboratory fee \$100.

**CHEM 240 - Research Projects in Chemistry (1-3 cr.)**

Prerequisite: CHEM 106, sophomore standing, a minimum GPA of 3.00, and permission of the instructor.

Research Project courses provide students with an opportunity to explore, in the chemistry laboratory, topics that go beyond what is normally covered in their coursework as well as help develop good laboratory and research skills. In addition to the specific goals of the project, this course will focus on accurate record keeping, acquiring basic gravimetric and volumetric technique, and laboratory safety.

The project may be a more detailed investigation of a course topic or one that is independent of specific course content. The research topic may be proposed by either the instructor or the student; but, ultimately, the specific topic must be clearly defined and agreed upon by both.

**CHEM 241 - Research Projects in Chemistry (1-3 cr.)**

Prerequisite: CHEM 106, sophomore standing, a minimum GPA of 3.00, and permission of the instructor.

Research Project courses provide students with an opportunity to explore, in the chemistry laboratory, topics that go beyond what is normally covered in their coursework as well as help develop good laboratory and research skills. In addition to the specific goals of the project, this course will focus on accurate record keeping, acquiring basic gravimetric and volumetric technique, and laboratory safety.

The project could be an extension of a course topic or one that is independent of specific course content and could be proposed by either the instructor or the student, in either case it must be one that both agree upon.

**CHEM 290 - Special Topics in Chemistry (1-3 cr.)**

Prerequisite: Sophomore standing.

Topics in chemistry that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**CHEM 312 - Instrumental Analysis (3 cr.)**

Prerequisite: CHEM 210 or concurrently, CHEM 211, CHEM 220 or concurrently, CHEM 221, CHEM 322, or concurrently; or permission of the instructor.

Building upon the concepts of classical quantitative analysis, the course includes the modern instrumental methods currently used for qualitative and quantitative analysis. For each major instrumental method, the fundamental interaction of energy with material samples is developed, followed by detailed examination of instrument design, operation, and application.

Distribution: MR

**CHEM 314 - Biochemistry (3 cr.)**

Prerequisite: CHEM 210 and CHEM 220

Corequisite: CHEM 324

This is an examination of the chemistry of living systems with emphasis on human biochemistry. Topics include the biosynthesis; metabolism; and function of proteins, nucleic acids, carbohydrates, and lipids.

Distribution: MR

This course taken concurrently with CHEM 324 satisfies one of the Writing Intensive Course requirements for Arts and Science students.

**CHEM 317 - Physical Chemistry I (3 cr.)**

Prerequisite: CHEM 211, CHEM 221, CHEM 327, or concurrently, MATH 235, PHYS 134, or permission of the instructor.

This course is an exploration of the fundamental physical laws governing the behavior of all substances. Among the topics examined are the kinetic theory of gases, real gas behavior, the basic laws of thermodynamics, and chemical equilibria.

Distribution: MR

This course is a prerequisite.

**CHEM 318 - Physical Chemistry II (3 cr.)**

Prerequisite: CHEM 317, CHEM 327, CHEM 328, or concurrently, or permission of the instructor.

A continuation of CHEM 317, this course includes a study of the behavior of liquids, the thermodynamics of solutions, phase equilibria, chemical kinetics, electrolyte behavior, and an introduction to quantum mechanics.

Distribution: MR

Offered: in alternate years in the spring semester.

This course is a prerequisite.

**CHEM 322 - Instrumental Analysis Laboratory (1 cr.)**

Prerequisite: CHEM 312 or concurrently.

Laboratory for CHEM 312. The instrumental methods used include ultraviolet, visible, infrared, and atomic absorption spectroscopy; nuclear magnetic resonance spectrometry; and potentiometry.

Distribution: MR

Four-hour lab.

Laboratory fee \$100.

**CHEM 324 - Biochemistry Laboratory (1 cr.)**

Corequisite: CHEM 314

Laboratory for CHEM 314.

This course consists of laboratory exercises designed to introduce modern techniques for the separation, purification, and determination of structure and function of biological compounds.

Distribution: MR

Four-hour lab.

This course taken concurrently with CHEM 314 satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Laboratory fee \$100.

### **CHEM 327 - Physical Chemistry Laboratory I (1 cr.)**

Prerequisite: CHEM 317 or concurrently.

Laboratory for CHEM 317. Emphasis is on techniques for the determination of the chemical and physical properties of materials.

Distribution: MR

Four-hour lab.

Laboratory fee \$100.

### **CHEM 328 - Physical Chemistry Laboratory II (1 cr.)**

Prerequisite: CHEM 318 or concurrently.

Laboratory for CHEM 318. This is a continuation of CHEM 327. Experiments continue to emphasize techniques necessary for the determination of the chemical and physical properties of materials.

Distribution: MR

Offered: in alternate years in the spring semester.

Four-hour lab.

Laboratory fees \$100.

### **CHEM 333 - Independent Study in Chemistry (1-3 cr.)**

See "Independent Study (p. 24)".

Laboratory fees may be required.

### **CHEM 334 - Independent Study in Chemistry (1-3 cr.)**

See "Independent Study (p. 24)".

Laboratory fees may be required.

### **CHEM 340 - Research Projects in Chemistry (1-3 cr.)**

Prerequisite: CHEM 210 and CHEM 220 or CHEM 211 and CHEM 221, junior standing, a minimum GPA of 3.00, and permission of the instructor.

This course builds upon the goals of CHEM 240-CHEM 241 and is designed to help the student develop into a more knowledgeable and independent researcher. The student will be required to work more independently than in CHEM 240-CHEM 241 and will be expected to perform relevant chemical literature research, as required by the project. The research project conducted may either be a continuation of a previous project or involve chemical research that is focused on a completely different topic.

### **CHEM 341 - Research Projects in Chemistry (1-3 cr.)**

Prerequisite: CHEM 210 and CHEM 220 or CHEM 211 and CHEM 221, junior standing, a minimum GPA of 3.00, and permission of the instructor.

This course builds upon the goals of CHEM 240-CHEM 241 and is designed to help the student develop into a more knowledgeable and independent researcher. The student will be required to work more independently than in CHEM 240-CHEM 241 and will be expected to perform relevant chemical literature research, as required by the project. The research project conducted may either be a continuation

of a previous project or involve chemical research that is focused on a completely different topic.

### **CHEM 390 - Special Topics in Chemistry (1-3 cr.)**

Prerequisite: Junior standing.

Topics in chemistry that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **CHEM 402 - Toxicology (3 cr.)**

Prerequisite: CHEM 314 and CHEM 324.

This course investigates the effects of xenobiotics on living systems. Integrating principles taken from chemistry, biology, pharmacology, and biochemistry, dose-response relationships between chemical exposures and disease states are identified. Basic processes central to understanding toxicological events including absorption, distribution, metabolism, and excretion are studied. Selected toxicants and poisons are studied and include representatives of various structural classes that induce pulmonary, hepatic, kidney, cardiac and/or nervous system toxicity.

Distribution: MR

Offered: in alternate years.

Formerly ENVS 302.

### **CHEM 410 - Molecular Spectroscopy (3 cr.)**

Prerequisite: CHEM 318 or permission of the instructor.

An introduction to the theory of molecular rotational, vibrational, electronic, and spin resonance spectroscopy and applications in thermodynamics, kinetics, and the chemistry of materials.

### **CHEM 421 - Inorganic Chemistry (3 cr.)**

Prerequisite: CHEM 210, CHEM 211, CHEM 220, CHEM 221 and CHEM 317

This is a theoretical course discussing the wave mechanical concept of electronic structure and modern bonding theories including molecular orbitals. Additional topics include periodic properties, covalent and ionic compounds, advanced acid-base and solvent interactions, and the structure, properties, and reactions of coordination compounds.

Distribution: MR

Offered: in alternate years.

### **CHEM 425 - Introduction to Polymer Science and Engineering (3 cr.)**

Prerequisite: CHEM 210 and CHEM 318, or permission of the instructor.

This is an introductory survey of the organic and physical chemistry of polymer molecules. Emphasis is on methods of preparation, kinetics and mechanisms, techniques of characterization, and the details of conformations and chain dimensions. Other topics include structure-property relationships, mechanical and rheological properties, and the thermodynamics of polymers.

Offered: in alternate years.

### **CHEM 430 - Advanced Topics (1-3 cr.)**

Prerequisite: CHEM 317 and CHEM 421 or concurrently.

Members of the chemistry faculty offer selected topics in their areas of specialty with emphasis on advanced concepts. Topics to be covered are available from the department chair.

Offered: in alternate years.

Laboratory fees may be required.

### **CHEM 431 - Inorganic Chemistry Laboratory (1 cr.)**

Prerequisite: CHEM 421 or concurrently.

Laboratory for CHEM 421. This course consists of the laboratory preparation and characterization of inorganic, coordination, and organometallic compounds. Techniques such as infrared spectroscopy and magnetic susceptibility are used to characterize compounds. The writing of scientific laboratory reports is emphasized.

Distribution: MR

Offered: in alternate years.

Four-hour laboratory.

Laboratory fees \$100.

### **CHEM 440 - Undergraduate Research (1-3 cr.)**

Prerequisite: Senior standing.

See "Undergraduate Research (p. 25)"

Laboratory fees may be required.

### **CHEM 480 - Internship in Chemistry (3 cr.)**

See "Internships (p. 25)".

## **CJ - CRIMINAL JUSTICE**

### **CJ 101 - Introduction to Criminal Justice (3 cr.)**

This course is an overview of the U.S. criminal justice system and the interaction of its components: the police, prosecution, the court systems, the correctional systems, parole, and probation. Career opportunities in criminal justice are explored.

Distribution: A&SR/MR

Offered: Fall and Spring semesters

This course is a prerequisite.

### **CJ 190 - Special Topics in Criminal Justice (1-3 cr.)**

Topics in criminal justice that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **CJ 210 - Criminology (3 cr.)**

Prerequisite: CJ 101, SO 101, ENGL 132 and ENGL 133

Cross-Listed as: SO 210

This is an examination of the various categories of offenses and offenders including casual and habitual individual offenders, organized criminal enterprises, and white-collar criminals. Current theories and research, with an emphasis on understanding the causative factors and sociological implications of criminal and delinquent behavior, are included.

Distribution: MR

Offered: Spring semester.

Satisfies Writing Intensive course (WIC) requirement.

### **CJ 211 - Corrections (3 cr.)**

Prerequisite: CJ 101 or six credit hours of sociology or psychology.

This course is an empirical analysis of the main considerations of correctional behavior and practice. Topics include the prison community, problems of treatment from the viewpoints of the offender and the treatment staff, and prevention and treatment in the community at large.

Distribution: MR

Offered: Fall semester

### **CJ 218 - Police and Society (3 cr.)**

Prerequisite: CJ 101 and SO 101.

This is a study of the history of policing, particularly in the United States, to include the police role, recruiting, and police organization. This course investigates the various police missions, crime, community relations, and police accountability, and the ever increasing demands on law enforcement being made by the American public of today.

Distribution: MR

Offered: spring semesters.

### **CJ 220 - Evidence (3 cr.)**

Prerequisite: CJ 101 or FS 201 or LSOC 101

The purpose of this course is to provide students with a general overview of the rules of evidence as practiced in the various courts of the United States. These rules are drawn from the rules of evidence as they existed as common law and were modified by various U.S. Federal Courts. The course is designed to give students some background into the origin, usually dictated by a need, of certain rules of evidence at common law, and to view these rules as modified by contemporary courts. It has become increasingly important for all individuals working in the field of criminal justice to have some familiarity with evidentiary rules so that significant evidence may be perceived and preserved, and that criminal investigation may avoid the pitfall of obtaining evidence of little or no value in the courtroom.

Offered: Spring semester

### **CJ 230 - Criminal Law (3 cr.)**

Prerequisite: CJ 101 or LSOC 101, and any 200 level CJ course or any 200 level LSOC course

This is a study of the major felonies (murder, rape, robbery, assault, larceny, burglary, and arson), their definitions, and methods of proof.

Offered: Fall semester

### **CJ 231 - Criminal Investigation (3 cr.)**

Prerequisite: CJ 101.

This is an introduction to the process of criminal investigation. Emphasis is on investigative techniques including interrogation of suspects and witnesses; use of informants; surveillance and undercover assignments; photographing, collecting, and processing physical evidence; obtaining information; and identifying and locating suspects.

Offered: Fall semester

**CJ 232 - Criminal Procedure (3 cr.)**

Prerequisite: CJ 101 or LSOC 101, any 200 level CJ course or any 200 level LSOC course

This course studies the constitutional restrictions upon each aspect of a felony prosecution: arrest, investigation, booking, initial appearance, preliminary hearing, trial and sentencing. Major areas of interest are due process, arrest, search and seizure, right to counsel, and sentencing.

Offered: Spring semester

**CJ 234 - The Judicial Process (3 cr.)**

Prerequisite: CJ 101 or LSOC 101, or permission of the department chair.

This is a study of the nature of law and the courts; the State and Federal Court systems of the United States, as well as the U.S. Supreme Court and its jurisdiction, operation, and workload. The concept of judicial review is analyzed, and the courts of England, Wales, and Germany are examined for comparative purposes.

Distribution: MR

Offered: Offered fall semester.

**CJ 235 - Domestic Violence (3 cr.)**

Prerequisite: PSY 101 or SOC 101 or CJ 101, or permission of department chair.

Cross-Listed as: SO 235

Domestic violence between adults is studied from an interdisciplinary perspective. The cycle of violence, dominance, and control are among the issues covered sociologically and psychologically. The legal perspective includes discussion of proactive arrest policies, restraining orders, and anti-stalking legislation that have emerged across the United States.

Formerly CJ 343.

**CJ 260 - Introduction to Terrorism and Homeland Security (3 cr.)**

Prerequisite: CJ 101.

This course is an introduction to the study of terrorism, and to the study of the United States response to defending the homeland. It examines the criminology and the controversy of terrorism. Students review definitions and motivations for terrorism: religious, ideological, nationalistic, and ethnic terrorism; domestic and international terrorist movements; cyber, nuclear, biological, and chemical terrorism; terrorist financing; terrorism and the media; and the bureaucracy of homeland security.

Offered: Fall semester

Formerly CJ 360.

**CJ 290 - Special Topics in Criminal Justice (1-3 cr.)**

Topics in criminal justice that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**CJ 300 - Applied Analytic Methods (3 cr.)**

Prerequisite: CJ 101 or SO 101, MATH 120, any 200-level CJ or SO course.

Cross-Listed as: SO 300

This course is an introduction to the concepts and techniques of a quantitative approach to the examination of social science research questions. The examples used in this course to illustrate quantitative analyses reflect practical applications within the social sciences, which include such disciplines as criminal justice, criminology, psychology, and sociology. Quantitative analyses of social science measurements will include descriptive, inferential, and predictive techniques. Besides learning the fundamentals of quantitative techniques, students will use the computer as an integral part of this course to perform analyses using computer software. Students generally will develop skills necessary to assist them in framing and answering research questions.

Offered: Fall semester

**CJ 301 - Research Methods (4 cr.)**

Prerequisite: Junior standing, and SO 300/CJ 300

Cross-Listed as: SO 301

This course is an introduction to scientific research in the social sciences. Its primary goals are to provide students with a foundation necessary for conducting quality research and to provide students with skills necessary to analyze and interpret research data. The course highlights the logic of research designs, the relation between experimental and nonexperimental research strategies, and the application of quantitative methods. It provides experience in collecting and analyzing research data, writing, and preparing research reports. This course will discuss and contextualize the concepts and techniques of quantification in social science research, which include descriptive, univariate, parametric, nonparametric, and inferential analyses. Students will learn to use a statistical computer-software package to perform analyses on research data.

Offered: Spring semester

**CJ 302 - Women and the Criminal Justice System (3 cr.)**

Prerequisite: CJ 101 and SO 101 and any 200 CJ level course or permission of chair. Junior or senior standing.

This course will scrutinize the various roles that women experience with the criminal justice system. Confronting the misconception that female criminal behavior is a less serious problem than male criminal behavior; students will study phenomena of female offenders with an emphasis on examining gender specific programs to address the issue. At great cost to the individual and to society, violence against women has reached epidemic proportions and will be examined specifically. Employment availability and relative success will be contrasted with workplace issues specific to women; the working woman employed by the criminal justice system in law enforcement, the courts, and corrections will be considered. Students will learn that today's role of women and crime is poorly defined and rarely definitive.

**CJ 304 - Children, Family, and the State (3 cr.)**

Prerequisite: CJ 101, SO 101, and any 200 level criminal justice course, or permission of chair.

Cross-Listed as: SO 304

This is a critical look at the policy, the theory, and the practice of state intervention into families on behalf of children. The study involves a review of the legal theory underlying child protective

services, an explanation of the relevant federal and state laws, an investigation of the various types of state involvement with families, an exploration of the role of social workers and departments of social services, and a practical look into how the legal system deals with families and children. Foster care and child treatment by the system will be explored.

### **CJ 306 - Disability and Mental Health Issues in Criminal Justice (3 cr.)**

Prerequisite: CJ 101, or SO 101, and any 200 level course or permission of chair.

Cross-Listed as: SO 306

This course will explore contemporary issues surrounding criminal justice response to persons having mental, cognitive, and psychiatric disabilities. Changes in the legal code governing patient rights, affirming the right of persons with mental illness to live in the community, in addition to deinstitutionalization in the 1960s set the stage for increased criminal justice involvement. Approximately 54 million Americans live with a wide variety of physical, cognitive, and emotional disabilities. The Americans with Disabilities Act (1994) entitles people with disabilities to the same services as provided to others. ADA application to criminal justice policy will be addressed.

### **CJ 313 - Criminal Justice Interviewing and Interrogation (3 cr.)**

Prerequisite: PSY 101 or SO 101 or CJ 101, and any 200 level CJ courses, or permission of the chair.

This course focuses on the art of inquiry and persuasion. The aim of the course is to complement standard techniques of communication while offering options for eliciting information. Interviewing procedures for obtaining statements from children and difficult adult populations are explored. Emphasis is on investigative methodologies consistent with federal and state constitutional principles.

Offered: Fall semester

### **CJ 320 - Probation and Parole (3 cr.)**

Prerequisite: CJ 101 and any 200-level CJ course.

This course is an analysis of both past and present-day systems for probation and parole, an examination of state local referral systems of probation and parole, and an introduction to current innovation within the field. Topics include probation and parole in the United States, intensive supervision programs, the role of the probation and parole officer, and substance abuse treatment methods.

Offered: Spring semester

### **CJ 325 - Forensic Science (3 cr.)**

Prerequisite: CJ 231 and BIO 101, or CHEM 101, or PHYS 101

This is a study of scientific principles applied to the investigation and prosecution of crime. Topics are drawn from biology, chemistry, and physics.

Offered: spring semesters.

### **CJ 333 - Independent Study in Criminal Justice (1-3 cr.)**

See "Independent Study (p. 24)".

### **CJ 334 - Independent Study in Criminal Justice (1-3 cr.)**

See "Independent Study (p. 24)".

### **CJ 340 - Ethical Decision-Making (3 cr.)**

Prerequisite: CJ 101 and any 200-level CJ.

This course examines the major philosophical points of ethical theories and the decision process. Classical and modern viewpoints are studied in an attempt to gain a better understanding of the major social issues in today's world. Cultural implications are addressed and students gain a better understanding of their values and their personal philosophy.

Distribution: MR

Offered: Spring semester

### **CJ 341 - Constitutional Issues in Criminal Justice (3 cr.)**

Prerequisite: CJ 101, POSC 102 and any 200-level CJ course, and junior standing, or permission of the instructor.

This course will explore the constitutional issues as they relate to the police and corrections. Major areas of interest are due process and state and federal liability law as these concepts relate to the law enforcement.

Offered: Spring semester

### **CJ 342 - Juvenile Delinquency (3 cr.)**

Prerequisite: CJ 101, or SO 101, or LSOC 101 and any 200-level course; or permission of instructor.

Cross-Listed as: SO 342

This course focuses on the history, causes, behavior, laws, and treatment of juveniles. It includes the criminal justice system, the process within the system, court decisions, and alternatives to incarceration. Where possible, on-site locations are visited. An in-depth perspective of juvenile gangs, drugs, and crime is included.

Offered: Fall semester

### **CJ 348 - Introduction to Cyber Crimes (3 cr.)**

Prerequisite: CJ 101, or CS 101/IT 101, plus any 200 level course, or permission of instructor.

This course examines crime which targets computers, crimes committed by use of computers, and forms of evidence stored on computers. Forms and impact of cyber crime are studied within the context of societal harm and criminal justice response. Designed to familiarize students with the available and emerging State and Federal Law, the class will investigate legal limitations in the investigation and prosecution of cyber crime.

Offered: Fall semester

### **CJ 349 - Multicultural Policing (3 cr.)**

Prerequisite: SO 101 or CJ 101, and junior standing, or permission of the instructor.

Cross-Listed as: SO 349

This course is designed to familiarize the student with the "theoretical and practical" application of peace keeping in a multicultural setting. Students will explore the issues of "diversity, cultural understanding, and communication" facing the law enforcement community in a multicultural environment. Particular attention will be given to the concept of "cross-cultural law enforcement for diverse communities."

Offered: Fall semester

### **CJ 350 - Security Management (3 cr.)**

Prerequisite: CJ 101, any 200-level course, and junior standing or permission of the instructor.

The purpose of this course is to provide an understanding of the interrelationship between physical security and crime prevention including a study of the evolution of the security profession in the United States. It covers proper planning and security design in industry, physical security in business, and how to reduce loss and threat of loss, from both the smallest business to the largest of international corporate enterprises. This course seeks to introduce students to the career opportunities in the enormous field of private security as well as the role law enforcement officers play in the development of home and business security in their particular areas. Students are introduced to the concepts, techniques, and technologies now being developed in the areas of physical security, computer security, privacy of personnel information management, safeguarding proprietary information, retail security, facility security design, access control and systems integration, executive protection, and the application of these to the public sector, utilities, public buildings, and institutions.

Offered: Spring semester

### **CJ 362 - Counter-terrorism (3 cr.)**

Prerequisite: CJ 260.

This course looks at the various practices, trends, and trade-crafts of local, state, and federal agencies used against actual or perceived threats of terrorist activities. Specifically, students examine surveillance strategies, military and law enforcement responsibilities, and seizure and interrogation tactics in carrying out a war on terrorism.

Offered: Spring semester

### **CJ 363 - Weapons of Mass Destructions (3 cr.)**

Prerequisite: CJ 260.

This course introduces and explains how the use of weapons of mass destruction by terrorists and rogue states could give them attack advantages over military, local, and federal law enforcement agencies. Today's danger of weapons of mass destruction comes mostly from the possible use of nuclear, biological, or chemical (NBC) weapons. In this course, students examine "how to respond to" and "how to deal with" NBC attacks. The course distinguishes facts from falsehoods about NBC weaponry.

Offered: Fall semester

### **CJ 364 - Terrorism and Business (3 cr.)**

Prerequisite: CJ 260.

This course addresses how corporate America and how international industry constitutes prime targets for terrorist attacks. It integrates business and criminal justice perspectives, while having students analyze the costs of terrorist attacks against businesses in terms of economic indicators and financial markets at the local, national, and transnational levels. Students also explore how business confronts terrorism: risks and responses.

Offered: Spring semester

### **CJ 390-395 - Special Topics in Criminal Justice (1-3 cr.)**

Topics in criminal justice that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **CJ 396 - Seminar of Current Issues in Corrections (3 cr.)**

Prerequisite: CJ 211 and senior standing or permission of the instructor.

This seminar looks at current trends in correctional management as they relate to issues including overcrowding, classification, inmate programs, health issues, racial and gender issues, constitutional rights of the confined, and the growing trend of privatization of prisons. An underlying theme is the impact of current management trends on the work environment faced daily by thousands of correctional staff.

### **CJ 397 - Alternative Sentencing (3 cr.)**

Prerequisite: CJ 211 and at least Junior standing.

This course will examine alternative sentencing practices and programs from its beginning to our present day correctional system. The course will examine various models responsible for the evolution of alternative sanction in the United States. The course will focus on new technologies and career opportunities in the field, including sex offender programs, intensive supervision programs, day reporting, substance abuse treatment programs, and electronic monitoring systems.

### **CJ 398 - Treating the Offender in the Community (3 cr.)**

Prerequisite: CJ 101 and any 200 level CJ course.

This course will provide the student with various treatment options for offenders in the community. Topics include gender specific treatment, cognitive behavioral therapy, mental health programs, and substance abuse treatment programs. Students will review research on the effectiveness of the treatment programs used with offender populations.

### **CJ 405 - Organized Crime (3 cr.)**

Prerequisite: CJ 101, any 3XX level CJ course, and senior standing.

This course will provide an overview of organized crime in the United States, its history, and modern influences. The student will explore traditional organized crime (the mafia), as well as other forms of organized crime (ethnic groups, biker gangs, etc.).

Offered: Spring semester

### **CJ 450 - Senior Seminar (3 cr.)**

Prerequisite: CJ major and senior standing.

This course includes a basic review of general principles of criminal justice. Each student will be required to do extensive independent research and produce a research paper.

### **CJ 480 - Internship in Criminal Justice (3 cr.)**

See "Internships (p. 25)".

### **CJ 481 - Internship in Criminal Justice (3 cr.)**

See "Internships (p. 25)".

### **CL - COLLOQUIA**

#### **CL 190 - Special Topics (1 cr.)**

Topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**CL 200 - Colloquium (1-3 cr.)**

Topics that are not specific to departments and that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**CL 201 - Colloquium (1-3 cr.)**

Topics that are not specific to departments and that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**COMM - COMMUNICATION****COMM 100 - Principles of Communication (3 cr.)**

This course provides an introduction to basic theories and practices of interpersonal, small group, and public communication. The course explores effective listening, dyadic dynamics, nonverbal communication, verbal communication, and similarities and differences between speaking and writing.

Distribution: BUSR/MR

Offered: every semester.

This course is a prerequisite.

Formerly COMM 201.

**COMM 102 - Introduction to Public Speaking (3 cr.)**

This course is designed to develop students' skills in researching, composing, and presenting speeches in public, and in adapting principles of public speaking to different situations and contexts.

Distribution: GUR/MR

Offered: every semester.

This course is a prerequisite.

Formerly "Public Speaking"

Formerly COMM 202

**COMM 190 - Special Topics in Communication (1-3 cr.)**

Topics in communication that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**COMM 205 - Mass Communication (3 cr.)**

This course offers an introduction to the structure and function of mass communication, including print, film, and telecommunications. The course addresses the history, purpose, problems, and power of the mass media.

Distribution: A&SR/MR

Offered: every semester.

**COMM 206 - Introduction to Communication Research (3 cr.)**

Prerequisite: COMM 100 or the equivalent.

This course introduces students to research methods in communication, addressing such issues as the reliability of information sources, measurement factors and techniques, qualitative vs. quantitative methodologies, experimental research, and ethical considerations.

Distribution: MR

**COMM 235 - British Press and Politics (3 cr.)**

Cross-Listed as: POSC 235

This course examines the interaction between British news media and the national government. Students of American media and politics may be surprised to learn that the constitutional guarantee of free press that Americans take for granted is not codified in a single document in Great Britain. Instead, the media-government relationship has evolved over time largely through practice, with print media today policing themselves through the Independent Press Standards Organisation and electronic media laboring under tighter government control. We will examine the relationship between British media and government in comparison with their counterparts in the United States. The course will consist of a mix of lecture notes, class discussions, case studies and field trips. Students will complete short homework assignments and quizzes while in London, and they will submit a more in-depth research paper after they return to the United States.

This course satisfies the Social/Behavioral Science perspective requirement. This course can also be taken at the 300-level with permission of instructor.

Taught in summer session in London.

**COMM 241 - Video Production I: Introduction to Digital Editing (3 cr.)**

This course focuses on the technical and aesthetic aspects of digital audio and video editing. Classes consist of instruction in and practice of the technical of digital editing software as well as elements of style. Students will also learn basic video camera operation and shooting techniques.

Distribution: MR

**COMM 250 - Video Production II (3 cr.)**

Prerequisite: Sophomore standing and COMM 241 or permission of instructor.

This course provides an introduction to lighting, sound design, videotaping, editing, and script development.

Distribution: MR

Equipment Fees \$200.

**COMM 251 - TV Broadcasting (3 cr.)**

Prerequisite: COMM 241 or concurrent and sophomore standing.

This course offers an introduction to writing and presenting TV news stories and commercials.

Distribution: MR

Equipment Fees \$200.

**COMM 260 - Web Design (3 cr.)**

Prerequisite: COMM 100 or the equivalent.

Using industry-standard software such as Macromedia Dreamweaver for HTML editing and Macromedia Fireworks for image manipulation, students will create, test, evaluate, and critique class work as well as existing web pages. Students will learn the fundamentals of web page design: Research, Typography, Contrast, Layout, Grid Systems, Identity, and Usability. Students will obtain a

working knowledge of HTML, Cascading Style Sheets (CSS), and JavaScript.

Equipment Fees \$100.

### **COMM 280 - Organizational Communication (3 cr.)**

Prerequisite: COMM 100 or the equivalent.

This course is designed to explore the communication dynamics, effective communication processes, and misunderstandings that may occur at all levels of an organization. Students will learn about the evolution of different theories about what constitutes an effective organizational structure; assess the roles, rights, and responsibilities of individuals in a variety of institutional positions; and consider the relationship among organizational norms, organizational structure, and interpersonal communication practices. They will also explore how organizational cultures are created and altered in response to internal and external stimuli.

Distribution: MR

### **COMM 285 - Introduction to Public Relations (3 cr.)**

Prerequisite: Sophomore standing.

Students in this course will study several types of communication that are common in business and professional environments. Topics include professional presentations, techniques of interviewing, questionnaire construction, small group dynamics, symposium planning, and presentation.

Distribution: MR

Offered: every semester.

### **COMM 290 - Special Topics in Communication (1-3 cr.)**

Prerequisite: COMM 100 or permission of instructor.

Topics in communication that are not offered on a regular basis are examined. This course may be repeated for credit if the topic varies.

### **COMM 300 - Communication Theory (3 cr.)**

Prerequisite: COMM 206.

This course describes the purpose and significance of theories of intrapersonal, interpersonal, small group, public, intercultural, professional, and mass communication, highlighting the distinctions among different theoretical paradigms within these areas. It also enables students to apply communication theories to contemporary issues within the communication disciplines as well as everyday life.

Distribution: MR

### **COMM 315 - Language in Communication (3 cr.)**

Prerequisite: COMM 100 and COMM 102 or equivalent and junior standing.

This course examines the ways in which language is used and misused as a communication tool, as well as a variety of language-based communication issues, including the cultural, political, rhetorical, and/or professional implications of word choice. Students will also consider the role of language in persuasion and in the cultivation and maintenance of social power.

Distribution: MR

### **COMM 320 - Small Group Communication (3 cr.)**

Prerequisite: COMM 100 or COMM 201 and junior standing.

Students will study several types of communication involving small groups that are common in business and professional environments. Students will consider how leaders and followers emerge in small groups; what factors contribute to or detract from effective small group dynamics; and what roles different individuals may play in small groups.

Distribution: MR

### **COMM 321 - Nonverbal Communication (3 cr.)**

Prerequisite: COMM 100 or COMM 201 and junior standing or permission of instructor.

This course explores all of the channels of nonverbal communication, analyzing individual, cultural, and contextual variables that affect it.

Distribution: MR

### **COMM 324 - Media Industries, Government, and Society (3 cr.)**

Prerequisite: COMM 100 and COMM 205.

This course explores the relationship among media industries, government, and society in the United States. The course will provide a brief history of media regulation and deregulation, examine the impact of new media (cable, satellites, and the Internet) on old media (broadcast television and radio), consider how to define and to operate media in the public interest, and scrutinize the relationship among corporate interests, government interests, consumer interests, and citizen interests. Students will also examine the role of news media and entertainment media-as well as news media as entertainment media-and the effects of media mergers on media technologies, the government, and U.S. culture.

Distribution: MR

### **COMM 326 - Race, Gender, and Ethnicity in the Media (3 cr.)**

Prerequisite: COMM 100, and COMM 205.

This course examines the media as cultural artifacts that provide the images and representations that help shape our identities, beliefs, and values. Special attention is paid to questions of race, gender, and ethnicity. Students investigate such forms of communication as advertising, popular music, popular fiction, television, film, and the Internet.

Distribution: MR

### **COMM 333 - Independent Study in Communication (1-3 cr.)**

See "Independent Study (p. 24)"

### **COMM 334 - Independent Study in Communication (1-3 cr.)**

See "Independent Study (p. 24)"

### **COMM 340 - Business Communication (3 cr.)**

Prerequisite: Junior standing and two courses in English writing with grades of "C" or better.

This course explores the principles of effective professional writing. The course requires extensive practice in planning, organizing, writing, revising and editing, and analyzing memoranda, executive summaries, letters, reports, speeches, and other forms of writing commonly found in business and industry contexts. Students will be

expected to focus on grammatical accuracy and other technical elements of English writing, as well as using concise and precise prose. Oral presentations will also be expected.

Distribution: MR

Offered: every semester.

### **COMM 348 - Intercultural Communication (3 cr.)**

Prerequisite: COMM 100 or equivalent and junior standing.

This course promotes the appreciation and understanding of other cultures by instructing students in the use of cross-cultural communication skills. Activities include discussion, guest lectures, simulations, case studies, role-playing, and presentations.

Distribution: MR

### **COMM 352 - TV Broadcasting II (3 cr.)**

Prerequisite: COMM 251.

This course focuses on advanced TV news reporting with instruction and practice in reporting, writing, and producing in-depth broadcast news stories. Emphasis is placed on investigative techniques, interviewing, writing for broadcast news, photography, voice-overs, and on-the-air talent techniques for production.

Equipment Fees \$200.

### **COMM 356 - Global Communication (3 cr.)**

Prerequisite: COMM 205 and junior standing.

This course examines the development and current state of global communication networks and communication policies. It devotes special attention to evaluating international telecommunication infrastructures and regulatory policy frameworks; examining national sovereignty and cultural identity in relation to pressures toward cultural homogenization; discussing media imperialism and various forms of resistance to globalization; and assessing the development of competition strategies and market dynamics on communication policy and practice. Different theories of globalization will also be discussed.

Distribution: MR

### **COMM 360 - Sportswriting (3 cr.)**

Prerequisite: JRNL 101 and two courses in English writing with grades of "C" or better.

Cross-Listed as: JRNL 360

This course introduces students to the craft of sportswriting. Beginning with a discussion of how to approach writing in general, the course focuses principally on analyzing models of successful sportswriting and developing skills in producing sportswriting. Students will be expected to read copiously and critically and to write (and revise) several short assignments as well as one research-based project. This course is cross-listed as JRNL 360.

### **COMM 371 - Advanced Radio Reporting (3 cr.)**

Prerequisite: COMM 241 and COMM 251, or permission of instructor.

Cross-Listed as: JRNL 370

This course provides students with professional radio reporting opportunities. It focuses on radio news reporting with instruction and real-life applications in developing, researching, writing, and producing broadcast news stories to be aired on National Public

Radio station WAMC. Students receive on-the-air talent techniques and one-on-one coaching for professional voice-over productions. Story ideas are provided by the instructor, the WAMC news director, and news producers; students must also generate his/her own story proposals. This course is cross-listed as JRNL 370.

### **COMM 390 - Special Topics in Communication (1-3 cr.)**

Prerequisite: Junior standing and permission of instructor.

Topics offered depend on student interests as well as particular interests of instructors. This course may be repeated for credit if the topic varies.

### **COMM 480 - Internship in Communication (1-3 cr.)**

See "Internships (p. 25)".

### **COMM 481 - Internship in Communication (1-3 cr.)**

See "Internships (p. 25)".

### **COMM 490 - Seminar in Media Theory and Journalism (3 cr.)**

Prerequisite: Graduating communication seniors or permission of instructor and COMM 300.

This capstone course is designed to enable students in media and journalism concentrations to integrate the theoretical and practical knowledge from their previous coursework into a cohesive whole. Students will examine the social, political, cultural, and economic contexts of mass media and journalism; probe a variety of theoretical frameworks for understanding mass media and journalism; and design and implement a substantial research project that draws on those contexts and frameworks.

Distribution: MR

### **COMM 491 - Seminar in Professional Communication and Public Relations (3 cr.)**

Prerequisite: Graduating communication seniors or permission of instructor and COMM 300.

This capstone course is designed to enable students in professional and public relations concentrations to integrate the theoretical and practical knowledge from their previous coursework into a cohesive whole. Students will explore current issues and factors affecting communication within and across profit and nonprofit corporations; consider theoretical approaches designed to illuminate interpersonal and professional communication dynamics; and design and implement a significant research project related to their chosen field of study.

Distribution: MR

## **CPE - COMPUTER ENGINEERING**

### **CPE 271 - Digital Design (4 cr.)**

This is an introductory course that gives students the ability to analyze and design digital circuits. Students become knowledgeable about the number systems used in computers and digital circuits. They learn to simplify Boolean algebraic expressions that describe circuit behavior. Students learn to design combinational and sequential circuits using basic gates and flip-flops, as well as larger functional units such as decoders, counters, and multiplexers. Students are introduced to the hardware description language VHDL, and learn to describe simple circuits with that language. Laboratory

work includes designing, building, and testing combinational and sequential circuits using available parts. Students will also use VHDL to program programmable logic devices. The methods for assessing student learning in the course are quizzes, tests, and lab reports. Three class hours, two lab hours.

Distribution: MR

This course is a prerequisite.

### **CPE 305 - Firmware Design for Embedded Systems (3 cr.)**

Prerequisite: CPE 271, EE 285, and ENGR 105 or equivalent.

This is an introductory course in the design and understanding of firmware for real-time embedded systems. After completing this course, students understand the issues involved with partitioning and managing a computation that has real-time performance constraints. Students are introduced to modeling the behavior of a system using UML. Approaches to the design of software architecture of embedded systems is presented. Students design an appropriate real-time clock scheduling mechanism and use it for task management that allows control of external devices and interpretation of data from external sensors. Students learn to use C++ for designing real-time device drivers that interface to a variety of hardware subsystems. This includes keypads, LCD displays, Analog to Digital Converters (ADC), networked (I2C and SPI) sensors as well as Stepper motors. Students learn to debug a real-time system through a semester long design project.

Distribution: MR

### **CPE 310 - Microprocessors I (3 cr.)**

Prerequisite: CPE 271 and any programming language.

This is an introductory course in low-level computer programming. Students learn skills in writing programs using the fundamental operations that electronic circuits on a processor can perform. IBM PCs and clones are used as example machines for running and testing programs. Students learn assembly language instructions, different addressing modes, and their use in different situations. They use basic programming constructs such as branching and loop control. Students learn to test and debug programs. The methods of assessing student learning in this course are programming assignments, quizzes, and tests. Two class hours, two lab hours.

Distribution: MR

Formerly "Machine and Assembly Language"

### **CPE 330 - Computer Organization (3 cr.)**

Prerequisite: CS Majors: Junior standing.

This is an introductory course in processor organization and assembly language programming. Students learn enough basics of digital circuits to understand how a processor functions, and how numbers are represented inside a computer. They then learn how to program this processor in assembly language. Addressing modes, branching, and loop control are included. Students also learn how to test and debug assembly language programs by doing several programming assignments. Students will learn the functions of the assembler, linker, and loader programs. The primary methods of assessing student learning in this course are programming assignments and exams. This course may not be taken for credit by electrical engineering majors.

### **CPE 333 - Independent Study in Computer Engineering (3 cr.)**

See □Independent Study□ on p. 32 of catalogue

Distribution: MR

### **CPE 355 - Real Time Embedded Kernels (3 cr.)**

Prerequisite: CPE 305 or equivalent, CPE 310 or equivalent.

This is an introductory course in the theory, design, and use of a real-time kernel for an embedded system. A real-time kernel is the control software that manages the time resources of a microprocessor. Students learn the basic structure and services of a kernel. Topics include dispatching, hierarchical scheduling, priority-driven scheduling, real-time schedulers (including non-preemptive and preemptive), scheduling groups, and multitasking. Students also learn to utilize tasks to describe multiple threads of execution in a computation. Students study methods to manage and control task execution as well as other kernel services. The primary methods of assessing student learning are homework assignments, quizzes, exams, and a term project.

Distribution: MR

### **CPE 360 - Microprocessors II (4 cr.)**

Prerequisite: CPE 310.

This is a course in the theory and design of modern microprocessor systems. It is a continuation of Microprocessors I and builds on concepts learned in that course. Students increase their awareness of the basic principles of system design. They design, fabricate, and test a complete working ATMEGA based system. Students design memory mapped systems which include non-volatile and volatile memory. They also study bus timing and loading considerations. A semester long design project is employed to provide the students with a hands-on experience. Upon successful completion of the course, the student will have learned about more detailed microprocessor architecture concepts, bus interfacing and clocking, memory system design, how to interface peripheral chips and devices to the bus, to use different serial and parallel I/O interfaces, to build I/O ports and the concept of a total system design.

The method of assessing student learning in the course includes quizzes, exams, lab reports, and lab demonstrations.

Three class hours, three lab hours.

Distribution: MR

Formerly "Microprocessor Systems and Design"

### **CPE 420 - Computer Architecture (3 cr.)**

Prerequisite: CPE 310 and CPE 271.

This is a senior level course in the theory and design of modern computer architectures. Students learn the fundamental organization of processors, controllers, memory, and communication links as well as the issues involved with internal data representation. They understand the close correlation between registers, bus interconnections, and instruction sets. Students gain skills in computer performance prediction by analyzing advanced features including instruction pipelines, arithmetic circuits or co-processors, cache, and virtual memory. After successfully completing this course students understand the issues involved with instruction set design and implementation and are able to evaluate new architectures. The methods of assessing student learning in the course are homework assignments, a term project, and exams.

Distribution: MR

### **CPE 425 - Software Engineering (3 cr.)**

Prerequisite: A structured programming language.

This is a first year graduate course in software system design fundamentals. Students learn the approaches to designing medium to large-scale systems. After completing this course, students understand lifecycle issues in modern software design. They learn a variety of software design methodologies including structured design, top down design, bottom up design, and incremental design and are introduced to object oriented design. Students participate in a semester-long team project with design documentation delivered and presented at specified design review milestones. The methods of assessing student learning in the course are homework assignments, a research paper, and a semester long design project that culminates in a formal presentation.

### **CPE 427 - Computer Engineering Laboratory (2 cr.)**

Prerequisite: EE 323 and CPE 360.

Corequisite: CPE 420.

A laboratory emphasizing the integration of advanced techniques in the design and implementation of an embedded microcontroller. Topics include embedded systems design and development using an EPROM based, industry standard microcontroller, interfacing serial and parallel I/O, PLD design using VHDL, Analog to Digital conversion (ADC), and Timers as well as interrupt structures. The course provides students the opportunity to design a control and data acquisition system for the alternative energy interdisciplinary project. Students design, construct, and test an embedded microcontroller based real-time system. The embedded computer is used to acquire performance data from the solar vehicle. Sensors are interfaced to the ADC and data are later uploaded to a workstation for analysis. Students learn about the challenges of system's integration.

Distribution: MR

One class hour, one three-hour lab.

### **CPE 435 - Requirements Analysis (3 cr.)**

Prerequisite: CPE 425

This course addresses the issues associated with eliciting, recording, and managing requirements. Poor requirements processes are a leading cause of project failure. Engineers must have the skills and tools to effectively collect, verify, validate, and implement requirements in order to improve the success rates of their projects. Major models of requirements will be examined. Methods of detecting ambiguity will be discussed and practiced. A comprehensive survey of various methods of eliciting, recording, and verifying requirements will be considered. Additional topics include: writing requirements, formal specification analysis, and formal notations. The primary methods of assessing student learning are homework assignments, a presentation, a group project, a midterm, and final exam.

### **CPE 436 - Project Research, Innovation and Development (2 cr.)**

Prerequisite: Senior standing.

This course is designed to enable students to learn about the product development process and apply it to their senior project. The students will learn about researching the problem being addressed, how to innovate and develop products, both, hardware and software. Students will learn about needs analysis, identifying business opportunities, assessing market potential. In the process, various aspects of entrepreneurship will also be addressed. In addition, students are guided in formulating a proposal for a Senior Design Project in preparation for project work in CPE 440. Faculty and

representatives from industry present ideas for Senior Design Projects and each student chooses a project, and develops and writes a project proposal with the supervision and guidance of a faculty advisor. The assessment in this course is based on the submission of short papers on some of the issues discussed in presentations the project proposal write-up and presentation.

Two class hours.

### **CPE 438 - Software Quality Assurance (3 cr.)**

Prerequisite: CPE 425

This course addresses the issues associated with software quality. This course provides an in-depth exploration of designing, measuring, and maintaining the quality of a software artifact. Many software engineering topics are brought to bear on a systematic approach to ensure the quality delivered software (Software Quality Assurance, SQA). The student learns the issues associated with verification and validation, testing, audits, review of software artifacts, configuration management, and process improvement. The primary methods of assessing student learning are homework assignments, a presentation, a group project, a midterm, and final exam.

### **CPE 439 - Professional Awareness (1 cr.)**

Prerequisite: CPE 436

This course is designed to make students aware of the problems, concerns, and responsibilities of an engineer as a professional. Students participate in discussions, led by invited speakers, on topics that enable students to write a professional résumé, interview for a job, generate an effective and substantive report, and make an effective technical oral presentation. Students are exposed to ethical issues in engineering environments, made aware of the necessity of protecting their work with patents, copyrights, trademarks, or trade secrets and of not infringing on the similar rights of others; and apprised of issues of safety in the work place, product liability, and the importance of professional registration. The assessment in this course is based on students' participation in discussions, the submission of short papers on some of the issues raised in the presentations, and the quality of project proposal and the oral presentation.

One class hour.

### **CPE 440 - Senior Design Projects (3 cr.)**

Prerequisite: CPE 439

This is a capstone design course that prepares students for entry-level positions. In this course each student works on an independent engineering project under the supervision of a faculty advisor. Students apply the design process and communicate the results of their project work in both oral and written form. Oral reports are presented before an assembly of faculty and students. Students apply engineering design principles either by working on a product, improving a product, or designing experiments to investigate causes of either an observed phenomenon or a problem in engineering. Students are required to demonstrate their achievements using appropriate laboratory exhibits. Students who select industry-sponsored projects have the opportunity of working with the industrial advisor in an actual engineering environment. The assessment in this course is based on the student's level of commitment demonstrated throughout the semester, the level of achievement attained, the recording of activities in a log book, and the quality of the written report and oral presentation. Meeting hours by arrangement.

Distribution: MR

### **CPE 442 - Verification and Validation (3 cr.)**

Prerequisite: CPE 425/CPE 525 or equivalent.

This course introduces the student to software testing strategies and techniques. The goal is to provide a framework for the testing of the developed software in a series of well-planned steps. The cost impact of testing is illustrated in terms of effort, time, and resources. Students learn the issues associated with program proving, code inspection, test coverage, code reviews, unit-level testing, and system level testing. Students are exposed to the difficulty and costs of some types of analysis and testing. These are examined in addition to the need for automation of tedious tasks. The benefits of automated tests are explored as well as the associated costs. The advantages of regression tests are discussed. The primary methods of assessing student learning are homework assignments, a presentation, a group project, a midterm, and final exam.

### **CPE 445 - Computer Graphics Software (3 cr.)**

Prerequisite: CPE 310 and ENGR 105 or equivalent.

This is an introductory course in computer graphics. Participants in the course learn the hardware organization of graphic display system in an IBM PC for both alphanumeric and bit mapped graphics. They write programs in C and assembly language to control, query, optimize, and write to and read from graphic controller chips in order to use the full capability of the display hardware. They write programs to generate and manipulate alphanumeric display; read and write to display memory to generate points, lines, and circles; read and write to the color tables; and control the start address to allow panning and scrolling and animation. An individual project is required. The assessment of student learning in this course is based on a writing program as homework, supervised laboratory work, and the quality of the project.

### **CPE 450 - Topics in Compiler Design Theory (3 cr.)**

Prerequisite: ENGR 105 or equivalent and CPE 310.

This is a course in the theory and design of modern programming languages. Students learn the basic elements of a language translator (compiler); lexical analysis, parsing, code generation, symbol table management, type checking, scope resolution, code optimization, and error recovery. They also learn to write regular expressions and context free grammars and understand the separate phases of compilation and the issues involved in designing a medium sized translator. To facilitate student understanding, a semester-long, incremental design project is employed. As a result of building their own compiler, students learn the operation and messages presented by any modern commercial translator. The methods of assessing student learning in the course are homework assignments, quizzes, an exam, a research paper, and a semester long design project that culminates in a formal presentation.

Formerly "Design And Analysis Of Algorithms"

### **CPE 462 - VHDL: Simulation and Synthesis (3 cr.)**

Prerequisite: CPE 271 or equivalent.

This is an introductory course in VHDL (very large scale integrated circuit hardware description language). Students will learn enough about the language to describe most digital hardware, including processors, interface circuits, etc. Students will learn how to use a simulator program to verify the correctness of their description. Students will synthesize programmable devices using VHDL. Several simulation exercises and some synthesis projects are included.

### **CPE 470 - Real-time Embedded Controls (3 cr.)**

Prerequisite: CPE 355 or concurrent or permission of the instructor.

This is an introductory course in the design and understanding of embedded micro-controllers in a time critical control application. Students learn the fundamentals of discrete systems modeling, analysis, and design. Students implement control algorithms on an embedded processor in the C language. Control issues associated with fixed-point processors, limited bandwidth I/O channels, and limited precision interfaces are studied. The methods for assessing student learning in the course are homework assignments, exams, and a design project.

Distribution: MR

### **CPE 475 - Operating Systems (3 cr.)**

Prerequisite: CPE 355 and CPE 420.

This is a first course in operating system theory and design. After successfully completing this course, students understand concurrent processes, process communication, resource allocation, and resource scheduling. In addition, they learn how to apply basic queuing models to predict real-time performance of an operating system. Students also learn the fundamentals of distributed (and network) operating systems. They also understand the interaction between operating system design and computer architectures. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, two exams, and a term project.

### **CPE 480 - Internship in Computer Engineering (3 cr.)**

See "Internships (p. 25)".

### **CPE 482 - Computer Engineering Research (1-3 cr.)**

Prerequisite: Junior or Senior Standing

See "Undergraduate Research" in catalogue.

Variable credits 1-3 cr.

### **CPE 485 - Computer Networks (3 cr.)**

Prerequisite: ENGR 212 or IE 212 or equivalent.

This is a first course on communication networks. After completing this course, students understand the structure and issues of network design using the ISO Seven Layer model as a reference. They understand the limitations placed on specific network architectures from the physical (hardware) layer up through the upper layers (transport). The problems of error detection and recovery are also discussed. Students learn to use delay models to predict network specific performance measures and understand the limitations of these models. The course covers issues associated with routing and flow control. The methods of assessing student learning in the course are homework assignments, quizzes, three exams, and research paper with a formal presentation.

### **CPE 490 - Special Topics in Computer Engineering (3 cr.)**

This is a study of an advanced topic in engineering of special interest to electrical engineering majors, but not offered on a regular basis. The course may be repeated for credit if the topic varies.

## **CS - COMPUTER SCIENCE**

### **CS 101 - Introduction to Computing (4 cr.)**

Cross-Listed as: IT 101

This course is designed to introduce the student to various fields of computing in order to help them make an informed choice about which career path they would like to pursue. Topics include data representation, hardware, system and application software, communications, the systems development life cycle and the basics of computer programming. Comparison of the fields will be ongoing throughout the course. Programming basics will be explored using a programming language.

Distribution: GUR/MR

Offered: in the fall semester

3 hours of lecture and 3 hours of lab per week.

This course is a prerequisite.

Laboratory fees \$50.

### **CS 102 - Introduction to Programming (4 cr.)**

Cross-Listed as: IT 102

Covers problem solving with programming in greater detail. Students learn to apply fundamental imperative, procedural constructs to solve common programming problems, as well as the beginnings of object oriented programming (e.g., defining classes, instantiating objects, using objects, and using application programmer's interfaces). Students learn to design and develop small programs using a procedural, imperative programming language and appropriate analysis, design, and testing techniques.

Distribution: GUR/MR

Offered: in the spring semester.

This course is a prerequisite.

One cannot receive credit for both CS 102 (p. 203) and BIS 300 (p. 177). This course is equivalent to IT 102 (p. 244). 3 hours of lecture and 3 hours of lab per week.

Laboratory fees \$50.

### **CS 131 - Computing for the Arts and Sciences (3 cr.)**

This is an introduction to computer systems, primarily from the user's viewpoint. Topics include hardware, software, vocabulary, and applications. The course culminates in a final project utilizing various software packages to research, analyze, and report on a topic of the student's choice.

Distribution: GUR

Offered: fall and spring semesters.

Not open to those who have completed CS 101 (p. 202), or IT 101 (p. 244).

Laboratory fees \$50.

### **CS 133 - Introduction to Informatics (3 cr.)**

Informatics is the integration of computing and information management and its application in society. Frequently informatics focuses on applying information technology and tools to information from a discipline such as biology (bioinformatics), healthcare

(healthcare informatics), nursing (nursing informatics), etc. This course will focus on how information technology can be used to organize and manage information in society. A project will be used to demonstrate student facility in informatics and students will present their work.

Distribution: GUR

Offered: fall and spring semesters

None, not open to those who have taken CS 101 (p. 202), CS 102 (p. 203), IT 101 (p. 244), or IT 102 (p. 244).

Laboratory fees \$50.

### **CS 170 - Technology in Mathematics (3 cr.)**

This course is an introduction to various computer software packages that can be useful for doing research, teaching, and working in the business world. Students will receive hands-on training in software packages including, but not limited to: computer algebra systems (Mathematica, Maple, or Matlab), Office products (Excel and Access), statistics packages (SAS and Minitab), and specialty math software (LaTeX).

Distribution: MR

Offered: in the fall semester.

### **CS 171 - Programming for Mathematics (4 cr.)**

An introduction to computer programming with emphasis on using programming to solve problems in mathematics. Topics include variables, data types, control structures, arrays, simple graphics, functions and recursion. Students will also be introduced to software packages for mathematical computation.

Distribution: MR

Offered: in the fall semester.

### **CS 190 - Special Topics in Computer Science (1 cr.)**

Topics in computer science that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **CS 200 - Data Structures (4 cr.)**

Prerequisite: CS 102 or IT 102

Cross-Listed as: IT 200

This course continues the introduction to computer programming begun in CS 102. This course covers the development and use of data structures in computer science and object-oriented software development. Using the Java programming language, students learn about the implementation and use of abstract data types. Students are expected to apply and augment the programming knowledge acquired in previous courses to the task of developing more complex works. Topics include linked lists, stacks, queues, hash tables, common trees and tree algorithms, graphs and traversal algorithms, and common algorithms related to these structures. Students will also learn to evaluate the efficiency of the algorithms that they implement over the course of the semester.

Distribution: MR

Offered: in the fall semester.

3 hours of lecture and 3 hours of lab per week

Lab Fee \$50.

### **CS 201 - Data Structures and Algorithms I (4 cr.)**

Prerequisite: CS 102 or IT 102.

This course continues the introduction to computer programming begun in CS 102. This course covers the concepts of object-oriented software development and design, linear data structures, and common algorithms related to linear structures. Topics include inheritance, polymorphism, encapsulation, abstract data types (ADTs), functional and structural recursion, use, and implementation of lists (with array and linked list implementations), collections.

Distribution: MR

Offered: in the fall semester.

3 hours of lecture and 3 hours of lab per week.

Laboratory fee \$50.

### **CS 202 - Data Structures and Algorithms II (4 cr.)**

Prerequisite: CS 201.

This course continues the coverage of linear and non-linear data structures and related algorithms. Topics include stacks, queues, hash tables, common trees and tree algorithms (e.g., heaps, AV trees, red-black trees, B-trees, and splay trees), graph representations and graph traversals (e.g., depth-first and breadth-first traversals), and common algorithms related to these structures.

Distribution: MR

Offered: in the spring semester.

3 hours of lecture and 3 hours of lab per week.

Laboratory fees \$50.

### **CS 210 - Software Design (4 cr.)**

Prerequisite: CS 200 or IT 200

This course introduces software design concepts, standard software design notations, software architectures, and design patterns. Design notations will include data flow-oriented, object-oriented, data-oriented, and real-time approaches. Modularization of design patterns for software construction will be explored. Students will design and implement portions of a software system to demonstrate the use of design notations and design patterns.

Distribution: MR

Offered: in the spring semester.

3 hours of lecture and 3 hours of lab per week.

Laboratory fees \$50.

### **CS 220 - Software Development (4 cr.)**

Prerequisite: CS 200 or IT 200

Participants will learn modern tools and practices to design and develop large systems in teams such as integrated development environments, build systems, testing, version control, and issue tracking.

Distribution: MR

Offered: in the spring semester.

3 hours of lecture and 3 hours of lab per week.

Laboratory fees \$50.

### **CS 290 - Special Topics in Computer Science (1-3 cr.)**

Prerequisite: Permission of the instructor.

Topics in computer science that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **CS 300 - Computer Forensics, Tools and Processes (3 cr.)**

Prerequisite: CS 101 or IT 101 and junior or senior standing or instructor's permission.

In this course, we will present methods to properly conduct a computer forensics investigation. This course will prepare the students to obtain and analyze digital evidence. We will also examine various computer forensics techniques that can be used in solving computer crimes. The course will cover topics such as file structures, data recovery, email, and network investigations. Students should have a working knowledge of hardware and operating systems to maximize their success on projects and exercises throughout the text. Students also need to know how to use a computer from the command line and how to use today's popular operating systems such as Windows, Unix/Linux, and their related hardware.

### **CS 310 - Computer Crime Scene Investigation (3 cr.)**

Prerequisite: CS 101 or IT 101 or permission of instructor.

The increase in the number of crimes committed using computers has resulted in a need for computer forensic specialists who are able to gather information and computer evidence to be able to reconstruct the crime committed using a computer in order to solve it. In this course, we will study how to seize, recover, and preserve computer evidence and what leads this evidence provides. We will review various ways in which, using gathered data, computer forensic experts can reconstruct computer crimes and events. Students will have hands-on opportunities to become familiar with some of the current available forensic tools.

### **CS 333 - Independent Study in Computer Science (1-3 cr.)**

See "Independent Study (p. 24)".

### **CS 334 - Independent Study in Computer Science (1-3 cr.)**

See "Independent Study (p. 24)".

### **CS 340 - Computer Graphics: Principles and Applications (3 cr.)**

Prerequisite: CS 200/IT 200 or permission of instructor

This course focuses on rendering the synthesis of realistic 3D images, the major concern in computer graphics today. Following a study of light, color, and shading, each student develops a simple program to generate images using ray-tracing, the most widely used photo-realistic rendering technique. Additional topics include 2D and 3D transformations, generation of 2D images on a screen, use of a simple 2D graphics package, and graphical user interfaces.

Offered: in alternate fall semesters.

### **CS 351 - Programming Paradigms (3 cr.)**

Prerequisite: CS 200/IT 200, CS 210 or permission of the instructor.

This is an examination of the development of programming languages. The emphasis is on the interaction between classes of languages and their associated programming paradigms. Topics include imperative, functional logic, and object-oriented languages.

Distribution: MR

Offered: in alternate fall semesters.

Formerly "Organization of Programming Languages"

### **CS 364 - Design of Database Management Systems (3 cr.)**

Prerequisite: BIS 300 or CS 102/IT 102 and at least junior standing.

This is a study of concepts, theory, design techniques, and retrieval methods, particularly using the industry-standard SQL data language. Topics include physical data organization, database architecture, data models with emphasis on the relational model, logical database design, normalization, and relational query languages. A design and an implementation project are required.

Distribution: MR

Offered: in alternate fall semesters.

### **CS 366 - Design and Analysis of Algorithms (3 cr.)**

Prerequisite: CS 200/IT 200, CS 210 or permission of instructor.

This course provides students with the fundamental techniques and strategies used in the design of algorithms, including proper selection of data structures, dynamic programming, divide-and-conquer, greedy methods, and backtracking. The course also exposes students to the analysis of algorithms using methods to estimate run-time performance. The theory of NP-completeness is discussed, along with heuristic methods for constructing algorithms for "hard problems." Numerous case studies give students perspective into how algorithm problems arise in the real world.

Distribution: MR

Offered: in alternate spring semesters.

### **CS 370 - Artificial Intelligence and Expert Systems (3 cr.)**

Prerequisite: Junior standing, and CS 102 or BIS 300 or CPE 305, or permission of the instructor.

This course is a survey of artificial intelligence (AI) including fundamental ideas, techniques, and applications, especially expert systems. One of the two major AI languages, LISP and PROLOG, is used, both for programming and for demonstrating programs and examples. Students must complete a project or a report that may combine an aspect of artificial intelligence with their major area (for example, expert systems in financial planning or vision systems in robotics).

Offered: in alternate years.

### **CS 390 - Special Topics in Computer Science (1-3 cr.)**

Topics offered depend upon student interest as well as particular interests of instructors. The course is offered as often as faculty time and student interest permit and may be repeated for credit if the topic differs.

### **CS 411 - Operating Systems (3 cr.)**

Prerequisite: CPE 310; CS 202

This course is an examination of the organization and architecture of computer operating systems including the major concepts and the major systems programs associated with operating systems.

Distribution: MR

Offered: in alternate fall semesters.

### **CS 413 - Parallel Computing (3 cr.)**

Prerequisite: CS 200 or IT 200

This course introduces students to the fundamentals of parallel computing with a focus on approaches appropriate for multicore architectures. Topics include parallel architectures, algorithms and programming paradigms, shared- and distributed-memory systems, message passing, graph and matrix algorithms. Cloud computing, synchronization techniques, shared data structures, and load balancing will also be covered.

Distribution: MR

Offered: in alternate fall semesters.

### **CS 480 - Internship in Computer Science (1-3 cr.)**

See "Internships (p. 25)".

### **CS 490 - Software Engineering (3 cr.)**

Prerequisite: CS 200/IT 200, CS 210 and CS 220

This is a software engineering course studying principles, methods, and ethical aspects of software engineering and featuring a large-scale software engineering project.

Distribution: MR

Offered: in the fall semester.

### **CS 492 - Computer Science Capstone (3 cr.)**

Prerequisite: CS 490

This project-based course provides students the opportunity to demonstrate their ability to synthesize and apply knowledge and skills acquired throughout the computer science program. Using appropriate software engineering practices, students will work in teams to substantially contribute to a significant, real world, software project.

Distribution: MR

Offered: in alternate fall semesters.

## **CUL - GLOBAL CULTURES**

### **CUL 210 - Comparative Race Relations: U.S. and South Africa (3 cr.)**

Prerequisite: Sophomore standing.

This course compares the experience of the United States and South Africa from the colonization by Europeans to the Civil Rights successes in the U.S. and the end of Apartheid in South Africa. We will study the literature, religious issues, political conflicts, and historical experience of these two cultures through the prism of race relations. We will study the works and lives of, among others, Malcolm X, Nelson Mandela, Stephen Biko, and Martin Luther King, as well as the political and economic realities which constrained and were changed by these individuals' activities.

Satisfies Elements of Culture requirement "C".

Formerly CUL 310.

### **CUL 221 - The Viking World (3 cr.)**

Prerequisite: Sophomore standing.

The Vikings were more than fierce warriors and daring pirates. They were shrewd businessmen, brave explorers, adaptable colonists, and skilled craftsmen. For two and a half centuries, they influenced the course of European history-in particular, the development of Great Britain and the English language-and left a legacy that continues into the modern world. This class offers an exploration of the history, art, language, (oral) literature, and customs of the Vikings.

Satisfies Elements of Culture requirement "CA".

### **CUL 222 - Southeast Asia (3 cr.)**

Prerequisite: Sophomore standing.

This course will cover the countries of Indonesia, Thailand, the Philippines, Vietnam, Laos, and Cambodia. We will consider the geography of the area- the consequences of being east of India and south of China, as well as issues affecting the environment and natural resources of this region; its history, essential points of nation formation, and the transitions from traditional to modern societies and governments; its economics, comparing the situation and policies before World War II to those afterwards, looking at traditional production techniques, and examining the effects of the present financial crisis; its cultures, the intersections of art, language, literature, music, drama, ethnicity, and religion; and social and political issues, such as the causes and impact of migration within and across the region, and ethnic and political conflicts.

Satisfies Elements of Culture requirement "CA".

### **CUL 223 - Modern Germany (3 cr.)**

Prerequisite: Sophomore standing.

This course introduces students to the culture of modern Germany from its unification in 1871 under Bismarck to the fall of the Berlin Wall and the reunification of East and West Germany.

Satisfies Elements of Culture requirement "CA".

### **CUL 224 - Italian Culture (3 cr.)**

Prerequisite: Sophomore standing.

Since the rise and fall of the Roman Empire, a wide range of historical and political events have manifested transformations leading up to the Unification of Italy in 1861. The demographic, economic, sociological differences and complexities leave Italians still attempting to establish a national identity. This course will provide students with an understanding of ancient and modern Italy, Italian culture, and the Italians. Students will immediately connect American multicultural challenges and diversity as a way of life for Italians for several centuries leading up to today. In addition, the course challenges students to engage in other ways of knowing, thinking, and rethinking about culture and Italy.

Italian Culture will cover political, historical and cultural questions, regionalism, linguistic variations, governance, social and political cultures, mafia and corruption, religion, literature, art, media, music, and film. In addition, students will explore Italian migration from the 1800s to 1970s, and contemporary Italy's recent immigration challenges in a multicultural world.

Satisfies Elements of Culture requirement "C".

### **CUL 225 - Chinese Culture and Society (3 cr.)**

Prerequisite: Sophomore standing.

This culture course about China examines how Chinese culture and society develop as a result of the interaction of historical, geographic, economic, philosophical, political and religious factors, and consider how those factors may be reflected in a culture's tradition. The thematic overview in the Chinese culture course might focus on the development of a cultural civilization and how that has developed over the last and contemporary century.

Satisfies Elements of Culture requirement "C".

### **CUL 230 - Culture of Iran (3 cr.)**

Prerequisite: Sophomore standing.

As the 21st century progresses, the necessity to understand and appreciate other cultures around the globe has grown. This increased need is related to the fact that interactions between people from different cultures have increased profoundly, and will probably continue to increase in frequency. This increase in intercultural interactions has occurred in part because of changes in technology, political systems, immigration patterns, and the global economy.

In this course, we will focus on the culture(s) of Iran, and Iranian interactions with the rest of the world. In order to do this, we will examine the following areas of the Iranian experience: cultural history, cultural patterns, world view, religion, language, education, art, architecture, poetry/literature, economics, politics/government, and contemporary issues in Iran.

Satisfies Elements of Culture requirement "C".

### **CUL 235 - The United States and International Perspectives (3 cr.)**

Prerequisite: ENGL 100 or equivalent.

Open only to nonnative speakers of English.

Satisfies Elements of Culture requirement "CA".

### **CUL 241 - Classical Greece (3 cr.)**

Prerequisite: Sophomore standing.

The Greek miracle is the creative genius born from the marriage of clarity of mind (reason) and deep spiritual power. Greek culture illuminated and guided change in a largely brutalized world where nothing had been held so cheap as human life. We will examine Greek society by way of literature, art, and archeology, considering myths, philosophy, and a way of life incorporating study, athletics, banquets, and slavery.

Satisfies Elements of Culture requirement "C" or "CA."

### **CUL 243 - Irish Culture (3 cr.)**

Prerequisite: Sophomore standing.

"Each community defines itself as much by what it is as by what it is not, and what it is not, is, above all else, the other."-Michael McDonald, Children of Wrath: Political Violence in Northern Ireland. The dilemma in studying Irish culture is that not just one culture exists; colonization has led to the creation of multiple cultures and identities in Ireland. The two dominant cultures in Ireland are at odds over every aspect of a perceived "national identity." What is "Irish"? Who defines a culture? If no consensus exists, how does a culture survive? Mythology, literature, music, and political symbolism are the main tools utilized by all in Ireland who attempt to

create or define their culture. In this course we will explore the creation of cultures and identities in Ireland by examining Irish history, literature, music, and symbolism. We will also look at the very different perception of Irish culture created in the United States.

Satisfies Elements of Culture requirement "C".

### **CUL 246 - Modern Israel (3 cr.)**

Prerequisite: Sophomore standing.

This course's objective is to understand the historical, political, economic, religious, and cultural dimensions of modern Israel and to examine these themes among others: the establishment of the state, its survival, the role of the Holocaust, and the role of art.

Satisfies Elements of Culture requirement "C."

### **CUL 247 - Renaissance Florence and Revival Dublin (3 cr.)**

Prerequisite: Sophomore standing.

This course surveys and compares the art, music, literature, and history of Florence during the Italian Renaissance and of Dublin during the Irish Revival.

Satisfies Elements of Culture requirement "CA."

### **CUL 248 - Russia Then and Now (3 cr.)**

Prerequisite: Sophomore standing.

Satisfies Elements of Culture requirement "C."

### **CUL 250 - Latin American Civilization (3 cr.)**

Prerequisite: Sophomore standing.

The objective of the course is to introduce the student to the rich cultural heritage of the peoples who have contributed toward forming the societies of Latin America. Attention will be given to the Indigenous, Spanish, Portuguese, and African populations. The course will examine Latin America from the perspectives of its environment, history, society, and higher thought (philosophy/religion). The student will be introduced to the geographical diversity and resources of Latin America. There will be discussion of the historical development of Latin America, dating back to pre-Columbian times. Comparisons will be made in the discussions with the historical and societal development of the United States. Comparisons will also be made among the diverse societies that comprise Latin America.

Satisfies Elements of Culture requirement "CA."

### **CUL 255 - African American and Caribbean Cultures (3 cr.)**

Prerequisite: Sophomore standing.

In his seminal piece, "Africa for the Africans" (1920) Marcus Garvey suggested that there was no difference between Blacks in the United States and Blacks in the Caribbean. He suggested that both African Americans and Caribbean peoples maintain the same heritage and culture despite the fact that each group occupied/s different nation spaces. This course will explore to what extent Garvey's assertion is applicable; how similar is the Black culture of the United States to that of the Caribbean. This course will provide information about the major aspects of both cultures: religion(s), philosophy, ethical principles, literature, government, economy, arts, customs, traditions, and ways of life.

Satisfies Elements of Culture requirement "CA."

### **CUL 260 - Japan (3 cr.)**

Prerequisite: Sophomore standing.

As we start the 21st century, worldwide interest in global cultures has grown. Interactions between people from different cultures have increased profoundly because of changes in technology, political systems, immigration patterns, and the global economy. In this course, we will focus on the culture of Japan, and its interactions with the United States, examining the following areas of the Japanese experience: cultural history, cultural patterns, world view, religion, language, education, art, architecture, drama, traditional sports, and contemporary issues in Japan.

Satisfies Elements of Culture requirement "CA."

### **CUL 261 - Australia and New Zealand (3 cr.)**

Prerequisite: Sophomore standing.

This course examines the impacts of three waves of colonization to Australia and New Zealand—the development of plants and animals in isolation, the first arrivals of Australian Aboriginals and New Zealand Maori, and the settlements of European prisoners, whalers, missionaries, pastoralists, and gold miners.

Satisfies Elements of Culture requirement "CA."

### **CUL 262 - Ancient Rome (3 cr.)**

Prerequisite: Sophomore standing.

This course introduces students to the culture of ancient Rome, with special emphasis on the late Republic and the beginning of the rule of the emperors. It covers politics, economics, religion, philosophy, social life, entertainment, women and the family, art and architecture, and literature. Students will learn about such figures as Hannibal, Tiberius and Gaius Gracchus, Julius Caesar, Augustus, Mark Antony, Cleopatra, Caligula, Nero, and the women of the imperial family of the Julio-Claudians.

Satisfies Elements of Culture requirement "CA."

### **CUL 263 - France and French Caribbean Culture (3 cr.)**

Prerequisite: Sophomore standing.

This course introduces the students to the politics and culture of France and their influence on the Francophone Antilles. The course includes the geography and a capsulated history of France, as well as that of Haiti, French Guiana, Martinique, and Guadeloupe. Much emphasis is placed on the impact of the French Revolution of 1789 on the Haitian Independence movement, and the political ramifications in Guadeloupe, Martinique, and French Guiana. The course attempts to compare and contrast the differences between the African and French influences in these countries, socially and economically, and examines the effects of these disparities as reflected in their music, art, and literature.

Satisfies Elements of Culture requirement "CA."

### **CUL 265 - Weimar Germany (3 cr.)**

Prerequisite: Sophomore standing.

This course focuses on the human experience of living in the tumultuous period of German democracy known as the Weimar Republic, 1919-1933. We will study the political and social institutions of Imperial Germany and of the democracy until the Nazi

takeover. Against this backdrop, we will look at art, architecture, film, theater, philosophy, and mass culture.

Satisfies Elements of Culture requirement "CA."

### **CUL 266 - Elizabethan England (3 cr.)**

Prerequisite: Sophomore standing.

This course introduces students to the culture of Elizabethan England, and major topics include Elizabethan English, society, politics, and religion. The first is especially crucial because a level of proficiency in Early Modern English is necessary to read and understand the many primary documents studied. The final unit of the course focuses on the Arts-portraiture, music, dance, and literature-concluding with a cultural approach to a Shakespearean play. Throughout the course, attention is given to how the period compares and contrasts with the United States today and to how Elizabethan culture has influenced our own.

Satisfies Elements of Culture requirement "CA."

### **CUL 270 - Victorian Britain (3 cr.)**

Prerequisite: Sophomore standing.

This course explores Great Britain's culture of the nineteenth century. It covers history, politics, economics, social life, religion, philosophy, and art.

Satisfies Elements of Culture requirement "CA."

### **CUL 273 - East Africa (3 cr.)**

Prerequisite: Sophomore standing.

This course discusses pre-colonial, colonial, and post-colonial history, traditional cultures (art, religion, and customs), political organizations, and literature of East Africa. Until recently, East Africa included the following former British territories: Kenya, Tanzania, and Uganda. Today that geographic area includes also two former Belgian territories: Burundi and Rwanda. The East Africa course will focus on a particular country or a comparison of two countries in East Africa. In the Rwanda focus, for example, Rwanda will be used as a case study to illustrate the impact of colonialism on African societies and the increasing importance of human rights in international relations. At other times, the course may focus on Swahili culture in general, or on some other aspect of East Africa.

Satisfies Elements of Culture requirement "C".

### **CUL 290 - Special Topics in Cultures (3 cr.)**

Prerequisite: Sophomore standing.

Topics that are not offered on a regular basis are examined. Recent topics have been China, Southeast Asia, and a travel course to Italy and the low countries. The course may be repeated for credit if the topic varies.

Satisfies Elements of Culture requirement "C".

May satisfy Elements of Culture requirement "CA" depending on topic.

### **CUL 315 - International Practicum (3 cr.)**

Prerequisite: Sophomore standing and consent of instructor.

Cross-Listed as: BUS 315

International Practicum involves pre-travel study and travel of 10-14 days duration during school breaks that are chaperoned and

supervised by a business faculty member. These trips take students outside the geographic borders of the U.S. and provide learning experiences beyond the classroom environment. Programs and activities enhance the ability of students to comprehend, analyze, and grasp different cultural aspects that impact successful management of organizations in the global work environment. The major goal of the International Practicum is to allow undergraduate students opportunities to enhance their understanding of cross-cultural differences and the globalization of the work environment. The course may be repeated for credit if the location/topic varies.

Satisfies Elements of Culture requirement "CA".

### **CUL 333 - Independent Study in Cultures (1-3 cr.)**

See "Independent Study (p. 24)".

### **CUL 334 - Independent Study in Cultures (1-3 cr.)**

See "Independent Study (p. 24)".

### **CUL 390 - Special Topics in Cultures (1-3 cr.)**

Prerequisite: Junior standing.

Topics that are not offered on a regular basis. The course may be repeated for credit if the topic varies.

Satisfies Elements of Culture requirement "C".

## **EC - ECONOMICS**

### **EC 101 - Introduction to Economic Issues (3 cr.)**

This is an exploratory, relatively non-technical examination of some important economic issues. The workings of markets are explained using supply and demand analysis. Students are introduced to the issues of inflation, unemployment, fiscal and monetary policy, international trade, the environment, and poverty.

Not open to students who have completed EC 111.

Does not satisfy Economics requirements in School of Business and Engineering.

### **EC 105 - The Economics of Crime (3 cr.)**

This course does not satisfy the economics requirement in the Colleges of Business and Engineering. This is an examination at the very basic introductory level of the market relationship between the amount of crime and the money spent on crime prevention and protection. A basic issue discussed in the course is that given limited resources and an obvious recognition that crime imposes an economic cost, society must make choices involving the trade-off between the economic costs of crime and the costs of purchasing more crime protection. The opportunity cost principle is used to illuminate this and other issues including the impact of criminal activity on the Gross Domestic Product and the impact of changing the legal status of certain goods and services.

### **EC 106 - The Economics of Poverty and Discrimination (3 cr.)**

This course does not satisfy the economics requirement in the Colleges of Business and Engineering. This is an introduction to the economic analysis of the problems of poverty and gender and race discrimination in the United States. Competing analytical perspectives are presented and evaluated. The course covers, among other topics, the analysis of government policies such as income

maintenance, minimum wages, Affirmative Action, and education policies.

Distribution: MR

This course is a prerequisite.

### **EC 111 - Principles of Microeconomics (3 cr.)**

Not open to students who have taken EC 117 or EC 206. This course introduces students to economic principles, beginning with the issue of scarcity and choice and building to an understanding of microeconomics. Topics include characteristics of the American private enterprise economy; markets, the price system, and the allocation of resources-including the different market structures in American industry; the labor market; the role of government when social costs and private costs diverge; and the distribution of income.

Distribution: A&SR/BUSR/GUR/MR

This course is a prerequisite.

Formerly EC 201.

### **EC 112 - Principles of Macroeconomics (3 cr.)**

Prerequisite: EC 111.

Not open to students who have completed EC 117 or EC 205. This course continues the coverage of basic economic principles. Most of the course will focus on the economy as a whole-on macroeconomics. Topics include National Income Accounting, unemployment and inflation, money and banking, the issue of government deficits and the national debt, economic growth, and international trade and finance.

Distribution: BUSR/MR

This course is a prerequisite.

Formerly EC 202.

### **EC 117 - Principles of Quantitative Economics (3 cr.)**

Prerequisite: MATH 133 or MATH 123 or equivalent.

Not open to those who have taken EC 111 or EC 112 or EC 201 or EC 202. This course is a calculus-based introduction to economic principles, both macro and micro. All topics will be elucidated mathematically. Topics include characteristics of the American private enterprise economy; markets, the price system, and the allocation of resources, including the different market structures in American industry. The course will also cover national income accounting, macroeconomic equilibrium, and fiscal and monetary policy issues.

Formerly EC 207.

### **EC 190 - Special Topics in Economics (1-3 cr.)**

Topics in economics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **EC 215 - Intermediate Macroeconomics (3 cr.)**

Prerequisite: EC 202 or EC 112 or EC207 or EC 117 and MATH 111 or MATH 123 or MATH 133.

This is a theoretical and applicational view of aggregative economics. A survey of Classical, Keynesian, and neo-Keynesian theory leads into a study of macroeconomics and economic policies, particularly in the United States. Emphasis is on current national economic goals and the macro dynamics of inflation, growth, investment, and

consumption as well as the problem. Public policies to promote economic stability and growth are discussed in detail.

Distribution: MR

Formerly EC 305.

### **EC 216 - Intermediate Microeconomics (3 cr.)**

Prerequisite: EC 112 or EC 117 or EC 111 and MATH 111 or MATH 123 or MATH 133.

This is an intermediate course in economics covering the theoretical bases used by economists in explaining the behavioral patterns of consumers, firms, and industries. Problems, readings, and discussions are directed to the logical development, understanding, and application of theoretical models and concepts rather than pure exposition of static analysis.

Distribution: MR

Formerly EC 306.

### **EC 219 - American Economic History (3 cr.)**

Prerequisite: EC 112 or EC 106 or EC 117.

This is a problem-oriented approach to American economic history. Specific problems studied in depth vary, but have included the economic experience of Black America, the agricultural problems of the post-Civil War years, Southern economic history, the rise of the industrial giants, and the causes and consequences of the Great Depression.

Formerly EC 316.

### **EC 290 - Special Topics in Economics (1-3 cr.)**

Prerequisite: EC 117 or EC 207.

Topics in economics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **EC 311 - Money and Banking (3 cr.)**

Prerequisite: EC 112 or EC 117, MATH 111 or equivalent.

This is a study of the role of money, credit, and financial institutions in the U.S. economy. Topics include policies concerning depository institutions, the role of the Federal Reserve System, and monetary theory.

Distribution: MR

### **EC 315 - Comparative Economic Systems (3 cr.)**

Prerequisite: EC 101 or EC 111.

This is a study of capitalism and socialism including theoretical interpretations of these systems. Case studies include descriptions of the mixed capitalist economies of the United States and Western Europe and the transitional economies of the former Soviet Union, China, and Eastern Europe.

Distribution: MR

Offered: in alternate years.

### **EC 321 - Economic Development (3 cr.)**

Prerequisite: EC 111 or EC 117.

This is an analysis of the characteristics and causes of underdevelopment in poor nations and of programs designed to stimulate economic growth.

Distribution: MR

Offered: in alternate years.

**EC 333 - Independent Study in Economics (1-3 cr.)**

See "Independent Study (p. 24)".

**EC 334 - Independent Study in Economics (1-3 cr.)**

See "Independent Study (p. 24)".

**EC 340 - The Economics of Sports (3 cr.)**

Prerequisite: EC 111 or EC 105 or EC 117 or EC 207.

This course applies the tools of economic theory to the market for professional sport entertainment. The major professional sports leagues all exhibit several practices which are unparalleled in other U.S. industries. These practices, both in hiring athletes and selling the "entertainment product," are analyzed. Government policies towards this unique market are also investigated.

Distribution: MR

**EC 350 - Economics of Arts and Entertainment (3 cr.)**

Prerequisite: EC 111 or EC 105 or EC 106 or EC 117.

This course applies the tools of economic theory to an analysis of the arts and entertainment industry. Key learning outcomes focus on the nature of supply and demand for art and artistic services, the contribution of the arts and entertainment sector to the economy, the economic functions of artists, the role of the nonprofit sector, and the role of public policy in providing a basis for cultural activities and organizations.

Distribution: BUSR/MR

**EC 351 - Economics and Government (3 cr.)**

Prerequisite: EC 111 or EC 117.

This course is a critical examination of the role of governments in free enterprise economies. Topics include the history of governmental intervention in business, industry, and finance; major current economic problems; and the method and degree of government action proposed to resolve economic problems.

Offered: in alternate years.

**EC 355 - Public Finance (3 cr.)**

Prerequisite: EC 112 or EC 117.

This course studies the effects of government expenditure, borrowing, and taxation upon resource allocation, national income, employment, and income distribution. Special emphasis is placed on the appropriate types of taxation and current and recent government budgetary choices.

Distribution: MR

Offered: in alternate years.

**EC 361 - Urban Economics (3 cr.)**

Prerequisite: EC 111 or EC 117.

This course is a study of the economic aspects of the social and political problems of the modern American city.

Offered: in alternate years.

**EC 366 - Labor Economics and Human Capital (3 cr.)**

Prerequisite: EC 111, EC 101 or EC106

The object of the course is to educate students about the general characteristics of the labor market. In particular, students will learn how choices are made in labor markets and why individuals engage in work behavior. Students will be familiar with various human capital theories, in particular with how education, skills, and training help individuals enhance their earning potentials, and finally with the role of unions in labor markets.

Offered: in alternate years.

**EC 371 - International Monetary Economics (3 cr.)**

Prerequisite: EC 112 or EC 117.

This is an analysis of the balance of payments and the foreign exchange market including the theory of payments adjustment and policies to attain domestic international balance. The course examines the roles of the dollar, other currencies, and the International Monetary Fund in the process of international monetary reform.

Distribution: MR

**EC 372 - International Trade (3 cr.)**

Prerequisite: EC 111 or EC 117.

This course studies the theory and practice of international trade and investment. Topics include comparative advantage, determination of the pattern of trade, current problems of commercial policy and trade negotiations, the role of the multinational corporation, and the theory of economic integration with special reference to the European Union.

Distribution: MR

Offered: in alternate years.

**EC 374 - Environmental Economics (3 cr.)**

Prerequisite: EC 101 or EC 111 or EC 117.

This course examines the economic aspects of current environmental and natural resource issues. The problems of pollution control and resource management are examined from an economic perspective. Other topics may include the global population problem; energy dependence and the economy; the economics of recycling; and the impact of environmental policy on growth, jobs, and the quality of life.

Distribution: MR

Offered: in alternate years.

Formerly EC 274

**EC 386 - Econometrics (3 cr.)**

Prerequisite: EC 111 or EC 112 and MATH 112 or MATH 123; or MATH 133 and BIS 220; or MATH 120, or PSY 207.

This course covers methods of detecting and means of remedying violations of the assumptions of classical regression analysis. While only economic models are discussed, the methodology is multidisciplinary in nature.

Laboratory fees \$50.

**EC 390 - Special Topics in Economics (1-3 cr.)**

Prerequisite: Varies according to nature of course.

Topics offered depend upon student interest as well as particular interests of instructors. The course is offered as often as faculty time and student interest permit. Recent topics have included The Economics of Work and Pay, The Economics of Election Issues, Women in the Economy, and Great Ideas in Economics. May be repeated for credit if the topic differs.

### **EC 392 - Special Topics in Economics (1-3 cr.)**

Prerequisite: Varies according to nature of course.

Topics offered depend upon student interest as well as particular interests of instructors. The course is offered as often as faculty time and student interest permit. Recent topics have included The Economics of Work and Pay, The Economics of Election Issues, Women in the Economy, and Great Ideas in Economics. May be repeated for credit if the topic differs.

### **EC 394 - Special Topics in Economics (1-3 cr.)**

Prerequisite: Varies according to nature of course.

Topics offered depend upon student interest as well as particular interests of instructors. The course is offered as often as faculty time and student interest permit. Recent topics have included "The Economics of Work and Pay," "The Economics of Election Issues," "Women in the Economy," and "Great Ideas in Economics." May be repeated for credit if the topic differs.

### **EC 480 - Internship in Economics (1-3 cr.)**

See "Internships (p. 25)".

### **EC 481 - Internship in Economics (1-3 cr.)**

See "Internships (p. 25)".

### **EC 490 - Seminar: Issues in Contemporary Economics (3 cr.)**

Prerequisite: EC 112 or EC 117 plus six additional credit hours of 200 or 300 level economics.

This course involves discussions of various topics of interest in economics. Each student prepares a research paper on a topic of choice, under the direct supervision of a faculty member. Majors in other programs are most welcome.

Distribution: MR

## **ED - EDUCATION**

### **ED 120 - Introduction to Education (1 cr.)**

This course is an introduction to educational practices and expectations for students planning to enter the teaching profession. Course content will focus on an introductory overview of lesson planning with a particular focus on the Massachusetts Curriculum Frameworks, teaching diverse student populations, and the Professional Standards for Teachers. Teaching strategies to support learning across disciplines will also be explored.

This course is required for all secondary education majors.

Credit change from 2 cr to 1 cr Fall'15

### **ED 190 - Special Topics in Education (1-3 cr.)**

Topics in education that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **ED 252 - Survey of Geography (1 cr.)**

Prerequisite: Sophomore standing.

This course introduces students to concepts and theories of geography. Students are also introduced to the National Geography Standards.

Distribution: MR

### **ED 260 - Teaching English Language Learners I (1 cr.)**

This course is designed to support preservice teachers development of the dispositions, skills, and strategies necessary for teaching English Language Learners (ELLs) and is the first part of two courses required for the Sheltered English Instruction (SEIT) Endorsement. The broad objectives for the course include: developing awareness of the social and cultural matters that impact second language acquisition and learning by ELLs, the stages of second language acquisition and issues related to supporting the academic success of all ELLs, responsibilities of classroom teachers for teaching ELLs, the relationship between ELL, World Class Instructional Design and Assessment (WIDA) standards, the Massachusetts Curriculum Frameworks, and introduces Sheltered English Instruction (SEI) theory and strategies.

This course is the first part of Teaching English Language Learners; both ED 260 and ED 270 must be completed successfully to earn the Sheltered English Instruction (SEI) endorsement.

Distribution: MR

### **ED 270 - Teaching English Language Learners II (2 cr.)**

This course is designed to support preservice teachers' development of the dispositions, skills and strategies necessary for teaching English Language Learners (ELLs); it is a continuation of ED 260. The broad objectives for the course include: building on theories and strategies introduced in ED 260 with an emphasis specifically on developing a repertoire of theoretically grounded strategies for working with ELL students to develop their vocabulary, reading and writing skills for the purpose of succeeding socially and academically. World Class Instructional Design and Assessment (WIDA) standards, the Massachusetts Curriculum Frameworks, and Sheltered English Instruction (SEI) theory and strategies will be examined and practiced.

This course is the second part of Teaching English Language Learners (ED 260); both ED 260 and ED 270 must be completed successfully to earn the Sheltered English Instruction (SEI) endorsement.

Distribution: MR

### **ED 290 - Special Topics in Education (1-3 cr.)**

Topics in education that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **ED 301 - Principles and Problems of Education (3 cr.)**

Prerequisite: Junior standing.

This course is an exploration of the issues confronting education at all levels. Topics include the history of education, philosophy of education, goals of educational systems, school organization and control, moral education, students' and teachers' rights, school law,

special education, multicultural education, and contemporary issues in education. Student performance is assessed through written assignments, quizzes, presentations, and participation. Students completing a Secondary Education Major are required to do appropriate field study.

Distribution: A&SR/MR

### **ED 333 - Independent Study in Education (1-3 cr.)**

See "Independent Study (p. 24)".

### **ED 334 - Independent Study in Education (1-3 cr.)**

See "Independent Study (p. 24)".

### **ED 350 - Teaching of Elementary Reading and Language Arts (3 cr.)**

Prerequisite: Enrollment in Elementary Education Program or permission of instructor.

This course focuses on the teaching of children's reading, writing, speaking, listening, and viewing skills in grades 1-6. Students learn formal and informal methods of assessing reading development, and significant theories and practices for developing reading skills and comprehension. They gain knowledge of the principles and instructional practices for developing phonemic awareness and phonics. They learn about the development of listening, speaking, and reading vocabulary, and theories on the relationships between beginning writing and reading. Students also gain an understanding of the approaches and practices for developing skills in using writing tools, as well as theories of first and second language education and development. Lesson planning is introduced in the class; the Massachusetts Framework for English Language Arts and Literacy is used as a reference for lesson rationales. Student performance is assessed by exams, written assignments, and lesson plan designs. Twenty-five hours of pre-practicum field work and a field work journal completed at a local elementary school are required for students intending to complete the Elementary Education Major.

Distribution: MR

This course is a prerequisite.

### **ED 375 - Elementary Curriculum and Methods (3 cr.)**

Prerequisite: Enrollment in the Elementary Education Program or permission of instructor.

This course places an emphasis on the development of concepts in mathematics, science, and social studies in grades 1-6. As a result of taking this course, students learn to balance direct elementary instruction with facilitated learning using physical models, manipulatives, and primary sources. Students demonstrate familiarity with current curriculum models and standards, instructional strategies, and instructional materials. Students complete lesson plans for curriculum units, using the Massachusetts Curriculum Frameworks as a resource, and plan and demonstrate math, science, and social studies lessons using appropriate manipulatives, technology, physical models, cooperative learning techniques, and various assessment tools. Student performance is assessed by quizzes, written assignments, lesson plan designs, and other content-specific assignments. Twenty-five hours of pre-practicum fieldwork at a local elementary school is required for students intending to complete the Elementary Education Major.

Distribution: MR

This course is a prerequisite.

### **ED 380 - Secondary Education Topics (1 cr.)**

Prerequisite: PSY 304, ED 301, senior standing and acceptance into the Secondary Education Program.

In this course an array of veteran teachers and content area faculty do presentations on issues relevant for secondary education. Topics include teaching special education students, teaching with the MA Curriculum Frameworks and Learning Standards, MCAS testing and effective assessment, use of technology in the classroom, legal issues in the teaching profession, among others. At the end of this course, students are able to apply this knowledge to the teaching practicum.

Distribution: GUR/MR

The course is graded pass/fail, based on attendance and classroom participation.

### **ED 390 - Special Topics in Education (1-3 cr.)**

Topics in education that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **ED 403 - Methods of Teaching in Secondary Schools (3 cr.)**

Prerequisite: Senior standing and acceptance into the Secondary Education Program.

This course is a study of the process of teaching, utilizing the Massachusetts Curriculum Frameworks and the Learning Standards. Topics include: objectives of teaching; class control and management; lesson preparation and planning; instructional design and strategies; curriculum development; techniques of questioning; materials of instruction; use of media; legal and moral responsibilities of the teaching profession; preparation of individualized instructional lessons; evaluation procedures and MCAS testing; and the role of the teacher in different classroom situations. Clinical experiences such as communications exercises, simulation, and micro teaching are provided. A required field study is integrated with the practicum experience. Student performance is assessed by written assignments and an examination.

Distribution: MR

### **ED 409 - Practicum in Secondary Teaching (9 cr.)**

Prerequisite: ED 301, PSY 304, and ED 403.

Open only to those students in the Secondary Education Program.

This is a practicum in teaching under the supervision of experienced teachers. The student teacher is observed, guided, and evaluated by a teacher from the high school, who is the supervising practitioner, and by a University faculty member, who is the program supervisor. Both supervisors will use the Massachusetts Professional Standards in their assessment. This course and SW 412 may not both be counted toward the minimum 122 credit hours required for the degree.

Distribution: MR

### **ED 410 - Secondary Practicum Seminar (3 cr.)**

Prerequisite: ED 301, PSY 304, and ED 403.

Students doing the secondary teaching practicum participate in a weekly seminar. As a result of taking this course, students are able to analyze and refine teaching strategies, curriculum designs, classroom management, and assessment. Students demonstrate skills as reflective practitioners of the teaching process. They are assessed by weekly classroom participation, a teaching journal that is handed in at the end of the semester, and a professional portfolio.

Distribution: MR

**ED 425 - Elementary Education Topics (3 cr.)**

Prerequisite: Senior standing, acceptance in the Elementary Education Program, ED 301, PSY 201, PSY 304, ED 350, and ED 375.

This is an investigation of instructional strategies for teaching the arts, health, physical education, and technology for grades 1-6, using the Massachusetts Curriculum Frameworks. As a result of taking this course, students are able to identify curriculum models and instructional materials for these content areas; they design and demonstrate appropriate lesson plans. Students also design strategies for addressing the needs of special education students and strategies for the general management and organization of the elementary classroom. An important component in the course is a pre-practicum fieldwork experience undertaken at a local elementary school. Student performance is assessed by written assignments, lesson plans, 25 hours of pre-practicum fieldwork at a local elementary school, and a fieldwork journal.

Distribution: MR

This course is a prerequisite.

**ED 479 - Elementary Teaching Practicum (9 cr.)**

Prerequisite: ED 301, PSY 304, ED 350, ED 375, ED 425, senior standing, and completion of all preliminary elementary education coursework.

This is a practicum in teaching under the supervision of qualified teachers. As a result of taking this course, students are able to design and teach content-appropriate lesson plans, utilize a variety of instructional techniques, organize and manage a classroom fairly and effectively, address a range of student learning needs, assess the performance of the students in the classroom, and conduct themselves in a professional manner. Student performance is assessed by unit and lesson plan designs based on the Massachusetts Curriculum Frameworks, as well as by regular observation and evaluation by an elementary teacher, who is the supervising practitioner and by a University faculty member, who is the program supervisor; both use the Massachusetts Professional Standards in their assessment. Open only to those students in the Elementary Education Major, this course and SW 412 may not both be counted toward the minimum 122 credit hours required for the degree. Includes 300 hours of full-time practicum fieldwork (student teaching) at a local elementary school.

Distribution: MR

**ED 480 - Elementary Practicum Seminar (3 cr.)**

Prerequisite: ED 301, PSY 304, ED 350, ED 375, ED 425, senior standing, completion of all preliminary elementary education coursework, and concurrent involvement in ED 479.

This is a weekly seminar for students doing the elementary teaching practicum. As a result of this course, students are able to analyze and refine teaching strategies, curriculum designs, classroom management, and assessment. Professional issues and preparation for job search are explored. Students demonstrate skills as reflective practitioners of the teaching process. Student performance is assessed by weekly classroom participation, a teaching journal that is handed in at the end of the practicum, and completion of a professional portfolio. Is concurrent with 300 hours of full practicum fieldwork (student teaching) at a local elementary school.

Distribution: MR

**EE - ELECTRICAL ENGINEERING****EE 205 - Electrical Engineering I (4 cr.)**

Prerequisite: Pre- or corequisite: MATH 236 and PHYS 134.

Students will learn about the static and dynamic behavior of resistors, capacitors, and inductors, the types of electrical energy sources used, the rules used to analyze electrical circuits, to analyze DC and AC circuits for power flow and response characteristics, how to analyze and design op amp circuits used in instrumentation applications, and how to analyze and test Combinational Logic Circuits as applicable to simple industrial and domestic control settings. Students will be able to model and mathematically describe circuit behavior under either static or dynamic conditions. To facilitate learning, this course makes extensive use of a circuit simulator and has a strong laboratory component (with a design project) to reinforce course material and develop laboratory skills with electronic instruments. Three class hours, three lab/tutorial hours.

Distribution: ER/MR

**EE 206 - Electrical Engineering II (4 cr.)**

Prerequisite: EE 205 and pre- or corequisite MATH 236.

This course builds on the knowledge gained and analytical skills developed in EE 205. Students learn to analyze circuits in steady state with alternating voltages and currents including determining frequency responses of circuits and analyzing resonant circuits. Students learn to model transformers and include them in steady state analysis of AC circuits. Additionally students study three phase power systems and active filter designs. Students use computer simulation as a tool for both transient and AC steady state analysis and use electrical test equipment to verify the theory learned. The methods of assessing student learning in this course are homework assignments, quizzes, exams, laboratory experiments, with reports a design project and final exam. Three class hours, three lab/tutorial hours.

Distribution: MR

**EE 285 - Computational Techniques in C (3 cr.)**

Prerequisite: ENGR 105 or equivalent and MATH 134.

This course provides an introduction to C programming and its application for solving problems in electrical and computer engineering. The application topics include digital signal processing, controls, computational methods, finite difference analysis, root finding, optimization methods, and matrix methods. The course focuses predominantly on applications of the methods, and students are required to solve real world, engineering problem utilizing the C language as well as MATLAB to implement algorithms. Students will gain practical experience with these techniques dealing with real applications.

**EE 301 - Signals and Systems (3 cr.)**

Prerequisite: MATH 236 and pre- or corequisite EE 206.

This is the first of a sequence of two courses that is developed to introduce students to the concepts of signal modeling and the interaction of signals and linear systems. The focus is on the continuous-time cases such as voice and music. Students learn signal and system modeling concepts; time-domain analysis including concepts of convolution and superposition; system response to different stimuli including impulse and step; frequency-domain analysis including concepts of Fourier series, Fourier transforms, and Laplace transforms; and applications of analytical tools such as signal representations, transfer functions, and filtering. Throughout the semester, MATLAB, a computational software program, is used to emphasize and to help in understanding important concepts of the course as well as a tool for solving homework problems. The

methods of assessing student learning in this course are homework assignments, quizzes, in class exams, and a final exam.

Distribution: MR

Formerly "Signals and Systems I"

### **EE 302 - Introduction to Digital Signal Processing (3 cr.)**

Prerequisite: EE 301.

This is the continuation of EE 301 course and develops the students' ability to apply mathematical techniques to analyze discrete signals and systems. Students learn the fundamentals of sampling and the representation of discrete-time systems and modeling an analog-to-digital (A/D) converter. They also learn both ideal and approximate methods of reconstructing a signal from a sequence of samples, and learn z-transform, inverse z-transformation, discrete convolution, difference equations, discrete-time transfer functions, discrete Fourier transform (DFT), and its realization through the use of fast Fourier transform (FFT) algorithms. Students also learn to analyze and design filters such as Butterworth, Chebyshev analog filters, Infinite Impulse Response (IIR), and Finite-duration Impulse Response (FIR) digital filters. Throughout the semester, MATLAB, a computational software program, is used to emphasize and to help in understanding important concepts of the course as well as a tool for solving homework problems. The methods of assessing student learning in this course are homework assignments, quizzes, in class exams, and a final exam.

Distribution: MR

Formerly "Signals & Systems II"

### **EE 303 - Introduction to Microelectronic Circuits I (3 cr.)**

Prerequisite: EE 206 or equivalent.

Co-requisite: EE 301 or equivalent, or permission of instructor. A study of the behavior and modeling of semiconductor devices. Topics include nonlinearity and the methods used to analyze nonlinear elements, simple AC and DC converters, and voltage regulation. Among the semiconductor devices studied are diodes, bipolar junction-transistors and field-effect transistors. Computer simulation is used as a design and study aid. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

Distribution: MR

### **EE 312 - Semiconductor Devices (3 cr.)**

Prerequisite: EE 303.

This course is designed to give the student an introduction to the physical basis of semiconductor devices. The goals are to provide the student with (1) a working knowledge of the physics underlying all semiconductor devices; (2) an understanding of the physical principles behind the most common semiconductor devices: the p-n junction diode, field-effect transistor, and bipolar transistor; (3) an understanding of the relationship between the circuit behavior of the devices, which were encountered in earlier courses, and their physical embodiment; and (4) a perspective of the physical and technological limitations of electronic devices.

Distribution: MR

### **EE 314 - Fields and Waves (3 cr.)**

Prerequisite: EE 206 or equivalent.

This is a one-semester introductory course in one of the most important subjects in electrical engineering, electromagnetic field theory, and its applications. Radar, television, electric motors, fiber optics, and medical imaging all depend on knowledge from this area. Upon completing this course the students have a basic understanding of the mathematical tools used in modeling static or dynamic electromagnetic fields, the behavior of static or dynamic electro-magnetic fields in various media with different physical boundaries, and the use of electromagnetic field theory in such important applications as transmission lines, waveguides, and antennas. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

Distribution: MR

### **EE 319 - Electrical Engineering Laboratory I (2 cr.)**

Prerequisite: EE 303 or concurrently.

This course is the first of the three course sequence designed to give students hands-on experience in the use of laboratory instruments, collection and interpretation of data, and design and debugging of electrical analog and digital circuits. The course also serves to develop technical writing skills. Students investigate device characteristics according to the instructions given and compare with those expected from theory. They also design and build digital and analog electronic circuits and demonstrate by appropriate measurements that the circuits perform and meet the design specifications. Students prepare engineering reports for every laboratory experiment. The assessment is based on the quality of collected data and the written report.

Distribution: MR

One class hour, one three-hour lab.

### **EE 320 - Introduction to Microelectronic Circuits II (3 cr.)**

Prerequisite: EE 303 or equivalent.

BJT and MOSFET amplifiers are studied. This includes the analysis of differential amplifiers, current mirrors, multistage amplifiers, feedback amplifiers, power amplifiers, and integrated circuit amplifiers. Feedback and frequency analysis of amplifiers is emphasized. Computer simulation is used as a design and study aid. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

Distribution: MR

### **EE 323 - Electrical Engineering Laboratory IIa (1 cr.)**

Prerequisite: EE 319 and EE 320 or concurrently.

Required of all Electrical Engineering majors (electrical and computer concentrations). The course builds on the skills developed in EE 319 and the material learned in junior level courses. Students design, build, and test electronic circuits. Students also study the societal impact of electrical engineering, and contemporary issues related to electrical engineering. The assessment in this course is based on the quality of work done in the lab and the quality of the students' reports.

Distribution: MR

One class hour, one three-hour lab approximately every other week.

### **EE 324 - Electrical Engineering Laboratory IIb (1 cr.)**

Prerequisite: EE 319 and EE 320 or concurrently.

Required of all Electrical Engineering majors in the electrical concentration. (Not required of students taking CPE 360.) The course builds on the skills developed in EE 319 and the material learned in junior level courses. Students design, build, and test electronic circuits with more than one device, determine parameters of device models, and use those for analysis and design of electric circuits. The results are documented in engineering reports. The assessment in this course is based on the quality of work done in the lab and the quality of the engineering reports.

Distribution: MR

One class hour, one three-hour lab approximately every other week.

### **EE 333 - Independent Study in Electrical Engineering (3 cr.)**

See "Independent Study (p. 24)".

Distribution: MR

### **EE 336 - Electrical Energy Systems (3 cr.)**

Prerequisite: EE 205

This is an introductory level course in the generation, distribution, and management of electrical energy in the context of Green Engineering. This course presents the essential components and operating features of the power industry so that those components and features can be used effectively with emerging technologies of energy capture (i.e. solar, wind, geothermal, etc.). Upon successful completion of this course, students should have a firm understanding of the structure and components of an electrical power system and be able to model such systems and determine associated power flows, efficiencies, and energy budgets. Methods of assessment include homework, quizzes, tests, and a short paper on one of the topics related to the course.

Distribution: MR

### **EE 338 - Electric Drives (3 cr.)**

Prerequisite: EE 205

This is an introductory level course in electric drive systems. Advances in power electronics has permitted the development of adjustable-speed drives which provide significant performance and efficiency improvements in such areas as pumps and compressors, precision motion control in automated factories, wind-electric systems in generating electricity, and hybrid-electric vehicles, to name a few. To understand what a variable-speed drive is and how it works we will study such things as mechanical models related to rotating machines, review of associated electric circuits' theory, overview of electric converter operation, electro-mechanical energy conversion principles, and what needs to be considered in controlling the various types of electrical machines available to us. Successful completion of this course should provide the student with a strong background at the systems integration level of electric drives. Methods of assessment include homework, quizzes, and tests.

Distribution: MR

### **EE 411 - Random Signals and Noise (3 cr.)**

Prerequisite: EE 301 or IE 212.

This is a study of signals, both random and nonrandom. Topics include spectrum analysis, auto-correlation and cross-correlation functions, network analysis of systems with random signals and noise, applications to various areas such as: reception of radar, and space signals. A design project is required.

### **EE 414 - Microwave Engineering (3 cr.)**

Prerequisite: EE 314 or equivalent.

Fundamentals of modern microwave engineering with emphasis on microwave network analysis and circuit design. Microwave transmission lines, including waveguide, coax, microstrip, and stripline. Microwave circuit theory, including S-parameters, ABCD matrices, equivalent circuits, and signal flow graphs. Upon completion of this class the student will be able to analyze and design passive microwave circuits and components such as matching networks and microwave resonators, power dividers, directional couplers, and filters. Throughout the semester, SerenadeSV, Sonnet Lite, and MATLAB will be used to emphasize and to help in understanding important concepts of the course as well as a tool for solving homework problems. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

### **EE 416 - Electromagnetic Compatibility (3 cr.)**

Prerequisite: EE 301 and EE 314 or the equivalents.

Senior level course focusing on the application of electromagnetic field and wave principles to equipment and system design practices for the control of Electromagnetic Interference (EMI) and the achievement of Electromagnetic Compatibility (EMC). EMI requirements for electronic equipment, EMI measurements, non-ideal behavior of components, spectrum analysis, radiated emissions and susceptibility, conducted emissions, crosstalk, field-to-cable and cable-to-field coupling, electrostatic discharge, grounding, and system configuration. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

### **EE 421 - Electronics of Radio (3 cr.)**

Prerequisite: EE 303.

Design of a radio system for transmission of information; types of receivers, matching techniques, oscillators, design using 2-port network parameters, receiver and antenna noise, nonlinear effects, frequency synthesis. The goal of this course is to teach electrical engineering students the basic principles of radio-frequency circuit design and to illustrate how such circuits are used in communication systems. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

### **EE 422 - Control Systems (3 cr.)**

Prerequisite: EE 301 or ME 320 or BME 202.

This is an introductory course in analysis and design of linear control systems. Students learn to analyze mathematical models, systems representation and reduction, steady-state errors, time domain and

frequency domain system performance and specifications, methods of testing for stability, Bode, root locus, and frequency domain response methods of linear time invariant systems. They also learn to design lead, lag, and lead-lag compensation techniques. Students also learn to use MATLAB computational software to understand new concepts and to perform and implement system analysis and design techniques. The methods of assessing student learning in the course are quizzes, exams, homework assignments, and a project.

Distribution: MR

### **EE 423 - Communications (3 cr.)**

Prerequisite: EE 302 and EE 320 This is a course in electronic (analog and digital) communication fundamentals.

After successfully completing this course students know what analog and digital signaling methods (PAM, PCM, AM, PM, and FM) are available; know how to model, analyze, and design a basic communication link; know how to model, analyze, and design signals that go with the various signaling methods (including the theories on information measure, signal types and their measure, encoding schemes and Fourier analysis); are familiar with the various types of modulation and demodulation schemes available and are familiar with some of the practical applications of modulation/demodulation theory. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, a research project, and a final exam.

Distribution: MR

### **EE 425 - Linear Systems Theory (3 cr.)**

Prerequisite: EE 301 or ME 320.

Students learn the fundamentals of the state space approach to systems modeling, analysis, and design. They also learn how to find the state space model of electrical, mechanical, and electromechanical systems. In addition students learn how to represent a system in the Jordan, first canonical, and phase variable forms, and to apply state space techniques to find zero input, zero state, and complete solution from state space system equations. In addition students learn to perform system stability, controllability, and observability tests and to design state and output feedback techniques as well as observer design technique. Students also learn to use MATLAB computational software to understand new concepts and to perform and implement system analysis and design techniques. The methods of assessment of student learning in this course are homework assignments, quizzes, tests, and a design project.

### **EE 427 - Electrical Engineering Laboratory III (2 cr.)**

Prerequisite: EE 323, EE 324 or CPE 360.

This is the third of a three-course laboratory sequence. The course consists of several experimental projects designed to provide students with hands-on experience in analysis and design of electronic circuits and systems. After successfully completing this course the students are able to design, construct, and test sensor, relay, and motor interface circuits. They will design these circuits as part of an interdisciplinary project where the team designs, constructs, and tests a vehicle. They will build a prototype circuit board and interface it to the sensors, relay circuit, motor, and power source on the vehicle and to the microprocessor prototype circuit board. Additional experiments in control theory will be performed. These experiments include modeling and simulation of a control system, and designing, building, and testing an analog PID motor speed controller. The students reinforce their technical writing ability by writing an engineering report on the results of each project. The assessment in this course is

based on the quality of the work done in the laboratory and the written reports.

Distribution: MR

One class hour, one three-hour lab.

### **EE 428 - Design of Analog CMOS Integrated Circuits (3 cr.)**

Prerequisite: EE 320 or equivalent.

The general objective of the course is to introduce students to the building blocks of analog integrated circuits; such as differential amplifiers, current sources and mirrors, gain stages, level shifters, active loads, and output stages. Throughout the semester, Spice will be used to emphasize and to help in understanding important concepts of the course as well as a tool for solving homework problems. The primary methods of assessing student learning are homework assignments, quizzes, exams, and a term project.

### **EE 430 - VLSI Design (3 cr.)**

Prerequisite: Pre- or corequisite EE 320.

This is a course in VLSI design fundamentals. After successfully completing this course, students are familiar with two suites of CAD tools (Electric, an IC layout tool, and ICAPS, a circuit simulator) used in VLSI design, are familiar with process technology (MOS1S in this case), know the IC design process (including layout constraints), know how to model electronic device behavior as a function of layout geometry, know how to apply layout information to simulation models, know how to design and layout basic digital logic gates, are familiar with the layout and operation of analog systems (in particular, the operational amplifier), and be aware of the problems associated with mixed-mode IC design. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, design projects, a research project, and a final exam.

### **EE 431 - Semiconductor Device Modeling for VLSI (3 cr.)**

Prerequisite: EE 312 or equivalent.

This course will describe the operation and characteristics of high speed devices: submicron silicon MOSFETS and Silicon Bipolar Transistors for high frequency and VLSI applications. It will also cover the basics of MESFETS and some high speed devices using compound semiconductors (HEMTs and HBTs).

### **EE 432 - Wireless Communication Techniques (3 cr.)**

Prerequisite: EE 423

This course begins with an introduction to wireless communication fundamental concepts and recent innovations. It deals with topics such as wireless channels, the cellular system, modulation techniques for mobile communication, multiple access technologies, multi-carrier transmission technologies, all the way to advanced modern wireless communication technology, such as software defined radio and cognitive radio. After successfully completing the course, students can simulate digital wireless communication systems using MATLAB; most importantly, students can build, implement and demonstrate software defined radio based wireless communication system using certain hardware. The methods of assessing student learning in this course are homework assignments, project assignments, classroom discussions, and exams.

### **EE 434 - Electrical Energy Converters/Inverters (3 cr.)**

Prerequisite: EE 206 and EE 303.

Electrical converters are an important component in portable electronics (especially digital electronics) where there is a need to efficiently convert standard battery voltages to other DC levels. The converter can be considered a DC to DC transformer. The inverter is an important component in electrical energy storage and management. The inverter takes the DC from such things as storage batteries and converts it to AC for distribution on a power network or to control electrical motors. Both devices play a major role in the management and distribution of renewable energy. This introductory course presents the foundation theory for analyzing and designing DC-DC converters (both buck and boost) as well as DC-AC inverters. Students will learn the various modeling schemes for switched electronic circuits starting with the idealized basics through to 'real world' practical complications. The course will also deal with how these devices have to be controlled to automatically compensate for changes in input energy and output loading (line and load regulation). To facilitate learning concepts and modeling various circuit topologies this course will make use of circuit simulation and mathematics software packages. Methods of assessing student learning include homework, quizzes, tests, and a short paper on some aspect of the material being studied.

### **EE 436 - Project Research, Innovation and Development (2 cr.)**

Prerequisite: Senior standing.

This course is designed to enable students to learn about the product development process and apply it to their senior project. The students will learn about researching the problem being addressed, how to innovate and develop products, both, hardware and software. Students will learn about needs analysis, identifying business opportunities, assessing market potential. In the process, various aspects of entrepreneurship will also be addressed. In addition, students are guided in formulating a proposal for a Senior Design Project in preparation for project work in EE 440. Faculty and representatives from industry present ideas for Senior Design Projects and each student chooses a project, and develops and writes a project proposal with the supervision and guidance of a faculty advisor. The final project proposal will be presented to an expert panel of industry representatives and faculty. The assessment in this course is based on the submission of short papers on some of the issues discussed in presentations the project proposal write-up and presentation.

Two class hours.

### **EE 435 - Fuzzy Logic (3 cr.)**

Prerequisite: Junior or Senior standing.

This course covers the fundamentals of fuzzy logic theory and its applications. Students learn to analyze crisp and fuzzy sets, fuzzy propositional calculus, predicate logic, fuzzy logic, fuzzy rule-based expert systems, and apply fuzzy logic theory to a variety of practical applications. Students also learn to use MATLAB computational software to understand new concepts and to perform and implement fuzzy logic rules and systems. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, design projects, and a final exam.

### **EE 437 - Design Projects (3 cr.)**

Corequisite: EE 439 and approval of the department.

Selected students work on an independent design project in the semester prior to enrolling in EE 440. This course is intended to

provide students with the opportunity for a two-semester project sequence culminating with EE 440.

### **EE 439 - Professional Awareness (1 cr.)**

Prerequisite: Senior standing.

This course is designed to make students aware of some of the problems, concerns, and responsibilities of an engineer as a professional. In addition, students are guided in formulating a proposal for a Senior Design Project in preparation for project work in EE 440. Students participate in discussions, led by invited speakers, on topics that enable students to write a professional résumé, interview for a job, generate an effective and substantive report, and make an effective technical oral presentation. Students are exposed to ethical issues in engineering environments, made aware of the necessity of protecting their work with either patents, copyrights, trademarks, and trade secrets and of not infringing on the similar rights of others; and apprised of issues of safety in the work place, product liability, and the importance of professional registration. Faculty and representatives from industry present ideas for Senior Design Projects and each student chooses a project, and develops and writes a project proposal with the supervision and guidance of a faculty advisor. The assessment in this course is based on students' participation in discussions, the submission of short papers on some of the issues raised in the presentations, and the quality of project proposal and the oral presentation. One class hour.

Distribution: MR

### **EE 440 - Senior Design Projects (3 cr.)**

Prerequisite: EE 439, EE 436

This is a capstone design course that prepares students for entry-level positions. In this course each student works on an independent engineering project under the supervision of a faculty advisor. Students apply the design process and communicate the results of their project work in both oral and written form. Oral reports are presented before an assembly of faculty and students. Students apply engineering design principles either by working on a product, improving a product, or designing experiments to investigate causes of either an observed phenomenon or a problem in engineering. Students are required to demonstrate their achievements using appropriate laboratory exhibits. Students who select industry-sponsored projects have the opportunity of working with the industrial advisor in an actual engineering environment. The assessment in this course is based on the student's level of commitment demonstrated throughout the semester, the level of achievement attained, the recording of activities in a log book, and the quality of the written report and oral presentation. Meeting hours by arrangement.

Distribution: MR

### **EE 445 - Neural Networks (3 cr.)**

Prerequisite: MATH 236 or concurrently.

This is a study of the basic concepts of neural networks and its application in engineering. In this course students learn the single layer and multilayer neural network architectures; understand linear and nonlinear activation functions; and analyze and implement McCulloch-Pitts, Hebbian, Hopfield, Perceptron, Widrow-Hoff, ADALINE, delta, and back propagation learning techniques with ample practical applications. Students also learn to use MATLAB computational software to understand new concepts and to perform and implement neural network rules and paradigms. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, design projects, and a final exam.

**EE 448 - Introduction to Electro-Optics (3 cr.)**

Prerequisite: MATH 236; EE 314 or equivalent.

Electro-optics is the study of the effects of electric fields on optical phenomena. A study of light and basic geometrical and physical optics theory prepares students for investigation of the electronic and optical properties of light sources and detectors including LEDs, lasers, display devices, photo detectors, detector arrays, and charge transfer devices. After an investigation of electro-optics system design and analysis techniques, students develop an understanding of such applications as optical signal processing, electro-optics sensors, optical communications, optical computing, holography, integrated optics, display technologies, and fiber-optics. A design paper is required. Upon completion of this course, the student should understand the design and analysis techniques used in modern electro-optics systems and apply these methods in electro-optics applications. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, design projects, and a final exam.

**EE 450 - Power Electronics (3 cr.)**

Prerequisite: EE 303 or equivalent.

This is a course in the components and systems used in power electronics. After successfully completing this course students will be familiar with the types and uses of electronic power components as well as understanding and using the various analytical methods (including state space and piecewise linear) that model components and systems that manage, control, and convert electrical energy. Topics include (but are not limited to) semiconductor power devices (such as diodes, SCRs, power FETs, etc.), energy conversion methods (such as ac-dc, dc-dc, dc-ac, etc.), converter electronics (such as buck, boost, etc.), conversion efficiency, and output regulation. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussion, a research project, and a final exam.

**EE 455 - RF and Microwave Wireless Systems (3 cr.)**

Prerequisite: EE 314 or equivalent.

This course provides an introduction to various RF and microwave system parameters, architectures and applications; theory, implementation, and design of RF and microwave systems for communications, radar, sensor, surveillance, navigation, medical, and optical applications. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

**EE 456 - RF and Microwave Active Circuit Design (3 cr.)**

Prerequisite: EE 314 or equivalent.

The general objective of the course is to introduce students to the principles, processes, and techniques used in the design and realization of modern microwave and wireless active circuits. The course examines a variety of commonly used circuits including detectors, mixers, oscillators, and amplifiers that are the building blocks of all communication platforms. Throughout the semester, SerenadeSV, Sonnet Lite, and MATLAB will be used to emphasize and to help in understanding important concepts of the course as well as a tool for solving homework problems. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

**EE 457 - Wave Transmission and Reception (3 cr.)**

Prerequisite: EE 314.

This course is designed to provide seniors/first year graduate students in electrical engineering with a solid foundation in applied electromagnetics. A review of transmission lines and the design of impedance-matching techniques will be explored. The application of Maxwell's equations to guided waves and radiation will also be explored. Throughout the semester, SerenadeSV, HFSS, and MATLAB will be used to emphasize and to help in understanding important concepts of the course as well as a tool for solving homework problems. The primary methods of assessing student learning are homework assignments, quizzes, exams, and design projects.

**EE 467 - Solid-state Electronic Devices (3 cr.)**

Prerequisite: EE 312.

The electrical behavior of solids, or the transport of charge through a metal or semiconductor, is determined by the properties of the electrons and the arrangement of atoms in the solid. Through a study of the crystal structure of electronic materials and the fundamentals of quantum electronics, students understand the band theory of solids, particle statistics, transport phenomena, and conductivity. Further study of equilibrium distributions in semiconductor carriers and p-n junctions leads to an understanding of solid state device operation. The investigation of practical devices such as diodes, IMPATT diodes, bipolar and junction field-effect transistors, and MOS devices enhance students' knowledge of the design and analysis techniques used in real-world applications. A design project is required. Upon completion of this course students should be proficient in the use of solid-state component and system design techniques and are familiar with a wide variety of semiconductor device applications. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, design projects, and a final exam.

**EE 470 - Computer-Controlled Systems (3 cr.)**

Prerequisite: EE 302 and MATH 236.

Students learn the fundamentals of the state space approach to discrete systems modeling, analysis, and design. They also learn to find the discrete state space model of mechanical, electrical, and electromechanical systems, and learn how to solve zero input, zero state, and complete responses of a system represented in discrete state space form. In addition students learn to analyze stability, controllability, and observability of sampled data system and to design computer controlled feedback systems to improve performance of a discrete time systems as well as learning to design observers. Students also learn to use MATLAB computational software to understand new concepts and to perform and implement discrete system analysis and design techniques.

**EE 480 - Internship in Electrical Engineering (3 cr.)**

See "Internships (p. 25)".

**EE 482 - Electrical Engineering Research (1-3 cr.)**

Prerequisite: Junior and Senior Standing

See "Undergraduate Research" in catalogue.

Variable credits 1-3 cr.

**EE 485 - Signal Processing (3 cr.)**

Prerequisite: EE 302 and MATH 236.

This is an introductory course in digital signal processing. It provides the requisite background for an entry-level position in signal processing or for advanced study. After successfully completing this course, students are familiar with the basic theory and practice of digital signal processing. The course covers the theory of digital signal processing with emphasis on the frequency domain description of digital filtering: discrete Fourier transforms, flowgraph and matrix representation of digital filters, digital filter design, fast Fourier transform, and effects of finite register length. Classroom lectures are supplemented with implementation exercises using MATLAB and the DSP Hardware.

### **EE 490 - Special Topics in Electrical Engineering (3 cr.)**

This is a study of an advanced topic in engineering of special interest to electrical engineering majors, but not offered on a regular basis.

### **ENGL - ENGLISH**

#### **ENGL 102 - Culture, Conversation & Discourse (0 cr.)**

Prerequisite: Preliminary Acceptance

The objective of the course is for students to be able to interact more fully with Americans in various settings. Students will listen to and study the discourse of various social institutions in order to engage in conversation with people from various discourse communities.

Offered Pass/Fail.

#### **ENGL 103 - Grammar & Writing Mechanics (0 cr.)**

Prerequisite: Preliminary Acceptance

The content of the course will focus on grammatical patterns in English and appropriate mechanics. Through peer review and instructor guidance, students will learn to edit and proofread their own writing and the written work of others.

Offered Pass/Fail.

#### **ENGL 104 - Listening, Speaking & Vocabulary (0 cr.)**

Prerequisite: Preliminary Acceptance

The course will focus on the development of communication skills for various academic and social settings. Students will interact extensively in English and study recorded materials to develop knowledge of the vocabulary, usage, and discourses embedded in American culture.

Offered Pass/Fail.

#### **ENGL 105 - Academic Reading & Writing (0 cr.)**

Prerequisite: Preliminary Acceptance

The course focuses on the reading and writing of academic texts. Students will learn appropriate rhetorical strategies and to synthesize the ideas of others, and acquire drafting, revision, and editing skills for the purpose of constructing clear, coherent and grammatically correct papers for an academic audience.

Offered Pass/Fail.

#### **ENGL 106 - Listening and Speaking in Context (0 cr.)**

Prerequisite: Preliminary Acceptance

This course is designed to build on the competencies developed in English 104. The objective of the course is for students to further develop listening and speaking skills necessary for various academic and social settings. Students will interact extensively in English with their teacher and other students. In addition, students will listen to authentic recorded material taken from the American culture, as well as academic lectures from across the curriculum. There will be focused listening exercises and note-taking practice.

In addition, students will be given opportunities for authentic practice by sitting in on lectures across the curriculum (4 hours per week).

Offered Pass/Fail.

#### **ENGL 107 - Advanced Reading & Writing (0 cr.)**

Prerequisite: Preliminary Acceptance

The course is designed to build on the competencies developed in English 105. Students will read academic texts that will provide an introduction to content across the curriculum, and they will respond to the readings through writing and discussion activities. The course will focus on reading strategies such as reading for detail, main idea and inference. Emphasis will also be given to learning rhetorical strategies appropriate for a North American academic audience, and learning how to synthesize the ideas of others into an academic paper without plagiarizing.

Offered Pass/Fail.

#### **ENGL 108 - Presentation and Conversation (0 cr.)**

Prerequisite: Preliminary Acceptance

The course is designed to build on the competencies developed in English 102. The objective of this course is for students to be able to interact more fully with American students and professors in academic settings. Students will have conversations with the instructor about various discourses across the curriculum. Students will receive instruction and feedback on pronunciation issues. Students will learn to participate in class conversations and to give formal and informal presentations.

Offered Pass/Fail.

#### **ENGL 109 - Grammar, Editing and Mechanics for Academic Writing (0 cr.)**

Prerequisite: Preliminary Acceptance

The course is designed to build on the competencies developed in English 103. The objective of this course is for students to further develop their ability to edit and proofread their own written work by learning about grammatical patterns in English as well as appropriate mechanics. The content of the course will cover verb tenses, syntactical structures, and English morphology. Application of the content of the course will occur through the student editing his or her own written work and through peer editing.

Offered Pass/Fail.

### **ENGL 130 - English Composition IA (3 cr.)**

Prerequisite: Permission of the instructor.

This course is designed for students needing preparatory work in key elements of college-level writing and reading. Topics include sentence and paragraph development, fundamentals of grammar, the writing of expository essays, integration of sources, and strategies for the critical reading of prose non-fiction. Note: Students placed in ENGL 130 may have to take additional credits to fulfill graduation requirements in some programs. Students who need supplemental instruction in grammar, mechanics, and usage take, on recommendation, a concurrent lab in writing fundamentals, LA 150.

Formerly "English Composition IA: College Reading and Writing A"

Laboratory fees \$50.

### **ENGL 132 - English Composition I (3 cr.)**

This is a standard course in the techniques of critical reading and academic writing. The purposes of the course are to develop skill in reading prose nonfiction from a variety of disciplines, to develop skill in writing accurate and effective informative prose on a variety of subjects, using a variety of techniques, to develop sensitivity to language and writing, to understand conventions of citation and documentation, and to develop critical judgment of one's own writing and that of others. Particular attention is given to the importance of thesis, evidence, audience, and thoughtful revision. Students who need supplemental instruction in grammar, mechanics, and usage take, on recommendation, a concurrent lab in writing fundamentals, LA 150.

Distribution: CR/ER/GUR/MR

This course is a prerequisite.

Formerly "English Composition I: College Reading and Writing"

Laboratory fees \$50.

### **ENGL 133 - English Composition II (3 cr.)**

Prerequisite: A "C" in ENGL 131, ENGL 132, or ENGL 140-level, or the equivalent.

This course explores the many ways in which human experience is shaped by language and culture. Focused on a semester-long theme, English 133 emphasizes both close reading and expository writing as students hone critical thinking skills. This course stresses the analytic reading of literary texts in a cultural context and the writing of accurate, effective, and persuasive prose using evidence from primary and secondary sources. English 133 courses consider literature and other cultural texts from underrepresented populations and/or discuss a wide range of cultural issues including those of racial and ethnic diversity and gender politics.

Distribution: CR/ER/GUR/MR

This course is a prerequisite.

Formerly "English Composition II: Introduction to Literature"

Laboratory fees \$50.

### **ENGL 139 - Writing for Special Purposes (1 cr.)**

Prerequisite: A "C-" in ENGL 132 or ENGL 133.

Building on the work taught in ENGL 132 or ENGL 133, students work under the guidance of a professor to communicate a central idea and organize a substantial amount of supporting material in a format different than those stressed in the introductory courses. A "B" in this course will offset the "C-" in the 100 level course, allowing the student to satisfy one General University Requirement of a "C" in a 100 level English course. May be taken more than once.

Laboratory fees \$50.

### **ENGL 206 - Writing for Business (3 cr.)**

Prerequisite: C or better in two 100-level writing courses.

This course is designed to give students a comprehensive view of communication, its impact and importance in business, and the role of written communication in establishing a favorable outside environment, as well as effective internal communications skills. The various types of business communication are covered. This course also develops an awareness of the importance of succinct and clear written communication in the modern business world. This course satisfies the A & S Writing Intensive Course requirement for A & S students.

### **ENGL 214 - World Literature I (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

Students read selections from the time of Homer to the nineteenth century. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

### **ENGL 215 - World Literature II (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

Students read selections from significant writers of the last 200 years. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

### **ENGL 223 - African American Literature I (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

An introduction to African American literature from colonial times to 1865, covering poetry, fiction, drama, and nonfiction prose such as slave narratives, memoirs, sermons, and speeches. The cultural context of the literary period will be explored. The course will cover such authors as Wheatley, Truth, Douglass, Turner, and others.

This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 224 - African American Literature II (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

An introduction to African American literature from the era of Reconstruction to the present, covering poetry, fiction, drama, and nonfiction prose such as memoirs, sermons, and speeches. The cultural context of literary periods will be explored. The course will cover such authors as Washington, DuBois, Hughes, Cullen, Brooks, Hurston, Ellison, Wright, Angelou, Baldwin, Morrison, Malcolm X, and Martin Luther King Jr.

This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Formerly ENGL 318.

### **ENGL 231 - British Literature I (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

This is a critical survey of selected texts in British literature from its origins to 1780. Emphasis is on major traditions and on major writers such as Chaucer, Marlowe, Donne, Jonson, Milton, Dryden, Swift, and Johnson. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

### **ENGL 232 - British Literature II (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

This is a critical survey of selected texts in British literature from the Romantic period to 1945. Emphasis is on major traditions and on major authors such as Wordsworth, Coleridge, Byron, Keats, Shelley, Austen, Tennyson, Browning, Arnold, Dickens, Conrad, Lawrence, Shaw, and Yeats. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

### **ENGL 237 - Creative Writing (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

This is a course designed for students who wish to write "creatively." Emphasis is on writing poetry and short fiction. Open to all majors.

Distribution: MR

This course satisfies one of the Writing Intensive course requirements for Arts and Sciences students.

### **ENGL 249 - Tutoring Seminar (3 cr.)**

Prerequisite: Sophomore standing and "C" or better in two 100-level writing courses.

This course is designed to develop interpersonal teaching and communication skills necessary for tutoring writing in the various disciplines. Students will study and analyze current writing theories, various writing genres, revision strategies, documentation style systems, and a variety of tutoring methods such as proper questioning, positive reinforcement, nonverbal communication, active listening, student differences, learning styles, and assertiveness training. Through the required one-on-one and small-group field experience sessions, the seminar students will receive additional education and training as peer tutors by observing, participating, analyzing, and reflecting on tutoring sessions and on the tutoring process. Lastly, they will enhance their own writing, listening, speaking, critical thinking, and collaboration skills by reflecting on and writing about their tutoring experiences.

### **ENGL 251 - American Literature I (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

This is a study of American literature in the following periods: Colonial, Revolutionary, Nationalism, Romanticism, and the American Renaissance. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

### **ENGL 252 - American Literature II (3 cr.)**

Prerequisite: Sophomore standing and two courses in English writing with grades of "C" or better.

This is a study of American literature 1860- the present. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

### **ENGL 260 - Literary Horizons (3 cr.)**

Prerequisite: Two course in English writing with grades of "C" or better.

Required in Elementary Education program. This course is an introduction to the learning standards in the literature strand of the Massachusetts Curriculum Frameworks and to the application of those standards to literary works. It will present potential elementary teachers with the background information necessary to apply the standards to works from our "Common Literary Heritage," as suggested by the Massachusetts Department of Education.

Distribution: MR

This course satisfies one of the Writing Intensive course requirements for Arts and Sciences students.

### **ENGL 281 - Supermen, Buffoons, & Bloody Revenge: Drama of the English (3 cr.)**

Prerequisite: Two course in English writing with grades of "C" or better.

This course introduces students to the richness and variety of English Renaissance drama beyond the plays of Shakespeare. Class meetings will include lecture, discussion, student performances, and the analysis and interpretation of scenes viewed on video.

Distribution: MR

### **ENGL 290 - 290-299 Special Topics in English (1-3 cr.)**

Topics in English that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 302 - Approaches to the Study of Literature (3 cr.)**

Prerequisite: Junior standing or permission of English chair and A "C" or better in two 100-level English classes and one literacy survey.

This course will explore contemporary literacy and cultural studies. Students will read primary texts that have had a major influence on the interpretation of literature (Freud, Marx, and others), explore the development of major critical "schools" of thought, and learn to consider texts from a variety of perspectives. This course will have

students study, share, and question contemporary approaches to literature and the literary term associated with those critical approaches, while also creating and sharing a close analysis of a particular literary work. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

### **ENGL 310 - Modern Drama (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This is a study of 19th and 20th century drama including dramatists such as Ibsen, Chekhov, Shaw, Strindberg, Sartre, Beckett, Ionesco, Brecht, Pirandello, Williams, Albee, Garcia, Lorca, and Genet. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 311 - The English Language (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

Cross-Listed as: COMM 311

This is an overview of the structure and history of the English language, and of its variation in different speech communities. Dual listed as COMM 311.

Distribution: MR

### **ENGL 312 - Chaucer and His Age (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This is a study of Chaucer as literary artist and critic of his age. Emphasis is on *The Canterbury Tales*, materials describing the world of the 14th century, and the oral presentation of Chaucer's verse rather than a linguistic analysis of Middle English. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 314 - Shakespeare: Plays and Poems (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course surveys all of Shakespeare's work. Plays from all four dramatic genres (history, comedy, tragedy, and romance), representative sonnets, and selections from the two narrative poems will be read and discussed. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 315 - Shakespeare: The Tragedies (3 cr.)**

Prerequisite: Junior standing or permission of English chair and two courses in English writing with grades of "C" or better.

This course consists of intensive reading and discussion of Shakespeare's major tragedies. It satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 316 - Shakespeare: The Comedies and Histories (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course consists of intensive reading and discussion of Shakespeare's major comedies and history plays. This course satisfies

one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

### **ENGL 319 - Early 17th Century Prose and Poetry (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This is a study of nondramatic poetry and prose from 1600 to 1660 including works by authors such as Bacon, Donne, Herbert, Marvell, and the young Milton. The political, intellectual, and religious currents of the period are included. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 322 - 19th Century American Literature (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better.

This is a critical survey of 19th century American fiction and poetry. Readings cover major writers such as Cooper, Emerson, Hawthorne, Melville, Dickinson, Whitman, Jewett, James, Wharton, and Twain amidst other significant authors. The course will give students an understanding of major literary trends of the period-including the transcendentalist, romantic, and regionalist traditions-in the context of important cultural developments of the period. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 324 - Memoir: Sign of the Self (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better.

*Sign of the Self* introduces students to the genre of memoir. Students will consider the definition of memoir, conventional prompts for the writing of memoir, and reading strategies specific to the genre. The focus will be on written texts, though memoir in other media such as photography, graphic novels, film and video may be considered. With each text, the class will trace the ways the personal intersects with broader social and political categories like family, nation, gender, race and class.

This course satisfies one of the Writing Intensive course requirements for Arts and Sciences students.

### **ENGL 327 - Literature and Culture in England, 1780-1832 (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course examines the literary movement known as "romanticism" with attention to relevant cultural contexts (French Revolution, industrial development in England, British Nationalism/Imperialism). Students will read poetry, essays, and fiction by authors such as Burke, Wollstonecraft, Barbauld, Wordsworth, Coleridge, Austen, Keats, and Shelley.

This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 328 - Literature and Culture in England, 1832-1890 (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This is a continued study of the significant attitudes and problems of the 19th century as expressed in poetry and prose. Readings are drawn from authors such as Carlyle, Mill, Tennyson, Dickens, Arnold, Hardy, and others. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 329 - Readings in 20th Century British Literature (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course is a study of selected authors, writings, issues, and ideas that have been associated with British "modernism." The focus is on both texts and contexts, recognizing and including in the analysis the sociopolitical, philosophical, religious, and literary influences at play in the early 20th century. Students will read poetry, essays, and fiction by authors such as Wilde, Yeats, Joyce, Eliot, Woolf, and others. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 333 - Independent Study in English (1-3 cr.)**

See "Independent Study (p. 24)".

### **ENGL 334 - Independent Study in English (1-3 cr.)**

See "Independent Study (p. 24)".

### **ENGL 336 - Ethnic American Literature (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This is a critical study of the literature from American underrepresented writers: Black, Native, Hispanic, Asian, and Jewish Americans. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: A&SR/MR

### **ENGL 338/411 - Major Authors (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

Investigating the important work of one to three major authors, this course will focus on the close reading of texts with attention, where appropriate, to the intellectual and cultural milieu. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 339 - Children's Literature (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair. ED 350 for students in Education program.

The course is an introduction to the field of children's literature. Its focus is primarily literary in nature, exploring the diverse literature written for children and young adults through reading, storytelling, meeting authors, and discussing works in class. Students are also introduced to the graphic artistry accompanying much of the literature and to a variety of cultures and traditions depicted in word and picture. The course furthers students' understanding of children and of the important role of home and school in literacy development. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: A&SR/MR

### **ENGL 341 - Caribbean Writers (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

A survey of major Caribbean writers in both English and translation. Poetry, fiction, drama, and the oral traditions will be studied. Where appropriate, the cultural context of the works of literature will be explored. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 343 - Literature of Africa and the African Diaspora (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

The African continent encompasses many traditions; this course will introduce and study some of the major figures as well as the contexts in which they wrote. The relationship between African writers and writers of the African Diaspora (African American literature, Caribbean literature, Black British literature, etc.) will be delineated comparatively. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 345 - Major African American Writers (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course will concentrate on African American writers such as Wright, Ellison, Morrison, Bambara, and others who have contributed significantly to the African American Literature. Most readings will be novels but the short fiction of these writers will also be selectively read. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 351 - Fiction Workshop (3 cr.)**

Prerequisite: A grade of "C" or better in two 100-level writing classes, and junior standing or permission of chair.

In *Is Nothing Sacred*, Salman Rushdie writes, "The geniuses of the novel are those whose voices are fully and undisguisedly their own, who, to borrow William Gass's image, sign every word they write. What draws us to an author is his or her unlikeness." The goal of this workshop will be to tune into the texture of a writer's sentences, to learn what makes it different than anyone else's writing. We will read student manuscripts as well as assigned novels and look at the way the works are put together, how time passes, how character is presented, the distance between the narrator and reader, the writer's inclination toward scene and narrative, how much of the novel is exposition as opposed to scene, and more. We will learn as much as we can about the craft of the novels, then forget everything and write.

Distribution: MR

This course satisfies one of the Writing Intensive course requirements for Arts and Sciences students.

This course can be repeated for credit with Chair's permission.

### **ENGL 352 - Poetry Workshop (3 cr.)**

Prerequisite: A grade of "C" or better in two 100-level writing classes, and junior standing or permission of chair.

This course is an upper level poetry workshop, concentrating on methods of creating and revising original poems to publishable quality. The objective is to encourage imagination; to learn what has already been tried and to play with new approaches, sources of

inspiration, twists, and spins rather than repeating old ways; to understand and use different techniques of writing imaginatively in your own work and in analyzing creative work by others. The goal is to enlarge a critical vocabulary as well as an everyday one; to gain an ability to use poetic devices and poetic forms and to determine where, why, and how they are most useful. The workshop also seeks to increase knowledge of the historic development of poetry in the English and American traditions and to add to that tradition in your writing. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

Distribution: MR

This course can be repeated for credit with Chair's permission.

### **ENGL 353 - Twentieth Century Poetry (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This is a study of the dominant themes and innovative techniques in British and American poetry from 1900 to 1950 with particular attention to Yeats, Eliot, and Frost. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 354 - Creative Non-Fiction Workshop (3 cr.)**

Prerequisite: A "C" or better in two 100-level writing classes, junior standing or permission of chair.

This course is a genre which uses literary techniques to write about factual events, real people, and actual places. It can include nature and travel-writing, memoir, essay, biography, and literary journalism, as well as scripts for documentary films. Students will practice a variety of nonfiction writing skills such as researching, interviewing, drafting, and revising, with the aim of completing three articles of publishable quality; they will also consider how to tailor their writing so as to place it in an appropriate publication..

Distribution: MR

This course can be repeated for credit with Chair's permission.

### **ENGL 355 - The Development of The Novel (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course is a critical examination of the novel as an art form, from its origins to the 20th century. Emphasis is on major writers of the 19th and 20th centuries: American, British, and European. Works selected are by major authors such as Fielding, Austen, Bronte, Dickens, Eliot, Hawthorne, Flaubert, Dostoevsky, Tolstoy, Melville, Hardy, James, Conrad, Forster, Hemingway, and Faulkner. This course satisfies the Humanities literature requirement for Arts and Sciences students.

### **ENGL 357 - Twentieth Century American Literature (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This is a critical survey of 20th century American fiction, poetry, and drama. Emphasis is on major writers such as Wharton, Fitzgerald, Hemingway, Steinbeck, Faulkner, Cather, and Morrison. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 358 - Women in Literature (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

The purpose of the course is to introduce students to a rich representation of women's writing from a variety of genres and periods, when only few women wrote. Through the careful study of works by women with courage and eloquence, this course may become an experience of discovery for all of us-men and women alike. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 366 - Crime and Punishment (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course examines a diversity of crimes and their punishments in selected works of Western Literature. Unlike popular detectives and TV shows where the emphasis is on "whodunit," literature often identifies the criminal at the outset and explores, in unparalleled depth and richness, his or her inner landscape: motives, conscience, reckoning, and growth. Through the study of crime in literary works spanning centuries, from Biblical stories and Greek tragedy through Shakespeare and Dostoevsky to contemporary literary criminals, this course will enhance our understanding of the psychological and moral complexity of crime in its diverse human and literary dimensions. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 376 - World Short Stories (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course studies stories written since about 1945 and from a variety of cultures around the world. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 386 - Biblical Heroes (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

This course studies heroes and their families from the Hebrew Bible (in English). This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 390-399 - Special Topics in English (1-3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

Topics offered depend upon student interests as well as particular interests of instructors. This course may be repeated for credit if topic differs. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 410 - English Seminar (3 cr.)**

Prerequisite: Senior standing and two courses in English writing with grades of "C" or better.

Intended primarily for English literature majors, this course is designed to enlarge and deepen the students' understanding of literary form and to enlarge their understanding of the human concerns that literature may treat.

Distribution: MR

This course satisfies one of the Writing Intensive course requirements for Arts and Sciences students.

### **ENGL 411/338 - Major Authors (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

Investigating the important work of one to three major authors, this course will focus on the close reading of texts with attention, where appropriate, to the intellectual and cultural milieu. This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **ENGL 480 - Internship in English (1-3 cr.)**

See "Internships (p. 25)".

### **ENGL 481 - Internship in English (1-3 cr.)**

See "Internships (p. 25)".

## **ENGR - ENGINEERING**

### **ENGR 100 - Engineering Seminar & College Success Skills (2 cr.)**

Prerequisite: Freshman status in pre-engineering.

This is a course designed to introduce first-year pre-engineering students both to the engineering profession and to the practice of engineering as it relates to their university experience. Furthermore, the course is designed to assist students in promoting their academic success and personal development in college. Topics include goal setting and decision making, time management, communication, note taking, test taking, and study skills. Students will be assessed through performance on homework, written reports, and by participation in course activities.

Distribution: ER/GUR/MR

This course is a prerequisite.

Formerly "First Year Engineering Seminar"

### **ENGR 102 - First Year Engineering Seminar (1 cr.)**

Prerequisite: Freshman Engineering major.

This is a course designed to introduce first-year engineering students both to the engineering profession and to the practice of engineering as it relates to their university experience. It enables students to further develop academic and life management skills and to learn how to use University resources. Students will be assessed through performance on homework, written reports, and by participation in course activities.

Distribution: ER/GUR/MR

This course is a prerequisite.

### **ENGR 103 - Introduction to Engineering (4 cr.)**

Prerequisite: Freshman Engineering major

This course is designed to introduce first-year engineering students to the engineering profession and its practices. The students complete various projects, including a major design project. Through these projects and other activities, the students learn about computer aided visualization, engineering analysis, sketching, critical thinking, ethical decision making, the design process, how to work in a team environment, problem formulation, design evaluation and selection,

teamwork, oral presentation skills, and effective writing. Students are assessed through performance on projects, exams, quizzes, homework, written reports, and oral presentations.

Distribution: ER/GUR/MR

This course is a prerequisite.

### **ENGR 105 - Computer Programming for Engineers (2 cr.)**

Prerequisite: College of Engineering student

This is an introductory course in the design of software solutions to engineering problems using software capable of being programmed by the user. Students learn procedural approaches to designing small to medium-scale programs. After successfully completing this course, students understand the issues involved in moving from a general problem statement to a software solution. Students learn a variety of software design solution techniques. They develop skills in logic, algorithm design, and data structure design and debugging. They apply these skills to a variety of engineering, mathematical, and numerical method problem areas. The methods of assessing student learning in the course are homework assignments; weekly quizzes; in-class, project-type programming assignments; and exams.

Distribution: ER/GUR/MR

This course is a prerequisite.

Fall'14 changed to 2 crs.

### **ENGR 110 - Data Acquisition and Processing (3 cr.)**

Prerequisite: ENGR 103

This is an introductory course in computer - aided data acquisition and processing. Through a series of studio experiences, students will learn the principles necessary to design, implement, and analyze computer- controlled experiments. Industry standard LabVIEW along with programmable hardware will be the learning platform for this course. Additionally, students will be introduced to the concepts of product innovation and development as well as associated elements of entrepreneurship. Competency in the knowledge gained will be demonstrated by developing and demonstrating a fully functional 'smart product'. The methods of assessing student learning in the course will be homework assignments, weekly quizzes, laboratory experiments, exams, and a final project.

Distribution: ER/GUR/MR

This course is a prerequisite.

Fall'14 changed to 3 crs.

### **ENGR 333 - Independent Study in Engineering (1-3 cr. per semester)**

See "Independent Study (p. 24)".

### **ENGR 480 - Internship in Engineering (3 cr.)**

See "Internships (p. 25)".

### **ENGR 481 - Internship in Engineering (3 cr.)**

See "Internships (p. 25)".

## **ENTR - ENTRPRENEURSHIP**

### **ENTR 251 - Entrepreneurship and Innovation (3 cr.)**

Prerequisite: Sophomore Standing.

This is a basic course on entrepreneurship from which students will learn the role of entrepreneurial organizations in the U.S. economy and the entrepreneurial process of identifying problem opportunities, developing raw ideas or solutions, evaluating and selecting the best ideas, and developing business plans to the launch new products and innovations. The students will also learn the concepts, practices, and policies employed by successful entrepreneurs. The students will form Entrepreneurial Teams (E-Teams) to experience the entrepreneurial process. The E-Teams will conduct several analyses and make several presentations to the class throughout the process. This experience will teach the students the skills needed to create and launch new innovations for start-up, corporations, family businesses, government, or social organizations.

Distribution: MR

Formerly MAN 251

### **ENTR 260 - Marketing for Entrepreneurs (3 cr.)**

Prerequisite: MK 200 and ENTR 251/MAN 251

This course deals with the marketing function from the small, entrepreneurial organization perspective. Jay Levinson in his 1984 book *Guerrilla Marketing* described an unconventional way of performing promotional activities (advertising, public relations, sales promotion, and personal selling) on a very low budget as opposed to the traditional way of promoting products employed by larger organizations with massive budgets, marketing staff, paid-consultants, and sophisticated computer tools, etc. Levinson called his unconventional approach *Guerrilla Marketing*. His original target audiences were small businesses and entrepreneurs who sought to maximize their profits while minimizing their investment in marketing. Over the years *Guerrilla Marketing* has been so successful that today many large organizations are employing its techniques and tactics.

Distribution: MR

Formerly MAN 260

### **ENTR 326 - Venture Feasibility (3 cr.)**

Prerequisite: MK 200 and ENTR 251/MAN 251

This course will examine the transformation of a business idea into a business venture. The course and text are organized around the process of creating a new venture from recognition of an opportunity to the launch of the business. Part I reviews the foundations of entrepreneurship and entrepreneurial opportunity that are important to the understanding the decisions the entrepreneurs make, the environment in which they make these decisions, and the tasks they must understand before they launch a new company. Part II addresses the heart of entrepreneurial activity, i.e. the testing of a new business concept through feasibility analysis. Part III focuses on how the feasibility study fits into the business plan. Part IV examines the funding issues of launching the business and growing the business. The instructor will introduce a number of perspectives on various entrepreneurial concepts especially on the sources of new venture concepts, the concept of sea changes, and the nature of opportunities. Student teams will develop new ideas, test their commercial feasibility, and develop funding plans. Students will also be given the opportunity to represent Western New England in the annual Grinspoon Elevator Pitch competition in April.

Distribution: MR

Formerly MK 326

### **ENTR 380 - Global Entrepreneurship (3 cr.)**

Prerequisite: ENTR 251/MAN 251

This course is a practical course for students who may someday start, join, or hold a stake in a global enterprise venture. In addition, one of the newly emphasized themes will be that of the global entrepreneur, in recognition of the fact that increasingly, ventures are global from inception; and opportunities, resources, uncertainties, customers, and exits can come from anywhere, anytime. Thus, Global Entrepreneurship is targeted toward aspiring international and U.S. based entrepreneurs and their investors.

Distribution: MR

Formerly MAN 380

### **ENTR 430 - Family Business Management (3 cr.)**

Prerequisite: MAN 101 or ENTR 251

Cross-Listed as: MAN 430

Family Enterprises have unique challenges, problems and issues such as starting-up and on-going decision-making issues with family members, handling conflicts involving family members and non-family members, family risk profiles, taxation, estate planning, multi-generation and succession issues, going public, and selling out. This course is particularly important for students who are planning to enter family businesses upon graduation.

### **ENTR 480 - Internship in Entrepreneurship (1-3 cr.)**

See "Internships (p. 25)".

For this internship students would be required to spend 120 hours during the semester for a start-up business (in operation for less than 3 years) and submit a performance-learning report to their Faculty Sponsor and Site Supervisor.

Distribution: MR

## **ENVS - ENVIRONMENTAL SCIENCE**

### **ENVS 301 - Waste Management (3 cr.)**

Prerequisite: Junior standing, CHEM 105, and four additional credits of laboratory science.

This is a technical and socio-political overview of the decisions often faced with regard to types and quantities of waste produced and the disposition of those wastes. Students are educated in the scientific, legislative, and personal dimensions of waste management, especially hazardous wastes, and discuss technical alternatives and obstacles to implementing them.

Offered: in alternate years.

## **FILM - FILM**

### **FILM 102 - The History of Film (3 cr.)**

This course is an introduction to the history of film from its beginnings to the present moment, with a concentration on the American context. We will examine changes in film form and content as the medium reacts to the cultural, political, social, and technological changes in the world of which it is a part.

### **FILM 103 - The Art of Film (3 cr.)**

Prerequisite: ENGL 132 or equivalent.

This course is an introduction to film and its narrative and formal components. Students analyze the basic elements of film including narrative form, mise-en-scene, cinematography, editing and sound with focus on the way specific formal choices shape content.

Formerly FILM 203

### **FILM 201 - Studies in Mainstream Film Genres (3 cr.)**

Prerequisite: Sophomore standing.

This course focuses on a single film genre that is historically significant. The course considers genres like the Western, Melodrama, Film Noir, Romantic Comedy, and Horror. The class will focus on enduring generic features and the changes to those same generic features over time that have taken place.

Formerly FILM 301

### **FILM 202 - The Haunted Screen (3 cr.)**

Prerequisite: Sophomore standing.

A cinematic investigation of good, evil, nature, science, and gender through narratives of monstrous transformations. Films may include Frankenstein, Alien, Them, Dracula, The Exorcist, and The Silence of the Lambs.

Formerly FILM 302

### **FILM 210 - Mass Media in Film (3 cr.)**

Prerequisite: Sophomore standing.

A critical investigation of how mass media are portrayed in such films as Citizen Kane, Radio Days, Atomic Café, Quiz Show, Network, and The Truman Show.

Formerly FILM 310

### **FILM 212 - Women and Film (3 cr.)**

Prerequisite: Sophomore standing.

This course examines the representation of women in different cinemas and the filmic structures that shape the way viewers look at women on screen. Students analyze the representation of women in mainstream, independent and experimental films including those made by women. Course readings draw from film criticism, feminist film theory and feminist writing in order to develop a critical vocabulary for analysis.

### **FILM 290 - Special Topics in Film (1-3 cr.)**

Topics in film that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **FILM 312 - International Cinema (3 cr.)**

Prerequisite: Junior standing.

This course studies films made in a variety of countries outside the United States.

### **FILM 320 - Introduction to Cinema Production (3 cr.)**

Prerequisite: Two English writing courses with a grade of "C" or higher.

An introduction to the fundamentals of motion picture production, including dramatic development, visual storytelling, editing, and directing.

### **FILM 321 - Introduction to Screenwriting (3 cr.)**

Prerequisite: Two 100-level writing courses with a grade of "C" or better and junior standing, or permission of English chair.

An introduction to writing for the screen. Topics include 3-act structure characterization, dialogue, theme, and pitching.

### **FILM 340 - Director's Signature (3 cr.)**

Prerequisite: Junior standing.

This course will consider the body of work attributed to individual directors whose work has come to be considered canonical and innovative. Directors include Alfred Hitchcock, John Ford, King Vidor, Robert Altman, and Francis Ford Coppola.

### **FILM 390 - Special Topics in Film (1-3 cr.)**

Topics in film that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

## **FIN - FINANCE**

### **FIN 214 - Introduction to Finance (3 cr.)**

Prerequisite: MATH 111, MATH 112 or MATH 115, MATH 116 or MATH 123, MATH 124, AC 201 or concurrent.

This course introduces the business student to the broad financial world consisting of financial management, financial markets, and investments. Key outcomes include a basic understanding of investment vehicles such as stocks, bonds, and mutual funds, the ability to value future cash flows emanating from securities and projects, the ability to analyze financial statements and the ability to apply elementary working capital management concepts.

Additionally, all students will apply their knowledge in a realistic, simulated stock market trading exercise.

Distribution: BUSR/MR

Offered: fall and spring semesters.

### **FIN 300 - Insurance and Risk (3 cr.)**

Prerequisite: Junior standing.

This is an analysis of the principles and practices of insurance and risk management. Topics include personal, business, and social aspects of life, health, property, and liability risks.

### **FIN 312 - Financial Markets and Institutions (3 cr.)**

Prerequisite: FIN 214, EC 111, and EC 112.

This course studies the institutions and markets that raise and allocate funds in modern economies in the context of interest rate determination and risk allocation. Key outcomes include the ability to use duration to manage fixed income financial instruments including their derivatives, and an understanding of the management of financial intermediaries in the contemporary regulatory environment.

Distribution: MR

Offered: in the fall semester.

### **FIN 320 - Intermediate Corporation Finance (3 cr.)**

Prerequisite: FIN 214.

This course provides the student with an understanding of finance theory and a working knowledge of financial strategies. Key outcomes include the ability to perform corporate-level financial

analysis, to pursue value-based management, to perform capital budgeting, to determine cost of capital, and to make both short-term and long-term financing decisions.

Distribution: BUSR/MR

Offered: in the fall semester.

### **FIN 322 - International Finance (3 cr.)**

Prerequisite: FIN 214, EC 111, and EC 112.

This is a study of the international dimensions of financial management. Key outcomes include a knowledge of international financial markets; the ability to measure and control economic, contractual, and translation risk; the ability to engage in international working capital management; and a knowledge of how funds are secured internationally.

Distribution: CR

Offered: in the spring semester.

### **FIN 330 - Financing Entrepreneurial Ventures (3 cr.)**

Prerequisite: FIN 214.

This course covers various aspects of finance in an entrepreneurial venture. Major topics include attracting seed and growth capital from sources such as venture capital, investment banking, government, and commercial banks. Among the issues discussed are different legal forms of organization, taxes, valuing a company, and exit strategies (going public, selling out, acquisitions, and bankruptcy).

Distribution: MR

Offered: in the fall semester.

### **FIN 333 - Independent Study in Finance (3 cr.)**

See "Independent Study (p. 24)".

### **FIN 334 - Independent Study in Finance (3 cr.)**

See "Independent Study (p. 24)".

### **FIN 350 - Advanced Corporation Finance (3 cr.)**

Prerequisite: Grade of C- or better in FIN 320.

The key outcome of this course is the ability to apply the concepts and tools of financial management learned in FIN 214 and FIN 320 to real-world situations. Students will also learn to explain their decisions through written and oral communication.

Distribution: MR

Offered: in the spring semester.

### **FIN 382 - Healthcare Finance (3 cr.)**

Prerequisite: FIN 214, AC 202

This course uses the case method of study to apply basic financial skills to four areas of concern to healthcare institutions: Financial Analysis and Performance Evaluation, Managerial Accounting, Capital Acquisition, Capital Budgeting, and Working Capital Management.

### **FIN 390 - Special Topics in Finance (3 cr.)**

This is a study of advanced topics in finance of special interest to finance majors but not offered on a regular basis.

### **FIN 417 - Investments (3 cr.)**

Prerequisite: FIN 214.

This course is a study of the theories of risk and return that underlie decisions about the allocation of wealth among competing investment vehicles. Key outcomes include the ability to measure and manage risk and return as it applies to equity securities and their derivatives through modern portfolio diversification techniques.

Distribution: MR

Offered: in the fall semester.

### **FIN 418 - Security Analysis (3 cr.)**

Prerequisite: FIN 417

This course is a study of how publicly available information can be used to determine both the intrinsic value and credit worthiness of a business enterprise. Key outcomes include the ability to perform professional level financial statement analysis, industry analysis, and risk assessment.

Distribution: MR

Offered: in the spring semester.

### **FIN 425 - Portfolio Management (3 cr.)**

Prerequisite: FIN 214

This is a course in equity portfolio management that applies financial theory and conventionally accepted practice to the management and assessment of a diversified portfolio designed to outperform a broad-based index such as the S & P 500 index. Students perform economic, industry and company analysis to select companies to include in portfolio. The portfolio is maintained and monitored by conventional metrics including attribution analysis.

Distribution: MR

Offered: in the spring semester.

### **FIN 480 - Internship in Finance (3 cr.)**

See "Internships (p. 25)".

### **FIN 481 - Internship in Finance (3 cr.)**

See "Internships (p. 25)".

### **FR - FRENCH**

#### **FR 101 - Elementary French Conversation I (3 cr.)**

This is an "immersion" course in French language and culture using the innovative Capretz French in Action method that combines video, audio, and print materials. Digital audio program on CD-ROM used. One hour of lab per week.

Offered: every fall.

Formerly Elementary French I

#### **FR 102 - Elementary French Conversation II (3 cr.)**

Prerequisite: FR 101 or the equivalent.

This is a continuation of French in Action. Digital audio program on CD-ROM used. One hour of lab per week.

Offered: every spring.

Formerly FR Elementary French II

### **FR 190 - Special Topics in French (1-3 cr.)**

Topics in French that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **FR 203 - Intermediate French Conversation I (3 cr.)**

Prerequisite: FR 102 or the equivalent.

This is a continuation of French in Action. Digital audio program on CD-ROM used.

Offered: every fall.

Formerly Intermediate French I

### **FR 204 - Intermediate French Conversation II (3 cr.)**

Prerequisite: FR 203 or the equivalent.

This is a continuation of French in Action. The emphasis is on fluent oral reports based on articles from current French publications. Digital audio program on CD-ROM used.

Offered: every spring.

Formerly FR Intermediate French II

### **FR 290 - Special Topics in French (1-3 cr.)**

Topics in French that are not offered on a regular basis are studied. The course may be repeated for credit if the topic varies.

## **FS - FORENSIC SCIENCE**

### **FS 152 - Crime, Science, And Justice. (3 cr.)**

Prerequisite: BIO 101 or BIO 107/BIO 117

In the United States since 1989, there have been hundreds of post-conviction DNA exonerations in criminal cases. These exonerations have taken place across the entire country and are not limited to geographical areas. Many of those exonerated were serving sentences on Death Row awaiting execution at the time of their exoneration and served an average of 12 years in prison before their release. This course will present the background, causes, and processes to prevent unjustified convictions in future criminal cases. Actual cases will be studied in detail. The course is presented to all students as an informative modern day discussion on this important topic.

### **FS 201 - Introduction to Forensics (4 cr.)**

Prerequisite: CJ 101 and FB or FC major or permission.

This course introduces students to the criminalistics concepts of crime scene procedures, techniques, and reconstruction pattern analysis. Even though this course is designed for students who have little or no science background, basic scientific measurements will assist in understanding the methods behind forensic science and its application to the legal system. Usually associated with law enforcement, the forensic scientist plays an increasingly active role in the civil and criminal justice arenas.

Fall'14 changed to 4 crs.

Three lecture hours, one three-hour lab.

Lab fee \$100.

### **FS 240 - Scientific Evidence (3 cr.)**

Prerequisite: FS 201, BIO 107/117, and CJ 101.

This course introduces the forensic science major to the theories of scientific evidence. After a brief study of the history, theory, and application of the rules of evidence in complex civil and criminal matters, the course will specifically focus on the procedures of qualification of expert witnesses and various scientific disciplines relative to the admissibility of expert testimony and scientifically-based evidence through each stage of a legal proceedings. The course will include both the civil and criminal trial processes, definitions of scientific evidence, and qualification of expert witnesses. These topics and the procedures for validating scientific evidence disciplines will be studied in detail through actual case studies from various U. S. judicial jurisdictions.

Distribution: MR

This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences' students.

### **FS 310 - Crime Scene Processing (3 cr.)**

Prerequisite: FS 201, FS 240, and CHEM 209/CHEM 219.

This course presents a detailed study of crime scene investigation through the eyes of the forensic scientist. The course, for the forensic science major, illustrates the role of the forensic scientist in responding to the crime scene and follows an investigation through the trial process. A major focus will be evidence recognition, documentation, and collection techniques at the crime scene. A detailed analysis of the developing common law is included so that the student will be immersed in the legal processes of major criminal investigations.

Distribution: MR

### **FS 325 - Criminalistics I (4 cr.)**

Prerequisite: FS 310 and CHEM 210.

This is an in-depth study of the recognition, collection, processing, and examination physical evidence typically found at crime scenes. Emphasis is placed on the laboratory techniques used in studying physical evidence. Topics are drawn from biology, chemistry, and physics.

Distribution: MR

Fall'14 changed to 4 crs.

Three lecture hours, and one three-hour lab.

Lab fee \$100.

### **FS 333 - Independent Study in Forensic Science (1-3 crs.)**

See "Independent Study".

### **FS 426 - Criminalistics II (4 cr.)**

Prerequisite: FS 325 and CHEM 210.

This course is designed to provide students with a strong theoretical and experimental background in forensic science applications and techniques, including proper documentation and communication of laboratory data. Through an integrated lab-lecture approach, the chemical, biological, and physical processes underlying the sampling, storage, and analysis of evidence will be studied.

Distribution: MR

Three lecture hours, and one three-hour lab.

Lab fee \$100.

### **FS 480 - Internship in Forensic Science (1-3 cr.)**

See "Internships (p. 25)".

Distribution: MR

## **GEOG - GEOGRAPHY**

### **GEOG 101 - World Geography (3 cr.)**

This course helps students see how a working knowledge of geography can be useful in better understanding the world around us. It provides an introduction to the concepts and theories geographers use to interpret spatial relationships between physical landscapes, climate, and human populations. Cases will be drawn from different regions of the world to illustrate both historical and contemporary geographic patterns on a global scale.

Distribution: MR

### **GEOG 102 - World Regional Geography I: Highly Developed Countries (3 cr.)**

This survey of world geography is designed to help you develop a greater understanding of the advanced industrialized and highly developed societies of North America, Europe, Russia, East Asia and Oceania. Greater familiarity with these places will help you to appreciate the challenges confronting the more affluent parts of the world. All face issues like aging populations, increasingly costly social insurance systems, deindustrialization, and growing multiculturalism. The class puts special emphasis on the ways in which the changing global environment and an increasingly interdependent global economy are impacting political, environmental, social and cultural dimensions in all of these regions.

### **GEOG 103 - World Regional Geography II: Less Developed Countries (3 cr.)**

This survey of world geography is designed to help you develop a greater understanding of the rapidly developing societies of Middle and South America, North Africa and Southwest Asia, Sub-Saharan Africa, South Asia and Southeast Asia. Developing a better understanding of these places will illustrate challenges associated with rapid population growth, urbanization, environmental stresses, industrialization, and dependence on raw material production in a highly competitive in a global market. This class will promote a better appreciation for the ways in which the changing global environment and an increasingly interdependent global economy are impacting political, environmental, social and cultural dimensions of all of these regions.

### **GEOG 110 - Geography of United States and Canada (3 cr.)**

This course is an introduction to the discipline of geography that offers case studies and analysis from the United States and Canada. Themes covered in this course include surveys of physical features of the region, historic settlement and population patterns, agriculture and extractive industries, manufacturing organization, transportation systems, urbanization, environmental impact, and cultural geography.

Distribution: MR

## **GEOL - GEOLOGY**

### **GEOL 101 - Physical Geology (3 cr.)**

This is a systematic study of the planet Earth with emphasis on the forces, processes, and materials that are responsible for the more familiar land forms. Two class hours, three-hour lab or field trip.

Laboratory fee \$100.

## **HIST - HISTORY**

### **HIST 111 - United States History to 1877 (3 cr.)**

This is an introduction to U.S. history with special emphasis on the colonial period, the American Revolution, the New Nation, Westward Expansion, the Civil War, and Reconstruction.

Distribution: GUR/MR

### **HIST 112 - United States History, 1878 to the Present (3 cr.)**

This is a survey of U.S. history with special emphasis on economic revolution, U.S. involvement in World War I, the Great Depression, the New Deal, World War II, the Cold War, and contemporary America.

Distribution: MR

### **HIST 132 - Early Modern Europe 1500-1815 (3 cr.)**

This course surveys the cultural, intellectual, social, political, and economic changes in Europe between 1500 and 1815. Central themes include the contemporary understanding of the human person, class status, gender roles, and the wider world known to early modern Europeans. The course considers topics such as the Protestant and Catholic Reformations, absolutism, colonialism, the scientific revolution, the enlightenment, the French Revolution, the Napoleonic period, and the advent of industrialization.

Formerly HIST 232 Early Modern Europe 1500-1815

### **HIST 133 - Modern Europe, 1815-present (3 cr.)**

This course examines the history of modern Europe from the Congress of Vienna to the present from a political, social, cultural, and intellectual history perspective. Dominant themes include nationalism, wars and revolutions, science and industry, socialism, fascism, the welfare state, feminism, the European Union, and globalization.

Formerly HIST 233 Modern European History, 1815-present

### **HIST 140 - Stonehenge to Spice Girls: A Brief History of England (3 cr.)**

This course offers a one-semester introduction to the history of England from prehistory to the present with an emphasis on social history. It is intended primarily for non-history majors.

### **HIST 170 - Colonial Latin American History (3 cr.)**

This course surveys the fascinating history of Spanish and Portuguese colonies in America (1500-1800). How did indigenous, Iberian and African peoples change with contact and coexistence? What political

and economic institutions developed? How did socioracial and cultural identities transform? How did colonial Latin America influence global society and culture? It examines specific individuals, groups, and regions to recognize commonality and difference, as well as patterns of continuity and change over time in colonial Latin America.

Formerly HIST 270

### **HIST 171 - Modern Latin American History (3 cr.)**

This course explores the dramatic history of Latin America since independence from Spain and Portugal (1800-present). How did legacies of colonial rule shape the new nations of Latin America? How did different Latin Americans envision democracy, define citizenship, and debate equality? How did Latin Americans embrace, reject, and change capitalism? How have different peoples, cultures, and ideas created such diversity across Latin America? How have Latin Americans interacted with and influenced the United States and the world?

Formerly HIST 271

### **HIST 190 - Special Topics in History (1-3 cr.)**

Topics in history that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **HIST 201 - Technology and Society (3cr.)**

This course examines the influence of technology on the development of the modern world. Technological changes have given rise to particular forms of economic and business organization, shaped cultures, allowed the rise of mass society, and had significant political ramifications. The course will use several technological breakthroughs as case studies to examine these effects.

### **HIST 204 - Ancient Greece and Rome, 1000 BCE-300 CE (3 cr.)**

This course will cover the rise and fall of classical civilization in the Mediterranean from the Heroic Age in Greece through the decline of the Roman Empire, with particular emphasis on life in the cities of Athens and Rome.

### **HIST 205 - World History, Prehistory-1500CE (3 cr.)**

This course is an introductory survey of world history to 1500. Focusing on the rise of the world's major civilizations and religions. The emphasis is on the social and political history of Europe, Asia, Africa, and the Americas.

Distribution: GUR/MR

Formerly HIST 105 World Civilization I

### **HIST 206 - World History, 1500CE-Present (3 cr.)**

This course explores continuity and change in world history from 1500CE to the present. It asks how interactions in the past between Africa, the Americas, Asia, and Europe shaped the patterns and processes of today's world. It examines specific encounters, empires, colonies and nations to understand the interrelated histories of today's world societies, governments, economies, and cultures.

Distribution: A&SR/GUR/MR

Formerly HIST 106 World Civilization II

### **HIST 208 - Medieval Europe, 300-1300 CE (3 cr.)**

This course covers European history from the fall of Rome to the beginnings of the Italian Renaissance and explores the social, political, and cultural changes that took place during this period. Note: this course replaces HIST 307 and HIST 309 and cannot be taken for credit by students who have already taken either of those courses.

Formerly HIST 308

### **HIST 212 - London through the Ages (3 cr.)**

Cross-Listed as: ART 212

This two-week summer course taught in London covers the history and culture of the city from the Roman period to the present day, and features extensive exploration of the city and its historic sites.

Satisfies either the cultural studies perspective or historical perspective requirement.

### **HIST 251 - Early American Women's History to 1865 (3 cr.)**

The purpose of this course is to introduce students to the diverse experiences of women in American history, which until recent decades had been largely ignored. Today, however, women's history and gender studies are two of the fastest growing and most promising fields of historical inquiry, offering students new perspectives on the nation's past and providing them with a framework to assess their own lives. This particular course will focus on the early years of American history, roughly from the 1500s to the 1860s, and cover such topics as colonial gender roles, the impact of the Revolution on women's status, gender and slavery in the Old South, and women's roles in opening the West.

### **HIST 253 - War and American Society (3 cr.)**

From the woodlands of New England to the muddy trenches of France, war waged in support of American civilization has often transformed the very society and values it was meant to protect. This course examines the changes warfare has wrought upon American society from its origins in the colonial era through the emergence of modern warfare in the early twentieth century. Topics addressed include the cultural implications of war in Native American societies, the controversy over standing armies during the Revolution, antiwar sentiment, women in war, and the impact of technology upon American military strategy.

### **HIST 254 - Civil War and Reconstruction (3 cr.)**

This is an examination of the Peculiar Institution, the anti-slavery movement, the intensification of sectionalism, the secession crisis, why and how war came, the course and conduct of the war, and the reconstruction of the nation.

Formerly HIST 354

### **HIST 259 - The United States in Vietnam (3 cr.)**

This course examines U.S. policy in Vietnam within the context of Vietnamese history and culture with special emphasis on Vietnamese nationalism, the French colonial period, both Indochina Wars, and the evolution of U.S. policy from the Truman presidency through the Nixon administration.

Formerly HIST 359

**HIST 260 - The History of Pre-Colonial Africa (3 cr.)**

This is a thematic survey of the history of Africa up to the late 1890s with special emphasis on the Neolithic revolution, the rise of African states, the trans-Atlantic slave trade, and the prelude to colonialism.

**HIST 261 - Africa in the Twentieth Century (3 cr.)**

This course examines the origins of colonialism and the conquest of Africa. The development of colonial society and economy is explored on a regional basis. The course ends with the rise of new independent African states.

**HIST 289 - Sophomore Methods Seminar (3 cr.)**

Prerequisite: Six credits of 100-level history.

This course provides a general introduction to historiography and historical research methods by focusing on a specific historical problem; in this case, the ongoing debate among historians over the transition between the classical and medieval periods.

**HIST 290 - Special Topics in History (1-3 cr.)**

Topics in history that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**HIST 302 - Ancient Mesopotamia and Egypt, 4000-1000 BCE (3 cr.)**

Prerequisite: Junior standing.

This course will draw on a combination of historical and archaeological sources (from epic poems and religious texts to burials and city ruins) to explore the earliest civilizations of the Near East.

**HIST 310 - Medieval Architecture and Society (3 cr.)**

Prerequisite: Junior standing.

Cross-Listed as: ART 310

This course examines the monuments of medieval architecture in their historical context. We will study knightly castles and peasant cottages as well as the great Romanesque and Gothic abbeys and cathedrals, with the ultimate goal of learning not only about the buildings themselves but the society that created them.

Satisfies either the aesthetic perspective or historical perspective requirement.

**HIST 312 - The Renaissance: Art and Mayhem (3 cr.)**

Prerequisite: Junior standing.

This course will explore the important shift in European culture and society during the years 1300-1500, with special emphasis on the city of Florence. A wide range of cultural sources (art, literature, personal diaries, etc.) will be studied to help understand this crucial period.

Satisfies either the cultural studies perspective or historical perspective requirement.

**HIST 320 - The Twentieth Century World (3 cr.)**

Prerequisite: Junior standing.

This course explores the forces and conditions that shaped events of the fastest changing century in human history. Themes will include the World Wars, the rise and fall of the Soviet Union, colonization and decolonization, globalization, and technology.

Distribution: MR

**HIST 332 - The History of Russia (3 cr.)**

Prerequisite: Junior standing.

This course consists of brief reviews of the earliest Indo-European settlements followed by study through the Kieran state to the emancipation of the serfs. The course covers the achievements and problems of late Czarist Russia, the Revolutions of 1917, the history of Soviet Russia, and the present.

**HIST 333 - Independent Study in History (1-3 cr.)**

See "Independent Study (p. 24)".

**HIST 334 - Independent Study in History (1-3 cr.)**

See "Independent Study (p. 24)".

**HIST 336 - Early American Republic (3 cr.)**

Prerequisite: Junior standing or permission of the instructor.

This course examines the creation and evolution of the American nation from its inception in 1776 to the outbreak of the Civil War in 1861. Forged out of the fires of war and revolution, the new United States faced the difficult task of securing unto itself a republican government while establishing a role in the international community. How it did so, and with what success, will be studied through such topics as patriotism and party politics, national identity and American folklore, and the "empire of liberty" and westward expansion. New England's changing role in the early republic will be given special emphasis.

**HIST 341 - German History since 1871 (3 cr.)**

Prerequisite: Junior standing.

Taking as its starting point the foundation of Germany in 1871, this course analyzes social, cultural, and economic issues at stake as the German nation experimented with a variety of political institutions under a constitutional monarchy, the Weimar Republic, National Socialism, Cold War division, and finally reunification in 1990. Themes such as social class, gender, religion, generation, and ideology serve as tools of analysis in this investigation of modern Germany.

Distribution: MR

**HIST 343 - East German Society and Culture, 1949-1989 (3 cr.)**

Prerequisite: Junior standing.

This course is designed to introduce students to the history of East German society and culture from the foundation of the German Democratic Republic through the velvet revolution of 1989 and the demise of the regime. While the course will focus predominantly on the period 1949-1989, a brief exploration of postwar conditions and the Soviet Occupation, 1945-1949, will provide the students with sufficient historical background to better evaluate the main period under investigation.

**HIST 345 - World War II and the Holocaust in Europe (3 cr.)**

Prerequisite: Junior standing.

This course investigates the Second World War in Europe between 1939 and 1945. Students will gain a sense of the historical

background of the conflict, including the rise of Italian and German variants of fascism. Main themes include the concept of total war, Operation Barbarossa, allied campaigns, occupation and resistance, anti-Semitism, the Holocaust, the post-war settlement, and memory of the war and wartime atrocities.

### **HIST 346 - The History of the British Isles, 1870-Present (3 cr.)**

Prerequisite: Junior standing.

From the late Victorian period through to the present, this course examines the history of the British Isles including England, Wales, Scotland, and Ireland. Important consideration will be given to topics such as gender roles and experiences, class identity and class conflict, enfranchisement, imperialism, the world wars, decolonization, immigration, postwar youth culture, and globalization.

### **HIST 348 - Women and Gender in Europe Since 1700 (3 cr.)**

Prerequisite: Junior standing.

This course examines the history of women in Europe from the 18th century to the immediate post-World War II period. It will focus on how conceptions of womanhood and woman's roles changed over time, and on how these conceptions related to political and cultural life.

### **HIST 350 - Colonial America (3 cr.)**

Prerequisite: Junior or Senior Standing.

This course examines the people and events that shaped America in the years before the creation of the United States. Because the traditional focus on the English experience overlooks the influential roles of other European nations and indigenous peoples in the process of colonization, we will begin with Columbus's "discovery" of the New World and study Spanish, French, and Dutch influences on America along with the English colonization effort. The role of various Native American societies in shaping colonial America, both as rivals and allies, will also receive extensive attention.

Formerly HIST 250.

### **HIST 351 - The American Revolution 1765-1789 (3 cr.)**

Prerequisite: Junior standing.

This course examines the transformation of Britain's American colonies into the United States between 1765 and 1789. Topics discussed include the changing character of imperial politics, the problems of waging revolutionary war, and the Revolution's impact on American society.

### **HIST 355 - Watching War (3 cr.)**

Prerequisite: Junior or Senior standing.

A constant in the contemporary instruction and understanding of American history is the centrality of war. To the American public, these wars have often manifested themselves in film. As filmmakers and audiences alike strive to find the "real experience" or "real meaning" of a war in what is usually less than two hours. From the Revolutionary War to the Iraq War, our understanding of history since the invention of the motion picture has been inextricably tied to what we watch. The film industry constantly revisits and even reinvents past conflicts in their movies, in the process, shifting our collective understanding of the past and changing our attitudes toward present and future conflicts. This course will examine how

movies shape our understanding of American history and mythology, and will seek to place these films in a proper historical context.

### **HIST 356 - A City Upon a Hill: Boston, Massachusetts, 1630-1865 (3 cr.)**

Prerequisite: Junior standing.

The purpose of this course is to introduce students to the origins and evolution of Boston, Massachusetts, as both a city and a community. From its Puritan beginnings to its role in the American Revolution and later the antislavery movement, Boston has not only fascinated the general public, but also captured the imaginations of individual poets, writers, and artists. This course combines a variety of sources to explore the character of urban life and culture in the dynamic metropolis. Among other issues, we will address the importance of Boston's Puritan origins, examine its function as a commercial seaport within Massachusetts as well as both the British Empire and the American union, and assess its role in the American Revolution. Social interaction and cultural exchange among Bostonians will also constitute a major theme of the course. In this regard, we will examine life in Boston for various ethnic and racial communities, including French Catholics, African Americans, and Irish immigrants, as well as explore important sites of public interaction in the city such as Boston Common. Finally, we will also consider the means by which modern-day Boston has sought to preserve its historical landmarks amid continued urban development.

### **HIST 357 - New York City (3 cr.)**

Prerequisite: Junior standing.

New York City-as the world was reminded on September 11, 2001-is a global capital, a symbol of American dominance and vulnerability in the 21st century. The story of how the city came to occupy this position is central to the history of America and the modern world. This course is also a local history, for as countless observers have noted, New York is different. A historical analysis of the city offers a glimpse into the best and worst of all worlds, and it remains to be seen whether New York will be the model of the future or a monument to the past and what might have been.

### **HIST 358 - History of The United States Since 1945 (3 cr.)**

Prerequisite: Junior standing.

This course will begin with an examination of how America came to be so powerful in 1945, and will continue through the present, covering such themes and events as the Cold War, Vietnam, the Civil Rights Movement, the "Reagan revolution," and the paradox of affluence and poverty. The course will end with a consideration of America's challenges, opportunities, and responsibilities in the post-Cold War world.

### **HIST 365 - The Rise of Islam and the Caliphates: 500-1500 (3 cr.)**

Prerequisite: Junior standing.

This course examines the origins of the Islamic religion. Topics will include pre-Islamic Arabia, the life of Muhammad, and the rise and fall of the Rashidun, Umayyad, and Abbasid Caliphates.

### **HIST 372 - Latin American Revolutions (3 cr.)**

Prerequisite: Junior standing.

This course will examine several ways in which social movements in Latin America have been defined and analyzed by historians and

social scientists. We will consider the circumstances under which people act collectively; how people respond to revolutionary transformations; and how economic, social, and cultural contexts limit or expand the scope of such activity. We will also give special attention to evaluating the kinds of sources that social scientists (historians, political scientists, anthropologists, and economists) employ in their studies of society, action, and change. We will focus on cases from Peru, Colombia, Mexico, Bolivia, and Brazil in the twentieth and twenty-first centuries. However, this will entail investigation into the historical roots of violent and non-violent movements and broader comparisons across Latin American and world societies.

Formerly "Rioters, Rebels and Revolutionaries in Latin America"

### **HIST 373 - Women In Latin America (3 cr.)**

Prerequisite: Junior standing.

This course considers Latin American history through the lens of women's social and political mobilization in the region from the late colonial period to the present. Gender, power, and the creation of identities in Latin America will be explored. Particular attention will be paid to the relationship between the ideologies of gender, class, and race. These scholarly concerns will take us into the household, workplace, and civil society. Chronologically, the course begins in the late colonial period (1770-1810) and extends through contemporary urban popular movements (1970-2000) in order to examine different moments of social and political activism involving, motivated, or impeded by women.

### **HIST 374 - Latin America - U.S. Relations (3 cr.)**

Prerequisite: Junior or senior standing.

This course explores the intertwined histories of Latin America, the U.S. and the world (1800-present). Why have societies so connected by cultural, commercial, and migratory ties been at odds so often? How have Latin American nations forged their foreign policy and influenced others? How have Latin American perceptions of the U.S. changed over time? The course highlights social and cultural history of Latin American foreign relations, such as; perceptions of racial and cultural inferiority; military and intelligence agencies; trade and labor; radio, television, and film industry influence.

Students may register for this course as HIST or INST.

### **HIST 375 - History of Modern East Asia (3 cr.)**

Prerequisite: Junior standing.

This course examines the radical transformation of East Asia over the last 150 years, from humbled nations to world powers. For China, this course begins with the Opium War (1839-1842), after which China was forced to cede Hong Kong to the British; it concludes with the return of Hong Kong in 1997 and rising Western fears over the path China might take as the next superpower. For Japan, this course begins with its "opening" to Western trade in the 1850s, and ends with Japan seeking to find its way in the turbulent economic and cultural currents of the 1990s.

### **HIST 380 - The Development of Modern Medicine (3 cr.)**

Prerequisite: Junior standing.

This course traces the late 18th century to the present in three interrelated themes: the intellectual history of our current system of

medicine, the social history of the medical profession, and changing patterns of health and disease.

### **HIST 390 - 390-394 Special Topics in History (3 cr.)**

Prerequisite: Junior standing.

Topics of this course vary from year to year depending on faculty and student interests. This course may be repeated if topic differs.

### **HIST 480 - Internship in History (1-3 cr.)**

See "Internships (p. 25)".

### **HIST 481 - Internship in History (1-3 cr.)**

See "Internships (p. 25)".

### **HIST 490 - Junior and Senior Seminar in History (3 cr.)**

Prerequisite: Junior standing.

Topics of this course vary from year depending on faculty and students interests. This course may be repeated if topic differs.

Distribution: MR

## **HON - ARTS & SCIENCES HONORS PROGRAM**

### **HON 102 - Cities and Societies (3 cr.)**

Prerequisite: Acceptance into the Honors Program.

Cities have had a disproportionate influence on the development of human society, and it is in cities that one can best see much of the creation and interaction of cultures. This course takes a broad view of culture, including such familiar areas as art, literature, and philosophy, but also the cultures of the workplace, the family, and politics. This course fulfills the general university wide history requirement.

Offered: in fall only.

### **HON 290 - Special Topics in Honors (3 cr.)**

Prerequisite: Acceptance into the Honors Program.

The majority of Honors courses are not regular offerings, but special topics courses selected by the honors students themselves. These vary every semester and can be repeated if there is sufficient demand. Past HON 290 topics include Bach to Broadway, Cryptography and Liberty, Mind of a Serial Killer, Unanswered Questions in Science, and Videogames and Comparative Media. The course may be repeated for credit if the topic varies.

### **HON 333 - Independent Study (3 cr.)**

Prerequisite: Acceptance into the Honors Program, arrangement with a member of the honors faculty, and approval of the Honors Research Committee.

This faculty-directed research project is a supervised research project intended to allow honors students to explore an area of study in more depth than is possible in regularly offered courses. This course is intended mainly for junior honors students and cannot be taken concurrently with the senior honors project HON 495. Students can only count one faculty-directed research project toward their honors graduation requirements. See Independent Study on p. 30.

### **HON 495 - Senior Honors Project (3 cr.)**

Prerequisite: Acceptance into the Honors Program, arrangement with a member of the honors faculty, and approval of the Honors Research Committee.

This course is intended for senior honors students who are preparing their senior honors project under the supervision of a member of the honors faculty in an appropriate field.

## HONB - BUSINESS HONORS PROGRAM

### HONB 101 - Managing People and Processes in Organizations (3 cr.)

Prerequisite: Acceptance into the Honors Program or consent of the Business Honors Coordinator.

Cross-Listed as: MAN 101

This course examines the managerial function in organizations and analyzes elements of organizational behavior that impact management practice and leadership. As the honors equivalent of MAN 101, this course is distinguished by the type of work required, pace of study, and opportunities for broader consideration of core course themes. In addition, this course emphasizes critical and independent thinking to produce creative applications of ideas. Key learning outcomes include an ability to analyze and critique: the role that individual differences and perception play in influencing behavior in organizations; theories and concepts of decision-making and problem solving; theories and concepts of motivation; theories and concepts of leadership; and theories and concepts used in effective teamwork and other organizational processes.

Offered: in fall only.

May not take HONB 101 and MAN 101 (p. 249) for credit.

### HONB 200 - Marketing Concepts (3 cr.)

Prerequisite: Acceptance into the Honors Program or consent of the Business Honors Coordinator.

Cross-Listed as: MK 200

This course examines the marketing functions and analyzes the business environment that affects the development of promotion, pricing, distribution, and product/service/idea areas of the business organization. As the honors equivalent of MK200, the type of work required, pace of study, and opportunities for broader consideration of core course themes distinguish this course. In addition, this course emphasizes critical and independent thinking to produce creative applications of ideas. Key learning outcomes include an ability to analyze and comment on market strategy and tactical development. Such analysis and commentary should address environment influences, changing political, social, demographic, legal and regulatory, technological, and global marketplace environment, and the effects on the planning and execution of ethical and socially responsible marketing strategy and detailed development of the marketing mix.

Offered: in fall only.

May not take HONB 200 and MK 200 for credit.

### HONB 201 - Business Law: Principles and Process (3 cr.)

Prerequisite: Acceptance into the Honors Program or consent of the Business Honors Coordinator.

Cross-Listed as: BL 201

This course provides students with an introduction to the legal system and key principles of business law including the State and Federal

Court System, torts, negligence, defamation, and contracts. Students will also engage in an in depth examination of legal processes including alternative dispute resolution options, legal research and writing, and preparing for and participating in a business related trial. Students will gain hands-on experience in business law processes through legal simulations, examination of business law case studies and legal research and writing. Key learning outcomes for this course include enhancing students' abilities to communicate the positions of the parties to a legal conflict; differentiate between the boundaries of law, ethics and sound business decision-making; and evaluate and determine the best course of legal action in business management, problem-solving and decision-making.

Offered: in fall only.

May not take HONB 201 and BL 201, BL 360 or BL 403 for credit.

### HONB 202 - Effective Information Systems for Today's Business (3 cr.)

Prerequisite: BIS 102 and acceptance into the Honors Program or consent of the Business Honors Coordinator.

Cross-Listed as: BIS 202

This course is an introduction to Information Systems as a discipline including a survey and overview of the role and functions of IS in a business organization, IS job functions and career paths, and the nature and vocabulary of major information systems technologies. The course explores the role of IS in advancing the digital economy and as a competitive tool for business. Course includes hands-on work with SAP software to introduce the concept of Enterprise Resource Planning ("ERP") and show the relationships between the different business functions.

Offered: in fall only.

May not take HONB 202 and BIS 202 for credit.

### HONB 203 - Financial Accounting: The Language of Business (3 cr.)

Prerequisite: MATH 115, MATH 111 or MATH 123 and acceptance into the Honors Program or consent of the Business Honors Coordinator.

This course is the introductory financial accounting course for students enrolled in the Business Honors Program in the College of Business. This course exposes students to the basic concepts and issues of financial reporting, including critical analysis of the four primary financial statements. The emphasis is on the interpretation and use of the financial accounting information to make informed decisions. Key outcomes include an understanding of underlying accounting concepts/principles, the accounting information process, the elements of the primary financial statements, and the role of financial accounting in the economy. Cases and financial statements of actual companies are used to stimulate critical and independent thinking, as well as creative application of concepts learned in class.

Offered: in fall only.

May not take HONB 203 and AC 201 for credit.

### HONB 450 - Strategic Thinking and Action in Organization (3 cr.)

Prerequisite: BUS 326 or BUS 312, and BIS 310 or BIS 312, and acceptance into the Honors Program or consent of the Business Honors Coordinator.

This honors strategy course expects students to go beyond a simple understanding of business strategy to more thoroughly examine

strategic thought and practice. As such, the course involves a more demanding and rapid-pace than BUS 450 in the examination and application of strategic analysis, planning, implementation, and evaluation undertaken in the development of organizational strategy. Students will critically examine the relationships and influences between environment, organizational structure, and strategy. Key learning outcomes include the application, examination, and evaluation of key elements in the strategic management process - including internal and external strategic analyses, traditional and non-traditional measures of organizational performance - and the basis and relevance of strategic management theories.

Offered: in fall only.

May not take HONB 450 and BUS 450 for credit.

Can not be taken concurrently with BUS 326 or BUS 312.

### **HONB 495 - Senior Honors Project (3 cr.)**

Prerequisite: Acceptance into the Honors Program and approval of College of Business Honors Research Committee.

This course is designed to provide an opportunity to work on an independent research or creative endeavor. Senior student works one-on one with a faculty mentor who is familiar with the field. The course plays a capstone role in completing the Business Honors Program.

## **HONE - ENGINEERING HONORS PROGRAM**

### **HONE 102 - Engineering Seminar (1 cr)**

Prerequisite: Acceptance to College of Engineering Honors Program

This seminar course is designed to introduce first- year honors engineering students both to the engineering profession and to the practice of engineering as it relates to their university experience. It enables students to further develop academic and life management skills and to learn how to use University resources.

As the honors equivalent of ENGR 102 the type of work required, and opportunities for broader consideration of core course themes distinguish this course. Students will also gain additional hands-on experience in the practice on engineering through their participation in the complementary ENGR 103 course. Students will be assessed through performance on homework, written reports, and by participation in course activities.

May not take HONE 102 and ENGR 102 for credit.

### **HONE 105 - Computer Programming for Engineers (2 cr)**

Prerequisite: Acceptance to College of Engineering Honors Program

This is an introductory course in the design of software solutions to engineering problems using software capable of being programmed by the user.

As the honors equivalent of ENGR 105, the type of work required, pace of study, and opportunities for more depth and breadth of course themes distinguish this course. Students learn procedural approaches to designing small to medium-scale programs. After successfully completing this course, students understand the issues involved in moving from a general problem statement to a software solution. Students learn a variety of software design solution techniques. They develop skills in logic, algorithm design, and data structure design and debugging. They apply these skills to a variety of engineering, mathematical, and numerical method problem areas. The methods of assessing student learning in the course are homework assignments;

weekly quizzes; in-class, project-type programming assignments; and exams.

May not take HONE 105 and ENGR 105 for credit.

### **HONE 110 - Data Acquisition and Processing (3 cr)**

Prerequisite: Acceptance to College of Engineering Honors Program

This is a follow-on course to ENGR103, Introduction to Engineering , to further develop basic skills in engineering and start developing skills in entrepreneurship.

As the honors equivalent of ENGR 110 the type of work required, pace of study, and opportunities for broader considerations of core course themes distinguish this course. In this course you learn about computer-aided data acquisition and processing, as well as, applying what you have learned to date in a product innovation competition. Through a series of laboratory experiences, students will learn the principles necessary to design, implement, and analyze computer-controlled experiments as well as continuing to develop their design skills (both necessary for product design). Industry standard LabVIEW and Arduino are the learning platforms. The methods of assessing student learning in the course are homework assignments, weekly quizzes, laboratory experiments and exams.

May not take HONE 110 and ENGR 110 for credit.

### **HONE 202 - Mechanics I-Statics (3 cr)**

Prerequisite: Acceptance to College of Engineering Honors Program and MATH 134 and PHYS 133

This course is designed to teach problem-solving techniques and to provide students with the necessary background to take succeeding courses in solid mechanics.

As the honors equivalent of ME 202 the type of work required, pace of study and opportunities for broader considerations of course themes distinguish this course.

May not take HONE 202 and ME 202 for credit.

### **HONE 205 - Circuits I - Electrical Engineering (4 cr)**

Prerequisite: Acceptance to College of Engineering Honors Program and pre- or co-requisite MATH 236 and PHYS 134

Students will learn about the static and dynamic behavior of resistors, capacitors, and inductors, the type of electrical energy sources used, the rules used to analyze electrical circuits, to analyze DC and AC circuits for power flow and response characteristics, how to analyze and design op amp circuits used in instrumentation applications, and how to analyze and test Combinational Logic Circuits as applicable to simple industrial and domestic control settings.

As the honors equivalent of EE 205 the type of work required, pace of study and opportunities for broader considerations of course themes distinguish this course.

Three class hours, three lab/tutorial hours.

May not take HONE 205 and EE 205 for credit.

### **HONE 240 - Undergraduate Research (1-3 crs.)**

Prerequisite: Acceptance to College of Engineering Honors Program

A limited number of students may undertake supervised research if they show interest in and aptitude for independent and creative work. Approval of the College of Engineering Honors committee is required.

(See Undergraduate Research on page 34)

### **HONE 290 - Special Topics in HONE (3 crs.)**

Prerequisite: Acceptance to College of Engineering Honors Program

Some of the Honors courses are not regular offerings, but special topic courses selected by the honors students themselves and/or the major department. These vary every semester and can be repeated if there is sufficient demand.

### **HONE 333 - Independent Study (3 crs.)**

Prerequisite: Acceptance to College of Engineering Honors Program and sophomore standing.

A limited number of students are accorded the opportunity to pursue course work through supervised independent study. Approval of the College of Engineering Honors committee is required.

(See Independent Study on page 33)

### **HONE 340 - Undergraduate Research (1-3 crs.)**

Prerequisite: Acceptance to College of Engineering Honors Program and junior standing.

A limited number of students may undertake supervised research if they show interest in and aptitude for independent and creative work. Approval of the College of Engineering Honors committee is required.

(See Undergraduate Research on page 34)

### **HONE 390 - Special Topics in HONE (3 crs.)**

Prerequisite: Acceptance to College of Engineering Honors Program and junior standing.

Some of the Honors courses are not regular offerings, but special topic courses selected by the honors students themselves and/or the major department. These vary every semester and can be repeated if there is sufficient demand.

### **HONE 480 - Internship (3 crs.)**

Prerequisite: Acceptance to College of Engineering Honors Program and junior standing.

Juniors or Senior students may undertake an internship for credit with an approved agency, organization or business. This opportunity furthers a student's knowledge in a specialized area in a way not customarily available within the regular classroom setting. The amount of internship credit that may be counted toward the degree is limited to three (3) credit hours.

(See Internship on page 34)

### **HONE 490 - Special Topics in HONE (3 crs.)**

Prerequisite: Acceptance to College of Engineering Honors Program and senior standing.

Some of the Honors courses are not regular offerings, but special topic courses selected by the honors students themselves and/or the major department. These vary every semester and can be repeated if there is sufficient demand.

### **HONE 495 - Senior Honors Project (3 crs.)**

Prerequisite: Acceptance to College of Engineering Honors Program and senior standing.

This course is intended for senior honors students who are preparing their senior honors project under the supervision of a member of the faculty of the appropriate engineering major.

## **HS - HEALTH SCIENCES**

### **HS 290 - Special Topics in Health Sciences (3-4 cr.)**

Prerequisite: Sophomore standing.

Topics in health sciences that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

Distribution: MR

### **HS 333 - Independent Study in Health Sciences (1-3 cr.)**

Distribution: MR

A lab fee may be required.

### **HS 334 - Independent Study in Health Sciences (1-3 cr.)**

Distribution: MR

A lab fee may be required.

### **HS 390 - Special Topics in Health Sciences (3-4 cr.)**

Prerequisite: Junior standing.

Topics in health sciences that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

Distribution: MR

### **HS 440 - Undergraduate Research in Health Sciences (1-3 cr.)**

Prerequisite: At least Senior standing.

See "Undergraduate Research (p. 25)".

Distribution: MR

A lab fee may be required.

### **HS 480 - Internship in Health Sciences (3 cr.)**

See Internships (p. 25)

Distribution: MR

## **IE - INDUSTRIAL ENGINEERING**

### **IE 212 - Probability and Statistics (3 cr.)**

Prerequisite: MATH 134 or concurrently.

This is a basic study of probability and statistical theory with emphasis on engineering applications. Students become knowledgeable of the collection, processing, analysis, and interpretation of numerical data. They learn the basic concepts of probability theory and statistical inference, and become aware of techniques of statistical design.

Distribution: ER/MR

### **IE 302 - Human Factors in Design Engineering (3 cr.)**

Prerequisite: ENGR 110 and IE 212

This course offers an introduction to the design of systems to fit the human user for the purpose of improving user efficiency, safety, decision-making, safety, and job satisfaction. Topics include both physical and cognitive aspects of human factors engineering. Course will include opportunities for hands on data-collection and an experiment- focused student project.

Distribution: MR

Formerly Human Factors in Design

### **IE 308 - Work Analysis and Design (3 cr.)**

Prerequisite: IE 212.

This is a study of past approaches and current trends in designing effective and efficient work systems. Included are investigation and practice of the creative process, design and development procedures, implementation, and problem solving. A major design and problem-solving project is required.

Distribution: MR

### **IE 312 - Engineering Economic Analysis (3 cr.)**

Prerequisite: IE 212

Corequisite: or IE 212

This is a study of the economic evaluation and comparison of engineering designs and project alternatives. Topics include the effects of cash-flow patterns, earning and inflationary powers of money, interest-rate characteristics, financing, and taxes on capital investments. Emphasis is on corrective actions.

Distribution: MR

### **IE 315 - Quality Control and Engineering Statistics (3 cr.)**

Prerequisite: IE 212

This course studies statistical techniques used in analyzing experimental results and quality control. Topics include data analysis,

regression, design of experiments, statistical process control, control charts, and process capability analysis.

Distribution: MR

### **IE 318 - Mathematical Programming for Engineers (2 cr.)**

Prerequisite: IE 212

This course will be an introduction to mathematical programming, with an emphasis on techniques for the solution and analysis of deterministic linear models. The primary type of model to be addressed is linear programming. The main emphasis will be on mathematical modeling of problems common to industrial engineers. This course will also emphasize effective modeling techniques, solutions methods such as the simplex and revised simplex methods.

Additionally, the course will introduce effective modeling techniques and commercial solvers such as MS Excel/Solver, LINGO, and CPLEX.

Distribution: MR

Formerly Industrial Design Laboratory I

### **IE 326 - Production Planning and Control (3 cr.)**

Prerequisite: IE 212.

This is an introduction to quantitative production management. Topics include inventory control, production planning, master production scheduling, capacity planning, and techniques for shop floor control. The relationships between a company's manufacturing, marketing, and financial functions are included.

Distribution: MR

### **IE 328 - Lean Six-Sigma for Engineers (2 cr.)**

Prerequisite: IE 212

This course will introduce the students to both the theory and application of contemporary quality improvement techniques. The course will cover Six Sigma methodology, and problem-solving tools to improve cost, quality, time and variability. The main emphasis will be on process improvement tools and methodologies and the integral elements of a total quality management for both manufacturing and service organizations. Additionally, the course will discuss approaches for designing quality into products and processes.

Distribution: MR

One class hour, three-hour lab.

Formerly Industrial Design Laboratory II

### **IE 334 - Computer Simulation and Design (3 cr.)**

Prerequisite: ENGR 105, IE 326, and IE 212

This is a study of discrete-event simulation and its use in the analysis and design of systems. The focus is on the analysis of manufacturing systems such as assembly lines, material handling systems, and production processes. Students write programs using traditional programming languages and simulation software.

Distribution: MR

### **IE 335 - Independent Study in Industrial Engineering (3 cr.)**

See □Independent Study□ on p. 32 of catalogue

Distribution: MR

### **IE 410 - Engineering Project Management (3 cr.)**

Prerequisite: Junior or senior standing.

Corequisite: Corequisite for IE students: IE 439.

This course studies the use of conceptual, analytical, and systems approaches in managing engineering projects and activities. Major topics are development and writing project plans including project proposals, project scopes, work breakdown structures, network diagrams, project schedules, and presentations. Other topics include the people side of engineering and project management, communication, and documentation. An industrial project is required.

### **IE 419 - Industrial Engineering Computer Applications (3 cr.)**

Prerequisite: ENGR 110, ENGR 212 or IE 212.

Corequisite: IE 326.

This is the study of contemporary computer tools toward industrial engineering. Students design, develop, and deploy computer applications or as applications which can be implemented via the Internet. These applications are developed for inventory and production control systems, statistical application, database/data mining applications, and for software system integration. Software tools and packages utilized include: XML, Javascript, Java, MATLAB, MSVBA, and MS Access.

### **IE 420 - Industrial Engineering Operations Research (3 cr.)**

Prerequisite: IE 212, MATH 235.

This course is applicable for undergraduate students interested in exploring current topics in the field of Operations Research. Issues discussed may include emergency management/response, healthcare, risk management/modeling, financial engineering, and supply chain management. The course will be project-based and utilize recent literature which will be discussed, analyzed, and possibly extended.

Distribution: MR

Formerly "Contemporary Issues In Operations Research"

### **IE 422 - Industrial Safety and Hygiene (3 cr.)**

Prerequisite: ENGR 212 or IE 212.

This is a study of issues related to human interaction(s) within a workplace. The focus is on industrial safety and hygiene in workplace design. Other topics include: the principles of industrial hazard avoidance and the roles of NIOSH and its relationship with OSHA.

This course is a prerequisite.

### **IE 424 - Computer Integrated Manufacturing (3 cr.)**

Prerequisite: ME 322.

This is a study in the issues related to computer-integrated manufacturing and the integration of automated processes within a modern manufacturing environment. The focus is on engineering

design, modeling and applications in automation, flow lines, robotics, numerical control, and computer usage in manufacturing.

### **IE 426 - Production Design (3 cr.)**

Prerequisite: IE 326 or permission of the instructor.

This course studies advanced topics in production planning and control, operational modeling, and network scheduling. A design project is required.

### **IE 428 - Facility Design & Material Handling (2 cr.)**

Prerequisite: IE 212 and IE 318

This course will provide students with the fundamental concepts, theory and procedures for the study of facilities design and location; physical layout; material flow principles; and material handling. The course will discuss product design, process planning and schedule design in the development of analytical procedures for facility design and material handling. Additionally, students will use software to supplement the decision-making process in the design, rationalization and improvement of factory and office layouts.

Distribution: MR

One class hour, three-hour lab.

Formerly Industrial Design Laboratory III

### **IE 429 - Design and Analysis of Experiments (3 cr.)**

Prerequisite: IE 212 or equivalent.

This course deals with the design of experiments, the application of analysis of variance, regression analysis, and related statistical methods. The goals are to learn how to plan, design, and conduct experiments efficiently and effectively and learn how to analyze the resulting data to obtain objective conclusions. Experimental design and analysis are investigated.

Distribution: MR

### **IE 439 - Senior Design Projects I (3 cr.)**

Corequisite: Graduating senior status.

Project management material covered in IE 410 is applied to business and industry problems. Each student develops a complete senior project plan in an industrial setting, obtains approval by a faculty and industrial project advisor, and makes an oral presentation of the proposal to the faculty. Guest lecturers relating to patents, technical writing, ethics, engineering registration, and other professional concerns are included.

Distribution: MR

### **IE 440 - Senior Design Projects II (3 cr.)**

Prerequisite: IE 439.

The student works on an independent engineering project under the supervision of a project advisor. The design process is emphasized. Progress reports and a final written report are submitted to the student's project advisor. Oral presentations of reports are made before the faculty and students. A student who selects a project suggested by industry has the opportunity of working with an industrial sponsor in an actual engineering experience.

Distribution: MR

### **IE 480 - Internship in Industrial Engineering (3 cr.)**

See "Internships (p. 25)".

### **IE 482 - Industrial Engineering Research (1-3 cr.)**

Prerequisite: Junior or Senior Standing.

See "Undergraduate Research" in catalogue.

Distribution: MR

Variable credits 1-3 cr.

### **IE 490 - Special Topics in Industrial Engineering (3 cr.)**

This is a study of an advanced topic in engineering of special interest to industrial engineering majors, but not offered on a regular basis.

## **ILP - INTEGRATED LIBERAL AND PROFESSIONAL**

### **ILP 210 - Cultures and Emerging Markets (3 cr.)**

The forces of globalization under way today offer many new avenues of contact, linking together economies and cultures at an unprecedented pace. This course takes a look at emerging markets of the developing world, where exciting new growth opportunities are accompanied by serious challenges stemming from poverty, inadequate infrastructure, poor governance, and cultural barriers. We will incorporate insights from the social sciences as we seek to better understand and interpret the wide range of experiences with development and chart what new directions these societies are heading.

### **ILP 212 - American Art and American Culture (3 cr.)**

American art both reflects and influences the culture in which it is created. This course will provide students with the opportunity to explore the evolution of major American art movements, styles, and artistic elements from the 18th century to the present and their connections to the cultural ideas of the time. Iconic works of American painting, sculpture, photography and architecture will be visually read and discussed. Selected readings, and a museum visit will supplement the visual analysis to highlight the connection between the art and the cultural context of the period. The class will include visual analysis techniques to look at and discuss a work of art using standard art terminology. Students will have the opportunity to investigate in-depth either a work of art or an artist as representative of an American art movement of their choice.

### **ILP 221 - Sounds & Symbols (3 cr.)**

This course will examine the relationship between language and music across time as basic forms of human communication, as well as how that has impacted music history. It also will look at professions for which the relationship between music and language is particularly central, such as music composition and music criticism.

### **ILP 225 - Gender and Work (3 cr.)**

Students are introduced to sociological and managerial perspectives on gender and work, including a consideration of standards for social research and its usefulness in a managerial setting. The focus of the course is on an analysis of the quality of social research and on its relevance and application in managerial settings.

### **ILP 230 - Business and the Global Environment (3 cr.)**

Prerequisite: Sophomore standing.

This course focuses on political, cultural, economic, and social elements related to globalization of the business environment and covers a broad spectrum of issues. Learning outcomes are focused on the recognition and understanding of concepts and practices with respect to: the economics of international monetary and banking systems; the nature of regional economic integration; theories of international trade; the organization of global firms; cross-cultural marketing issues; international legal frameworks and trade organizations; and ethics and social responsibility.

Sustainability majors must take SUS 230.

Distribution: CR

### **ILP 234 - Our Nuclear World (3 cr.)**

Prerequisite: Sophomore standing.

In this course, we examine how the development and employment of nuclear technologies may have both positive and negative consequences. This course discusses in detail the social, geopolitical, and scientific implications associated with the use of nuclear technologies. Such uses include: electric power production, weapons, medical applications, non-destructive testing, food preservation, and radioactive dating. The first part of the course uses the principles of natural science to explain the fundamental science behind the various nuclear technologies in use all around us today. Also, it will address some of the practical benefits and problems created by this usage. The working premise for the liberal perspective of Our Nuclear World is the Thomas Theorem: "If men define situations as real, they are real in their consequences." From this position, we examine the history and social, economic, and geo-political impact of nuclear power, nuclear weapons, and nuclear medicine, etc. Using sociological thought regarding culture (values, beliefs, and norms), social structure (social class, social status, social power), and social institutions (economy, politics, media, national security), we seek to explain the social forces behind the development, promotion, and resistance to the nuclear age. Finally, we try to make all of this relevant to your life.

Distribution: CR

### **ILP 235 - Global Sustainability Management (3 cr.)**

Prerequisite: Sophomore standing and permission of instructor.

This travel/study course explores the impact of organizational activities on sustainability through trips of one-to-three week's duration during school breaks that are chaperoned and supervised by a faculty member. These trips take students outside the geographic borders of the U.S. and provide learning experiences beyond the classroom environment. The course involves research and discussion of environmental issues relevant to the country being visited, and programs and activities that enhance the ability of students to comprehend, analyze, and grasp different aspects of sustainability that are the responsibility of organizations in the global environment. The major goal of the course is to allow undergraduate students opportunities to understand the relationship between the science of environmental sustainability and the efforts of organizations to

support environmental responsibility. The course may be repeated for credit if the location/topic varies.

### **ILP 236 - Global Warming (3 cr.)**

This ILP course will first address the physical laws and underpinnings of the observed global warming trend. Changes in the atmospheric abundance of greenhouse gases and aerosols and in land surface properties, that alter the energy balance of the climatic system and the preexisting greenhouse effect, will be investigated. Model projections for future climates will be discussed. The investigation of the physical science basis will be followed by an assessment of the observed and projected global and local impacts of the climatic changes and the adaptations and vulnerabilities of natural, social, and economic systems impacted by these changes. Finally the proposed political solutions addressing these threads, (local and global) especially as expressed and outlined in the Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC) a panel under the joint auspices of the United Nations and the World Meteorological Organization will be discussed.

Sustainability majors must take SUS 236.

Distribution: CR

### **ILP 237 - Forensic Physics (3 cr.)**

Prerequisite: PHYS 103 or PHYS 123 or PHYS 133.

This ILP course will focus on the application of basic physics concepts to Forensic Science with an emphasis on the quantitative analysis of real and contrived cases. It will expose the students to actual methods and techniques used by investigators in the field of Forensic Physics. The science of physics is especially important when dealing with ballistic evidence where the trajectory of a bullet is in question (kinematics). Physics is needed to aid in accident reconstruction, resolving the many different forces at work in order to explain how an event may have happened (Newton's laws, collisions, energy). Other topics are, e.g., the physics of explosions and arson (thermodynamics), analysis of bloodstain patterns (kinematics), and the use of physical and geometric optics principles to develop latent fingerprints.

### **ILP 238 - Global Health and Technology (3 cr.)**

This course provides a multidisciplinary study of the intersection between global health issues and the technologies being developed to resolve them. Major questions that will be addressed during the course include: (1) What are the major health problems facing the world today? (2) Who pays for healthcare and how does this vary regionally? (3) How can technology be used to solve global health issues? The course content and assignments reflect the integrated liberal and professional approach to learning through graphical analysis of biomedical data, examination of cultural and economic issues, and both written and oral communications regarding the social implications of technology development.

At the conclusion of the course, students embark on a faculty-led trip to Guatemala, where they investigate healthcare in the region.

### **ILP 240 - Football w/o Helmets: Soccer & Rugby (3 cr.)**

The team sports industry in the UK is alive and well even with the four major US professional team sports having little or no presence. This course examines two of the most popular professional team sports in the UK, football and rugby. The course focuses on the structural, cultural, and economic aspects of these two sports focusing on the similarities to their counterparts in the US.

### **ILP 250 - AIDS: A Global Pandemic (3 cr.)**

Prerequisite: Sophomore standing.

This course explores the origins and history of the HIV/AIDS pandemic, the socio-economic factors related to the epidemiology of the disease and the impact of the disease. Much of the course's content will focus on sub-Saharan Africa, which is the epicenter of the pandemic. The globalization of the disease and the increasing interdependence of countries and regions requires discussion and readings that take a national and international approach.

Formerly ILP 350.

### **ILP 251 - The Economics of Social Policy: Deciding How Your Money Is Spent (3 cr.)**

Prerequisite: Sophomore standing.

This course examines how economic theory assists in examining and explaining the social policy choices we all make as citizens. This integrated liberal arts and professional course will cover policy issues such as welfare reform, healthcare, Social Security, and immigration. Student debates will be required.

### **ILP 252 - Based on a True Story: Films That Inspire (3 cr.)**

Prerequisite: Sophomore standing.

This course combines social work professional knowledge, values, and skills that relate to community organization and the promotion of social justice with psychological and sociological explanations of why some people choose to act in the face of oppression, while others become bystanders, victims, or collaborate with the aggressor. The course will be taught using films based on true stories of people who took action to combat oppression.

### **ILP 253 - Justice Then and Now (3 cr.)**

Prerequisite: Sophomore standing.

This course will consider the development of the Hellenistic world, the growth of the Roman Republic, the transition to the Principate, and then the Dominate. Lectures and readings will survey Roman Literature, Philosophy, Law, Religion, and the rise of Christianity. Attention will be given specifically to the Roman practice of criminal law and procedure-apprehension, trial, and punishment-comparing this practice to that of England in the 18th century and America of today.

Formerly CUL 251.

### **ILP 314 - Textiles Through Time (3 cr.)**

Prerequisite: Junior standing.

This course will examine the history, sociology, aesthetics, economics, and inventions related to textiles. We will move through time looking at the change in choice of textile production from natural fibers to manufactured fibers exploring what drove these changes and the applications of various textiles as they became available.

### **ILP 317 - Management Issues for Professionals (3 cr.)**

Prerequisite: MATH 111 or MATH 123 or MATH 133.

Managerial economics is part of the education of managers, engineers, and other professionals who are involved in decision-making. It provides a framework for assembling information and analyzing alternative decisions. The principle problems studied are

those of optimization, forecasting, risk avoidance, and business decision making. Its principle tools are drawn from economic theory and statistics. Calculus and numerical calculations are used to develop and analyze the data that theory has demonstrated to be relevant.

### **ILP 320 - The Moving Image (3 cr.)**

Prerequisite: Sophomore standing.

This course provides an introduction to the skills necessary when writing for the media in various forms-non-fiction, speech-writing, broadcast and print journalism, and film documentaries. Students will do research and preparation to enable them to create their own media products, considering how their ideas can be translated creatively into effective sound and moving images, into something functional in the everyday world. They will also learn to transform the purely functional into a product with satisfying aesthetic, educational, and ethical dimensions.

### **ILP 353 - Leadership and Team Skills (3 cr.)**

Prerequisite: Junior/senior standing.

Cross-Listed as: MAN 353

This course provides the opportunity to examine leadership issues from historical, sociological, and psychological perspectives, and to practice leadership and group skills within the classroom. Readings from historical biographies, sociology, and psychology will be used to gain insights into a range of leadership qualities and abilities. Students will also take a number of assessment instruments that will help them determine their own leadership profiles and will guide them in refining their skills during the semester. Students will be assigned to a specific small group that will perform an array of activities and serve as the context for personal skill building. Students will learn how to analyze a variety of leadership functions and develop a reflective practice that will enable them to continue to perfect their leadership skills in the future.

### **ILP 365 - Emergence of Modern Marketing (3 cr.)**

Prerequisite: Junior standing.

The purpose of this course is to introduce students to the emergence of modern marketing through "characteristics of persistent, systematic, and increasingly widespread marketing methods adopted by businesses from the nineteenth century onwards." Issues investigated include selling, advertising, branding, pricing, promotion, market research, and product planning and development. A case-based approach to the investigation of the history and context behind these pivotal moments in marketing and marketing practice is the basis for instruction in this course.

### **ILP 367 - Baseball and American Culture: The Evolution of a Pasttime (3 cr.)**

Prerequisite: Sophomore standing.

This course seeks to explore the various relationships between baseball and American culture, focusing on the role of business and baseball; the way in which baseball has been used to define boundaries for American identity, particularly along the lines of race, gender, and ethnicity; the uses to which baseball has been put within different art forms, including fictional literature, poetry, music, theater, and film; and how baseball has played a significant role in the creation and maintenance of print and broadcast media institutions.

### **ILP 369 - Problem Solving Through Design (3 cr.)**

Prerequisite: Junior or senior standing.

This course is intended for all majors. The course will focus on systematic approaches to problem-solving through design. Design is the process to achieve desired transformation from the current state to an improved state. Everyone does this, whether it is a simple activity or finding the solution to a complex problem. Students will gain understanding of defining criteria and restrictions that influence designs and how designs influence culture and society.

### **ILP 370 - Human Genome Project (3 cr.)**

Prerequisite: Junior or senior standing.

This 300-level course is targeted at both non-science and science majors intrigued by the potential this new research has for affecting their lives, and the lives of their friends and family, particularly regarding health issues. The current learning objectives for this course include, but are not limited to: (1) a basic understanding of how genetics works; (2) a basic understanding of the history of the HGP; (3) an understanding of some of the potential benefits of new genetic and reproductive technologies; (4) an understanding of the inherent conflicts associated with new genetic technologies and the ethical issues associated with these conflicts, for example, concerns about access—who is denied benefits, who gains the benefits; and (5) an understanding of the civil responsibility in guiding both the research and its ultimate applications. Students will be introduced to the history and motivation for the project, the fundamentals of genomics, and applications of the HGP. The second part focuses on the ethical, legal, and social implications (ELSI) of the research.

### **ILP 375 - Exploring Public Opinion (3 cr.)**

Prerequisite: Junior/senior standing.

In this course, students will learn the basics of public opinion polling within the broader context of rhetoric and the "public sphere." Readings in rhetoric and culture criticism will frame the work that students do in constructing surveys, selecting samples, and conducting public opinion polls for clients on and/or off-campus. Practical and theoretical perspectives will be employed.

### **ILP 380 - Investigative Reporting (3 cr.)**

Prerequisite: Junior or senior standing.

This course allows all students to gain knowledge of criminal investigation, criminal procedure, and criminal law while conducting research and writing of investigative reports. An investigative reporter needs to have an open mind while spending considerable time researching and preparing a report in order to arrive at the truth. Reporters need a clear and concise knowledge of the criminal justice system before beginning their research. Students will be responsible for weekly readings in criminal investigation, trials, and appellate hearings on death row inmates. Each student will write weekly investigative reports in a specific area of the criminal justice system. Students will pair up to write and present in class a final investigative report on death row inmates to determine whether or not such inmates are guilty or raise concern of a wrongful conviction. This course serves a dual purpose in preparing students in the criminal and investigative way of reporting as well as the opportunity to view and report the facts of a case in an open-minded procedure by establishing the truth of the matter. This course emphasizes the integration of behavior science (criminal justice and political science) and communicating (communications) to the public in written form of the issue at hand.

### **ILP 388 - Sexuality and Sexual Assault in our Society (3 cr.)**

The first part of the course explores cultural, political and socio-economic factors with regard to communication and sexual relationships, sexual behaviors, gender roles, sexual orientation, sexual disorders, and sexually transmitted diseases. The remainder of the course discusses sexual assault in our society from cultural, legal, psychological, and political perspectives with an emphasis on awareness, prevention, and treatment. The course engages guest lecturers in the field to enhance the professional perspectives. The course will use a combination of primary research literature, textbook material, and popular literature to illustrate the variety of perspectives.

### **ILP 389 - Issues in Adolescence (3 cr.)**

Students will be introduced to theories of adolescent development to prepare them for a practical experience working in an alternative high school environment. This experience will include the opportunity to observe, teach, advise, assess, counsel, and interview at-risk youth.

## **ILSP - INTEGRATED LIBERAL STUDIES PROGRAM**

### **ILSP 480 - Internship (1-3 cr.)**

Internship experiences typically occur within the context of major or minor academic disciplines. From time to time, however, there are opportunities that fall outside the confines of the major, but yet provides career experience.

### **ILSP 481 - Internship (1-3 cr.)**

Internship experiences typically occur within the context of major or minor academic disciplines. From time to time, however, there are opportunities that fall outside the confines of the major, but yet provides career experience.

## **INST - INTERNATIONAL STUDIES**

### **INST 100 - Global Intercultural Orientation (2 cr.)**

This course is designed for students who are preparing to study and/or work abroad. Studying abroad is a unique opportunity that more and more students are taking advantage of in an effort to become more worldly, improve their employment prospects after graduation, and to gain a better understanding of different political and economic systems, dissimilar cultures, histories, and norms, divergent religious beliefs and practices, as well as the diversity of languages that are spoken in our increasingly globalized world. The ultimate goal of this course is for students to be better prepared for what they will experience when they travel abroad in order that they can make the most of their overseas travels and experiences.

Distribution: MR

### **INST 101 - Introduction to Contemporary Global Issues (3 cr.)**

Cross-Listed as: POSC 101

The course examines numerous social, cultural, economic, and political issue areas from the vantage points of global community and global citizenship. Areas such as the regulation of business, the spread of technology, environmental pollution, health, poverty, crime, human rights, immigration, education, and democracy as well as war and peace, are analyzed within the context of globalization.

Distribution: MR

This course is a prerequisite.

### **INST 190 - Special Topics in International Studies (1-3 cr.)**

Topics in international studies that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **INST 290 - Special Topics in International Studies (1-3 cr.)**

Topics in international studies that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **INST 480 - Internship in International Studies (1-3 cr.)**

See "Internships (p. 25)".

Distribution: MR

### **INST 481 - Internship in International Studies (1-3 cr.)**

See "Internships (p. 25)".

Distribution: MR

### **INST 490 - Seminar in International Studies (3 cr.)**

Prerequisite: Senior standing and 15 credit hours of international studies or permission of the instructor.

This is an exploration of selected topics in international studies with an emphasis on developing research analytical skills. These skills are incorporated into a research project on a topic selected by the student. This course may be repeated if the topic differs. All senior international studies majors are required to enroll in this course.

Distribution: MR

## **INTB - INTERNATIONAL BUSINESS**

### **INTB 251 - Introduction to International Business (3 cr.)**

Prerequisite: Sophomore Standing.

This course serves as an introduction to the vocabulary and concepts of international business and to the challenges that face business firms conducting activities across national borders. Key learning outcomes include: international business terms and concepts, cultural variables that affect business practices, different types of economic, political and legal systems and their impact on business, and the financial and regulatory frameworks of international commerce.

### **INTB 465 - Seminar in International Business (3 cr.)**

Prerequisite: Senior Standing and International Business Major.

The course examines contemporary issues in international business. Key learning outcomes focus on current events and issues in the international domain, and to the integration of international business concepts and theories for addressing them. Strategies for international business career determination and implementation are emphasized.

Distribution: MR

### **INTB 480 - Internship in International Business (3 cr.)**

See "Internships (p. 25)".

Distribution: MR

**IT - INFORMATION TECHNOLOGY****IT 101 - Introduction to Computing (4 cr.)**

Cross-Listed as: CS 101

This course is designed to introduce the student to various fields of computing in order to help them make an informed choice about which career path they would like to pursue. Topics include data representation, hardware, system and application software, communications, the systems development life cycle and the basics of computer programming. Comparison of the fields will be ongoing throughout the course. Programming basics will be explored using a programming language.

Distribution: GUR/MR

Offered: in the fall semester.

Three hours of lecture and three hours of lab per week.

This course is a prerequisite.

Laboratory fees \$50.

**IT 102 - Introduction to Programming (4 cr.)**

Cross-Listed as: CS 102

Covers problem solving with programming in greater detail. Students learn to apply fundamental imperative, procedural constructs to solve common programming problems, as well as the beginnings of object oriented programming (e.g., defining classes, instantiating objects, using objects, and using application programmer's interfaces). Students learn to design and develop small programs using a procedural, imperative programming language and appropriate analysis, design, and testing techniques.

Distribution: MR

Offered: in the spring semester.

3 hours of lecture and 3 hours of lab per week.

One cannot receive credit for both IT 102 (p. 244) and BIS 300 (p. 177).

Laboratory fees \$25.

**IT 200 - Data Structures (4 cr.)**

Prerequisite: IT 102 or CS 102

Cross-Listed as: CS 200

This course continues the introduction to computer programming begun in CS 102. This course covers the development and use of data structures in computer science and object-oriented software development. Using the Java programming language, students learn about the implementation and use of abstract data types. Students are expected to apply and augment the programming knowledge acquired

in previous courses to the task of developing more complex works. Topics include linked lists, stacks, queues, hash tables, common trees and tree algorithms, graphs and traversal algorithms, and common algorithms related to these structures. Students will also learn to evaluate the efficiency of the algorithms that they implement over the course of the semester.

Distribution: MR

Offered: in the fall semester.

3 hours of lecture and 3 hours of lab per week

Lab Fee \$50.

**IT 230 - Introduction to Operating Systems and Script Development (3 cr.)**

Prerequisite: IT 101 or CS 101 and IT 102 or CS 102 or permission of instructor.

This course provides students with the foundations for working with current operating systems. Students learn to make effective use of operating systems' powerful command-line interface. They also learn how to create scripts to automate redundant tasks and scripts to act as glue between otherwise independent applications.

Distribution: MR

Offered: in the fall semester.

**IT 240 - Foundations of Web Systems (3 cr.)**

Prerequisite: At least sophomore standing and at least one CS or IT course not including CS 131.

Cross-Listed as: BIS 210

This course provides student with the foundation for website development and maintenance. Students learn about web browsers, how URLs are resolved, and webpages are returned. They learn hypertext, self-descriptive text, webpage design, web navigational systems, and digital media. Students become proficient with common tools for authoring and publishing webpages.

Distribution: MR

Offered: in the spring semester.

This course is equivalent to BIS 210.

**IT 250 - Data Communications and Networks (3 cr.)**

Prerequisite: IT 101 or CS 101 or BIS 300.

Cross-Listed as: BIS 413

This is a study of the concepts and terminology of data communications, network design, and distributed information systems. Major topics include communication concepts, network architectures, data communications software and hardware, and the impact of communications technology on information systems.

Distribution: MR

**IT 300 - Database Management Systems (3 cr.)**

Prerequisite: IT 101 or CS 101 or BIS 300 and junior standing.

Cross-Listed as: BIS 321

This course is a study of the concepts, theory, design techniques, and information retrieval methods, emphasizing the relational database model and structured query language (SQL). It incorporates database design and application development CASE (computer aided software engineering) tools, with emphasis on the entity-relational (E-R) model and unified modeling language (UML). Topics include data

modeling and organization, database architecture, SQL, and database connectivity technologies. Design and implementation projects are required.

Distribution: MR

This course is equivalent to CS 364 (p. 205).

### **IT 310 - System Operation and Administration (3 cr.)**

Prerequisite: IT 230 and at least junior standing.

This course focuses on the organization and architecture of computer systems and major components such as process management, I/O management, and resource management. The course also enables the students to learn how to perform standard system administrative tasks, such as installing system and applications software, installing new hardware, managing user accounts, backing up and restoring file systems, boot-up and shutdown, and monitoring system performance.

Offered: in alternate fall semesters.

### **IT 320 - Foundations of Human Computer Interaction (3 cr.)**

Prerequisite: IT 102 or CS 102 and junior standing in CS, IT, or BIS program or permission of instructor.

Students learn the basic concepts of human computer interaction to evaluate, design, and improve the usability of a system. These basic concepts include human factors, performance analysis, cognitive processing, usability studies, environment, and user training. Students will gain practical experience by applying these concepts to web systems.

Distribution: MR

Offered: in fall semester.

This course is a prerequisite.

### **IT 330 - Network Security Concepts (3 cr.)**

Prerequisite: IT 230 and IT 250, or permission of instructor.

Over the past decade, organizations have increased their dependence on networks for core business processes. Due to the fact that many organizations are allowing their employees to have remote access to the company's network via virtual private networks (VPNs), network security has become very critical. This course teaches students how to secure a network (small or large) by focusing on understanding of the policies, products, and expertise that helps organizations to deal with the network security topic.

Offered: in alternate fall semesters.

### **IT 340 - Wireless Networking Concepts (3 cr.)**

Prerequisite: IT 230 and IT 250, or permission of instructor.

This course introduces the students to wireless networks by exploring the latest wireless technologies in the networking industry. The students learn about wireless LANs, cellular telephone, infrared lasers, microwave, spread spectrum, and satellite. The course also looks at the current industry standards such as IEEE 802.11 (Physical Layer) and IEEE 802.11 (Medium Access Control and Network Layer).

Offered: in alternate fall semesters.

### **IT 350 - Web Systems Development (3 cr.)**

Prerequisite: IT 102 or CS 102, IT 240 and at least concurrent enrollment in IT 300/BIS 321.

Web applications are the heart and soul of ecommerce. Students will learn to create interactive web applications that are backed by databases using current server-side technologies. Students also learn basic web server administration, and how to secure websites and web communications.

Offered: in alternate fall semesters.

### **IT 360 - Network Management and Operations (3 cr.)**

Prerequisite: IT 230 and IT 250.

In this course, students learn about various tasks that are involved in day-to-day network management and operations. Students will learn how to perform tasks such as network configuration, remote administration access, IP configuration (static and dynamic), setting up name servers, namespace configuration and management, and how to troubleshoot network problems and fix them.

Offered: in alternate fall semesters.

### **IT 410 - Advanced Topics in System Administration (3 cr.)**

Prerequisite: IT 310.

This course is a study of current advanced topics in system administration. Topics may include the latest security issues, advances in storage technologies, advances in network file systems, latest technology used in setting up shared file systems, high performance computer system maintenance, and latest strategies used for backup and restoration.

Offered: in alternate spring semesters.

### **IT 430 - Advanced Topics in Network Security (3 cr.)**

Prerequisite: IT 330.

This course is a study of current advanced topics in network security. The course will focus on advanced topics in access control, web security, remote access and virtual private networks, wireless LAN/WAN security, and mail and DNS security.

Offered: in alternate spring semesters.

### **IT 440 - Advanced Topics in Wireless Networking (3 cr.)**

Prerequisite: IT 340.

This course is a study of current advanced topics in wireless networks. Topics such as wi-fi networks, hybrid wireless architectures, ultra wideband networks, and wireless sensor networks will be studied.

Offered: in alternate spring semesters.

### **IT 450 - Advanced Topics in Web Design and Development (3 cr.)**

Prerequisite: IT 350.

This course is a study of current advanced topics in web design and development. Topics such as load balancing, quality of service, caching, information architecture, website administration tools, usability, and security in ecommerce will be studied.

Offered: in alternate spring semesters.

### **IT 460 - Advanced Topics in Network Administration (3 cr.)**

Prerequisite: IT 360.

This course is a study of current advanced topics in network administration. Topics such as latest software/hardware network management tools, switches and routers, firewall configurations, and latest tools to manage and troubleshoot enterprise and service provider networks will be studied.

Offered: in alternate spring semesters.

### **IT 480 - Internship in Information Technology (3 cr.)**

See "Internships (p. 25)".

Distribution: MR

## **JRNL - JOURNALISM**

### **JRNL 101 - Introduction to Journalism (3 cr.)**

Prerequisite: ENGL 132 or equivalent with a grade of "C" or better.

This course offers an introduction to the nature, problems, and ethics of newspaper work as well as the organization and techniques of the modern newsroom. The course places special emphasis on writing the news story in its various forms. Extensive written assignments are required.

Distribution: MR

Offered: every semester.

Formerly JRNL 210

### **JRNL 120 - Producing The Westerner (1 cr.)**

Prerequisite: Work on The Westerner and permission of the instructor.

This course gives students hands-on experience with producing a college newspaper. Students may be responsible for writing, editing, photographing, graphic design, layout, advertising, and aspects of business management.

### **JRNL 121 - Producing The Westerner (1 cr.)**

Prerequisite: Work on The Westerner and permission of the instructor.

This course gives students hands-on experience with producing a college newspaper. Students may be responsible for writing, editing, photographing, graphic design, layout, advertising, and aspects of business management.

### **JRNL 205 - Journalism Ethics (3 cr.)**

Prerequisite: JRNL 101.

This course examines the ethical responsibilities of journalists in the contemporary sociopolitical climate and in contemporary media organizations. Students learn about and weigh competing interests and ethical considerations in areas such as privacy rights, neutrality or objectivity, confidentiality, plagiarism, undercover reporting and/or the use of deception in pursuing stories, and intellectual property rights. Students will also weigh their competing responsibilities to the public and to the corporate or nonprofit organizations for which they work. Finally, students will consider issues pertinent to First Amendment responsibilities and obligations.

Distribution: MR

### **JRNL 220 - Producing a College Newspaper (3 cr.)**

Prerequisite: Permission of the instructor.

In this course, students learn all aspects of newspaper production, including writing, editing, layout, research, checking sources, and meeting deadlines for the university's newspaper, The Westerner.

### **JRNL 250 - Intermediate Journalism (3 cr.)**

Prerequisite: COMM 100 and JRNL 101.

This course develops students' nonfiction storytelling, research, and writing skills. Students will be expected to produce publication-worthy stories as a result of this course.

Distribution: MR

### **JRNL 360 - Sportswriting (3 cr.)**

Prerequisite: JRNL 101 and two courses in English writing with grades of "C" or better.

Cross-Listed as: COMM 360.

This course introduces students to the craft of sportswriting. Beginning with a discussion of how to approach writing in general, the course focuses principally on analyzing models of successful sportswriting and developing skills in producing sportswriting. Students will be expected to read copiously and critically and to write (and revise) several short assignments as well as one research-based project.

### **JRNL 370 - Advanced Radio Reporting (3 cr.)**

Prerequisite: JRNL 250 or permission of instructor.

Cross-Listed as: COMM 371.

This course provides students with professional radio reporting opportunities. It focuses on radio news reporting with instruction and real-life applications in developing, researching, writing, and producing broadcast news stories to be aired on National Public Radio Station WAMC. Students receive on-the-air talent techniques and one-on-one coaching for professional voice-over productions. Story ideas are assigned by the instructor, the WAMC news director, and news producers; students must also generate his/her own story proposals.

Distribution: MR

## **LA - LIBERAL ARTS**

### **LA 100 - First Year Seminar (2 cr.)**

This course represents a segment of the general education requirements, specifically pertaining to personal development and relevant academic skills. First Year Seminar is a course designed to ease the transition to the first year of college and to explore the value of college and develop a sense of personal identity. While course content can vary from section to section, there is a commonly shared core of objectives that characterizes the seminar. Organized around academic interests, there is structured opportunity to become acquainted with the intricacies of particular academic disciplines, or, if undecided, to engage career exploration activities. As regards general education components, the seminar serves as an introduction to critical thinking, a platform for exploring information literacy, and practical application of oral presentation strategies. One of the unique components of the course is linking the role of instructor to that of academic advisor for the students enrolled in any particular section. The course is also distinguished by the use of student assistants known as First Year Seminar Assistants whose role is to support students in the academic transition challenges of the first year.

Distribution: GUR

**LA 101 - First Year Field Experience (1 cr.)**

Linked with First Year Seminar, this learning beyond the classroom experience exposes first year social work students to the realities and complexities of the actual workplace. Working with such populations as the elderly, developmentally challenged, children in foster care, and school age children, students explore the development of professional relationships and the challenges often faced by social workers. Enrollment in First Year Seminar is a corequisite. The course may be used to meet one unit of the General Education requirement of Learning Beyond the Classroom.

Distribution: MR

**LA 150 - Writing and Reading Laboratory I (1 cr.)**

This is a one-credit laboratory course designed to supplement the work in certain sections of ENGL 132 English Composition I: College Reading and Writing with a review of English fundamentals. Topics include sentence structure, mechanics, and usage.

**LA 151 - Writing and Reading Laboratory II (1 cr.)**

This is a one-credit laboratory course that introduces basic rhetorical principles and applies the principles taught in LA 150 to assignments in certain sections of ENGL 133 English Composition II: Introduction to Literature.

**LA 175 - Academic Reading Strategies I (1 cr.)**

This is a one-credit laboratory course that provides students with an understanding of the skills needed for proficiency in college reading. Some theory is presented, but the emphasis is on the application of the skills to college reading.

**LA 176 - Academic Reading Strategies II (1 cr.)**

This is a one-credit laboratory course that applies the strategies taught in LA 175 to textbooks from courses across the curriculum.

**LA 190 - Special Topics in Liberal Arts (1-3 cr.)**

Liberal Arts topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**LA 250 - Language Support Lab I (1-2 cr.)**

This is a one-credit laboratory course which gears instruction to the individual needs of students who speak English as a foreign or second language or who come from a bilingual background. The course is usually taken concurrently with a designated section of ENGL 132. May be taken for two credit hours by arrangement.

**LA 251 - Language Support Lab II (1-2 cr.)**

This is a one-credit laboratory course that continues the work of LA 250. This course is usually taken concurrently with a designated section of ENGL 133. May be taken for two credit hours by arrangement.

**LA 275 - Guided Research Strategies for Thesis and Project Writers (1 cr.)**

Prerequisite: Recommended for sophomores and above. Target audience is sophomores working on faculty research, first semester seniors, and second semester juniors who will be completing a senior thesis, capstone project, or an independent research project. May be repeated once for credit.

This course guides students through the research process for thesis or in-depth written projects. Building on the first-year introductions to information literacy, this class extends students' information research skills to more advanced, discipline-specific techniques and tools. Beginning with their own topics, students learn to form research questions or problems, develop strategies for discovering authoritative information, and the effective and ethical use of sources. Students have ample time for hands-on research pertinent to their project, with immediate guidance and feedback from the instructor. The course meets in a computer lab. Students are encouraged to have a research topic before beginning this course.

Offered: in the fall.

**LA 276 - Guided Research Strategies for Thesis and Project Writers (1 cr.)**

Prerequisite: Recommended for sophomores and above. Target audience is sophomores working on faculty research, first semester seniors, and second semester juniors who will be completing a senior thesis, capstone project, or an independent research project. May be repeated once for credit.

This course guides students through the research process for thesis or in-depth written projects. Building on the first-year introductions to information literacy, this class extends students' information research skills to more advanced, discipline-specific techniques and tools. Beginning with their own topics, students learn to form research questions or problems, develop strategies for discovering authoritative information, and the effective and ethical use of sources. Students have ample time for hands-on research pertinent to their project, with immediate guidance and feedback from the instructor. The course meets in a computer lab. Students are encouraged to have a research topic before beginning this course.

Offered: in the spring.

**LA 277 - Guided Research Strategies for Thesis and Project Writers (1 cr.)**

Prerequisite: Recommended for sophomores and above. Target audience is sophomores working on faculty research, first semester seniors, and second semester juniors who will be completing a senior thesis, capstone project, or an independent research project. May be repeated once for credit.

This course guides students through the research process for thesis or in-depth written projects. Building on the first-year introductions to information literacy, this class extends students' information research skills to more advanced, discipline-specific techniques and tools. Beginning with their own topics, students learn to form research questions or problems, develop strategies for discovering authoritative information, and the effective and ethical use of sources. Students have ample time for hands-on research pertinent to their project, with immediate guidance and feedback from the instructor. The course meets in a computer lab. Students are encouraged to have a research topic before beginning this course.

Offered: in the fall.

**LA 278 - Guided Research Strategies for Thesis and Project Writers (1 cr.)**

Prerequisite: Recommended for sophomores and above. Target audience is sophomores working on faculty research, first semester seniors, and second semester juniors who will be completing a senior thesis, capstone project, or an independent research project. May be repeated once for credit.

This course guides students through the research process for thesis or in-depth written projects. Building on the first-year introductions to information literacy, this class extends students' information research skills to more advanced, discipline-specific techniques and tools. Beginning with their own topics, students learn to form research questions or problems, develop strategies for discovering authoritative information, and the effective and ethical use of sources. Students have ample time for hands-on research pertinent to their project, with immediate guidance and feedback from the instructor. The course meets in a computer lab. Students are encouraged to have a research topic before beginning this course.

Offered: in the spring.

**LA 290 - Special Topics in Liberal Arts (1-3 cr.)**

Liberal Arts topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**LA 390 - Special Topics in Liberal Arts (1-3 cr.)**

Liberal Arts topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**LA 391 - Student Literacy Volunteers (1-3 cr.)**

Prerequisite: Sophomore standing or higher.

This is an introduction to the problems of illiteracy and to the techniques of teaching literacy. Students receive elementary training in techniques and practice those techniques under supervision in the Greater Springfield community.

**LA 490 - Special Topics in Liberal Arts (1-3 cr.)**

Liberal Arts topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**LA 491 - Student Literacy Volunteers (1-3 cr.)**

Prerequisite: Sophomore standing or higher, LA 391.

This is a continuation of the work in LA 391.

**LBC - LEARNING BEYOND THE CLASSROOM**

**LBC 201 - Course Based (No credit)**

The experiential activity is embedded into the course curriculum.

**LBC 202 - Cocurricular Activity (No credit)**

Membership or leadership of a cocurricular organization.

**LBC 203 - Leadership Development (No credit)**

Experiences in this category carry significant leadership and time commitments. Roles where the students have been selected and trained to fulfill the responsibilities of their positions.

**LBC 204 - Athletics (No credit)**

Participation in organized and recognized athletic programs.

**LBC 205 - Service Learning (No credit)**

May or may not be associated with a course or academic credit. Service meets a designated community need.

**LBC 206 - Experiential Learning (No credit)**

May or may not be associated with a course or academic credit. Experience not service oriented.

**LBC 207 - Internship (No credit)**

Participation in a university recognized internship program. See "Internships (p. 25)".

**LBC 208 - Study Abroad (No credit)**

Participation in a structured, university recognized study abroad program.

**LBC 209 - Research (No credit)**

Participation in an independent or semi-independent research project.

**LBC 401 - Course Based (No credit)**

Prerequisite: LBC 2xx.

The experiential activity is embedded into the course curriculum.

**LBC 402 - Cocurricular Activity (No credit)**

Prerequisite: LBC 2xx.

Membership or leadership of a cocurricular organization.

**LBC 403 - Leadership Development (No credit)**

Prerequisite: LBC 2xx.

Experiences in this category carry significant leadership and time commitments. Roles where the students have been selected and trained to fulfill the responsibilities of their positions.

**LBC 404 - Athletics (No credit)**

Prerequisite: LBC 2xx.

Participation in organized and recognized athletic programs.

**LBC 405 - Service Learning (No credit)**

Prerequisite: LBC 2xx.

May or may not be associated with a course or academic credit. Service meets a designated community need.

**LBC 406 - Experiential Learning (No credit)**

Prerequisite: LBC 2xx.

May or may not be associated with a course or academic credit. Experience not service oriented.

**LBC 407 - Internship (No credit)**

Prerequisite: LBC 2xx.

Participation in a university recognized internship program. See "Internships".

**LBC 408 - Study Abroad (No credit)**

Prerequisite: LBC 2xx.

Participation in a structured, university recognized study abroad program.

**LBC 409 - Research (No credit)**

Prerequisite: LBC 2xx.

Participation in an independent or semi-independent research project.

**LSOC - LAW AND SOCIETY****LSOC 101 - Introduction to Law and Society (3 cr.)**

This is an introductory survey course which examines the interrelation between law and society, viewing law as a cultural development and a product of history, religion, philosophy, economics, politics, and geography. The survey will emphasize the development of legal concepts and institutions in the United States, as well as in other societies and on the international level.

Distribution: MR

**LSOC 202 - The Literature of the Law (3 cr.)**

Prerequisite: LSOC major and junior status or permission of the instructor.

This course is founded on the notion that, just as the "Gettysburg Address" is both a political document and great literature, so, too, does much of past legal writing rise to such a level of splendid prose as we all may wish to emulate. In addition to plays and novels whose plots involve a deep legal milieu, this course will also study the clear prose of such writers as Coke, Blackstone, Marshall, and Holmes.

**LSOC 203 - Theories of Justice (3 cr.)**

Prerequisite: LSOC 101 or POSC 102 or permission of the instructor.

This course in political and legal theory explores the notions of justice and of a just society and considers the role(s) of liberty and equality in such a society. The course considers a variety of contemporary political and legal issues, both domestic and international, through the frameworks of various theories of justice, including, but not limited to, utilitarianism, libertarianism, and egalitarian liberalism.

**LSOC 206 - Legal Justice and Social Justice (3 cr.)**

Prerequisite: LSOC 101 or CJ 101 or SO 101.

This course is a multicultural, interdisciplinary examination of justice concepts, legal, and social responses using legal case studies and commentaries. It will examine issues nationally and internationally from which evolve the concept of human rights and legal rights.

**LSOC 230 - When Cultures Collide (3 cr.)**

Prerequisite: Sophomore standing.

Cross-Listed as: POSC 230

This course examines how modern nation-states can and should come to terms with issues of cultural and religious diversity, and it considers whether, under what conditions and to what extent cultural and religious minorities can and should be accommodated, integrated and/or assimilated in society. This course looks at a variety of contemporary political and legal case studies, including, but not limited to, immigration policy, child brides, polygamy, female and male circumcision, cultural and religious attire and the use of cultural evidence in court.

**LSOC 290 - Special Topics in Law and Society (1-3 cr.)**

Topics in law and society that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**LSOC 333 - Independent Study in Law and Society (1-3 cr.)**

See "Independent Study (p. 24)".

**LSOC 334 - Independent Study in Law and Society (1-3 cr.)**

See "Independent Study (p. 24)".

**LSOC 344 - Comparative Legal Systems (3 cr.)**

Prerequisite: POSC 201 and junior standing or permission of the instructor.

This course will review the major systems now operative on each continent and examine and compare the basic principles of each. It will consider tribal and communal approaches to conflict resolution as well as national legal systems.

Distribution: MR

Formerly POSC 344.

**LSOC 390 - Special Topics in Law and Society (1-3 cr.)**

Topics in law and society that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**LSOC 440 - Undergrad Research in Law and Society (1-3 cr.)**

Prerequisite: Junior standing and permission of instructor.

See "Undergraduate Research (p. 25)".

**LSOC 441 - Undergrad Research in Law and Society (1-3 cr.)**

Prerequisite: Junior standing and permission of instructor.

See "Undergraduate Research (p. 25)".

**LSOC 480 - Internship in Law and Society (1-3 cr.)**

See "Internships (p. 25)".

**LSOC 481 - Internship in Law and Society (1-3 cr.)**

See "Internships (p. 25)".

**LSOC 490 - Senior Seminar in Law and Society (3 cr.)**

Prerequisite: LSOC 101 and LSOC 203, and Senior Standing.

This course explores advanced topics in law and society, with a particular focus on questions of civil and criminal justice and individuals' access thereto. Students in the course will be required to research and write a substantial research term paper.

**MAN - MANAGEMENT****MAN 101 - Management and Organizational Behavior (3 cr.)**

Cross-Listed as: HONB 101

This course introduces the managerial function in business and examines elements of organizational behavior that influence effective management practice and leadership. Key learning outcomes include an understanding and recognition of: the role that individual differences and perception play in influencing behavior in organizations; theories and concepts of decision-making and problem solving; theories and concepts of motivation; theories and concepts of leadership; and theories and concepts from the behavioral sciences in developing strategies for effective teamwork and other organizational processes.

Distribution: BUSR/MR

This course is a prerequisite.

Lab Fee \$15.

### **MAN 201 - Interpersonal Skills for Leading (3 cr.)**

Prerequisite: MAN 101 and COMM 100.

Competency in interpersonal skills is essential for leadership in organizations. This course utilizes theory and research in the social and behavioral sciences to identify effective strategies and best practices in the interpersonal dimensions of leading. Key learning outcomes include the development of interpersonal skills involved in active listening, providing feedback, effective persuasion, and managing conflict in a diverse workplace. Course includes career readiness element.

Distribution: MR

### **MAN 240 - Business and Society (3 cr.)**

Prerequisite: Sophomore standing.

This course explores the connections between businesses and the wider social environment of which they are a part. Key learning outcomes focus on: recognition of ethical issues with respect to business activities, the basis for government regulation of business and business' involvement in the public policy process, identification and analysis of stakeholder issues, and the nature of corporate social responsibility. This course can be taken to fulfill the PH 211 requirement. Cannot take both PH 211 and MAN 240 for credit.

Distribution: BUSR/CR/MR

Formerly BUS 240.

### **MAN 305 - Managing for Sustainability (3 cr.)**

Prerequisite: MAN 101/HONB 101 and sophomore standing.

The course focuses on the principles and practices of managing organizations sustainably. The course integrates concepts of sustainability into the management of organizations with respect to social, financial and environmental criteria. Key learning objectives include recognition and application of the concept of sustainable development in business; the ways in which principles of sustainability can provide businesses with competitive advantages; various bases for evaluating the economic, environmental, and social impact of organizational activities; and how managers contribute to the achievement of sustainable business development.

Distribution: CR/MR

### **MAN 311 - International Management (3 cr.)**

Prerequisite: MAN 101/HONB 101

This course focuses on issues of nations and cultures with respect to central themes in management practice including motivation, communication, negotiation, leadership, ethics and social

responsibility, organizational structure, human resources, and diversity. Learning outcomes are focused on the recognition and application of relevant concepts and practices with respect to: an awareness of the influence of culture on behavior, particularly in terms of leadership, motivation, decision-making, and conflict; familiarity with the types of situations and issues that managers may confront when working internationally and/or returning home; and an appreciation for the complexity of ethics and social responsibility in the global environment.

### **MAN 315 - Organizational Theory (3 cr.)**

Prerequisite: MAN 101/HONB 101 or SO 101

Cross-Listed as: SO 315

The course examines organizations at a macro-level in order to develop skills for analyzing the complicated situations in contemporary organizations. Key learning outcomes focus on the understanding and application of vocabulary of organization theory; recognizing existing organizational theories, models, and concepts; historical approaches to organizational theorizing; strengths and weaknesses of different organizational designs; the role of conflicting perspectives, ambiguity, paradox, and contradictions as they relate to organizational life; inherent tensions of specialization, and integration that characterize organizational designs and processes.

### **MAN 323 - Human Resource Management (3 cr.)**

Prerequisite: MAN 101/HONB 101 and junior standing.

The course provides an overview of human resource management practices in organizations. Focus on key learning outcomes includes the understanding, application, and problem-solving associated with: the strategic role of human resource management; legal issues of HRM including selection and compensation; principles of effective employee selection; various approaches to employee training; setting and administration of compensation; pay for performance systems; approaches to performance appraisal; and value of job description and building motivation into the job design. Course includes career readiness element.

Distribution: MR

### **MAN 331 - A Humanistic Approach to Leadership and Management (3 cr.)**

Prerequisite: MAN 101/HONB 101 and junior standing.

The course provides a study of fiction, biography, drama, and film as primary sources to arrive at a better understanding of how effective leadership and management occur. Key learning outcomes focus on the understanding, use, and problem-solving applications associated with: the basic differences among successful leadership styles and situational factors; personal leadership styles; leadership skills such as initiative, planning, and risk taking; application of humanistic leadership principles to work and family situations; effective leadership decisions; and non-traditional learning sources in everyday leadership opportunities.

### **MAN 333 - Independent Study in Management (3 cr.)**

See "Independent Study (p. 24)".

### **MAN 334 - Independent Study in Management (3 cr.)**

See "Independent Study (p. 24)".

### **MAN 341 - Leadership and Change (3 cr.)**

Prerequisite: MAN 101/HONB 101 and junior standing.

This course focuses on the leadership challenges in organizations pursuing change. Key learning outcomes in the course include the understanding, use, and problem-solving applications associated with a range of current perspectives on the key elements of effective leadership, the fundamental elements and best practices in the area of organizational change, and the concepts of leadership and change.

### **MAN 353 - Leadership and Team Skills (3 cr.)**

Prerequisite: Junior or senior standing.

Cross-Listed as: ILP 353

This course provides the opportunity to examine leadership issues from historical, sociological, and psychological perspectives, and to practice leadership and group skills within the classroom. Readings from historical biographies, sociology, and psychology will be used to gain insights into a range of leadership qualities and abilities. Students will also take a number of assessment instruments that will help them determine their own leadership profiles and will guide them in refining their skills during the semester. Students will be assigned to a specific small group that will perform an array of activities and serve as the context for personal skill building. Students will learn how to analyze a variety of leadership functions and develop a reflective practice that will enable them to continue to perfect their leadership skills in the future.

Does not satisfy the ILP Requirement.

### **MAN 370 - Project Management (3 cr.)**

Prerequisite: MAN 101/HONB 101 and junior standing

This course introduces the project management discipline and focuses on critical success factors in achieving project success. The roles managers and technical professionals fulfill in the project development process will be explored with emphasis on the skill set demanded for successful project participation, contribution, and completion. Current trends in project management will be analyzed with emphasis on the impact of globalization. Key learning outcomes include: an understanding of standard project management processes, analytical techniques used in project management, and the different roles and responsibilities in projects.

### **MAN 390 - Special Topics in Management (3 cr.)**

This is a study of advanced topics in management of special interest to management majors, but not offered on a regular basis.

### **MAN 422 - Conflict Resolution (3 cr.)**

Prerequisite: MAN 101/HONB 101 and junior standing.

This course provides in-depth coverage of conflict-resolution in organizational settings. Key learning outcomes focus on conflict styles and response alternatives along with various modes of resolution including alternative dispute resolution, third-party intervention, mediation, and arbitration.

### **MAN 430 - Family Business Management (3 cr.)**

Prerequisite: MAN 101 or ENTR 251/MAN 251

Cross-Listed as: ENTR 430

Family Enterprises have unique challenges, problems and issues such as starting-up and on-going decision-making issues with family members, handling conflicts involving family members and non-family members, family risk profiles, taxation, estate planning, multi-

generation and succession issues, going public, and selling out. This course is particularly important for students who are planning to enter family businesses upon graduation.

Formerly Family Entrepreneurship

### **MAN 466 - Seminar in Management and Leadership (3 cr.)**

Prerequisite: MAN 201, MAN 323, MAN 370. Management and Leadership majors only.

The course provides students with an enhanced understanding of current perspectives on management and leadership. Key learning outcomes focus on new models of leadership practice the integration of management and leadership imperatives in global and diverse organizations, and current practices of ethical, socially responsible, and creative managerial problem-solving. Course includes career readiness element.

### **MAN 480 - Internship in Management (1-3 cr.)**

See "Internships (p. 25)".

Distribution: MR

### **MAN 481 - Internship in Management (1-3 cr.)**

See "Internships (p. 25)".

## **MATH - MATHEMATICS**

### **MATH 107 - Mathematics For Elementary Education I (3 cr.)**

Prerequisite: Successful performance on the Western New England University placement test.

This course is the first of a two-semester sequence in mathematics that satisfies the mathematics requirement for prospective elementary teachers. Prospective elementary teachers are introduced to the content of the elementary mathematics curriculum as well as some of the teaching methods used at the elementary level. The real number system is studied in depth. Topics include an examination of whole numbers, integers, and rational numbers with an emphasis on place value and the associated operations. Topics from numeration systems, number theory, and set theory are also developed. Problem-solving techniques and appropriate use of technology are integrated throughout the course.

Distribution: GUR/MR

Offered: in the fall semester.

This course is a prerequisite.

### **MATH 108 - Mathematics for Elementary Education II (3 cr.)**

Prerequisite: MATH 107 or permission of the instructor.

This course is a continuation of MATH 107. A further study of the real number system, it focuses on exponents, decimals, and irrational numbers. Areas such as algebra, geometry, probability, and statistics are studied within the context of the elementary curriculum.

Distribution: MR

Offered: in the spring semester.

This course is a prerequisite.

**MATH 109 - Pre-Calculus Mathematics (3 cr.)**

Prerequisite: Two years of algebra and one year of geometry.

This is an overview of the algebra and trigonometry needed for analytic geometry and calculus and is designed for students who need a review before taking calculus. Topics include basic algebra, functions and graphs, radicals and exponents, trigonometric functions, identities, and equations. TI-83/84 calculator is required.

Distribution: GUR/MR

Offered: in the fall semester.

This course is a prerequisite.

**MATH 111 - Analysis for Business and Economics (3 cr.)**

Prerequisite: Successful performance on the Western New England University placement test.

This course considers optimization and sensitivity analysis to support business decision making. Topics include building models for supply, demand, revenue, cost and profit; future and present value for compound interest (both discrete and continuous) problems and annuities; systems of equations; and linear programming. TI-83/84 calculator is required.

Distribution: BUSR/CR/GUR/MR

Offered: fall and spring semesters.

This course is a prerequisite.

Formerly "Analysis for Business and Economics I"

**MATH 115 - Contemporary Mathematics (3 cr.)**

This course is a survey of some contemporary applications of mathematics. Topics, which may vary each year, will be chosen from among the following: voting theory, weighted voting systems, fair division, apportionment, probability, Euler circuits, financial mathematics, Hamilton circuits, minimum network problems, Fibonacci numbers, the golden ratio, and fractal geometry.

Offered: in the fall semester.

**MATH 117 - Mathematical Reasoning (3 cr.)**

This course is intended to satisfy two objectives. One objective is to learn some of the methods that mathematics uses to solve problems. The areas of mathematics to be considered may include logic, algebra, geometry, number theory, counting (sometimes referred to as combinatorics), probability, graph theory, etc. Also considered will be the role of proof in mathematics. A second objective is to learn how a mathematical approach can assist in the general endeavor of solving problems. The approach includes: stating problems clearly and concisely, determining what is important and what is irrelevant, making conjectures, justifying conclusions using logic, etc. Various problem-solving strategies will be introduced and applied.

Offered: in the fall and spring semesters.

**MATH 120 - Intro Statistics for the Arts & Sci (3 cr.)**

Prerequisite: Successful performance on Western New England University placement test.

This is an introduction to the basic descriptive and inferential techniques for presenting, analyzing, and interpreting data that may

arise in several fields. Topics include frequency distributions, measures of central tendency, probability, sampling, estimation, correlation and regression, hypothesis testing, and tests of significance. Emphasis is on understanding and interpreting, not on computations. A standard statistical software package is used throughout the course. The course is intended for general students, not for those whose major program requires BIS 220 or ENGR 212. Credit for both this course and BIS 220 is not permissible. TI-83/84 calculator is required.

Distribution: GUR/MR

Offered: fall and spring semesters.

**MATH 121 - Introductory Probability and Statistics (3 cr.)**

Prerequisite: Successful performance on Western New England University placement test.

This course is an introduction to the general theory of probability and statistics, designed to provide students with a working knowledge of ideas and tools of practical statistics, with an emphasis on applications to the pharmaceutical and biological sciences. Aspects of data analysis that students will learn include presentation of data, measures of central tendency and spread, the normal distribution, correlation, and linear regression. Topics for inferential statistics include confidence intervals, t-tests, one-way analysis of variance (ANOVA), z-tests of proportions, and Chi square tests, as well as the relevant classical and conditional probability theory. A TI-83 or TI-84 calculator is required. The class will consist weekly of three lecture hours and one lab hour. Credit for this course and BIS 220 or MATH 120 is not permissible.

Distribution: GUR/MR

Offered: spring semesters

**MATH 123 - Calculus I for Management, Life, and Social Sciences (3 cr.)**

Prerequisite: Three years of high school mathematics including two years of algebra.

This is a study of functions, limits, continuity, the derivative, and applications of the derivative. Among the business related applied topics are supply and demand functions; marginal revenue, cost, and profit; elasticity of demand; inventory control; and compound interest. Other applied topics include population trends, velocities and accelerations. General applications include rates of change, curve sketching, and maximizing and minimizing functions. Credit for both this course and MATH 133 is not permissible. TI-83 calculator is required.

Distribution: BUSR/CR/GUR/MR

Offered: fall and spring semesters.

This course is a prerequisite.

Credit for both this course and MATH 133 is not permissible. TI-83 calculator is required. Offered fall and spring semesters.

**MATH 124 - Calculus II For Management, Life, and Social Sciences (3 cr.)**

Prerequisite: MATH 123 or MATH 133.

This is a study of exponential and logarithmic functions, techniques and applications of integration, and multivariable calculus. Among the applied topics are models of growth and decay, continuous interest, payments on loans, and consumers' and producers' surplus.

Credit for both this course and MATH 134 is not permissible. TI-83/84 calculator is required.

Distribution: BUSR/CR/GUR

Offered: in the spring semester.

Credit for both this course and MATH 134 is not permissible. TI-83/84 calculator is required.

### **MATH 130 - Problem Solving in Calculus (1 cr.)**

Corequisite: Fall MATH 133, Spring MATH 134.

The course is specifically designed to help students improve their problem-solving skills in Calculus I and II. There will be emphasis on student class participation and analysis of solutions. The course will meet once a week.

Offered: fall and spring semesters

The course is graded pass/fail.

May be repeated for credit, once.

### **MATH 133 - Calculus I (4 cr.)**

Prerequisite: MATH 109 or the equivalent.

This course is the first half of an introduction to single-variable calculus with an emphasis on trigonometric, exponential, and logarithmic functions. Topics include functions, mathematical models, limits, continuity, the derivative and applications of the derivative, parametric equations, the integral, and the fundamental theorem of calculus.

Distribution: ER/GUR/MR

Offered: fall and spring semesters.

This course is a prerequisite.

Credit for both this course and MATH 123 is not permissible. TI-83/84 calculator is required.

### **MATH 134 - Calculus II (4 cr.)**

Prerequisite: MATH 133.

This course is the second half of an introduction to single variable calculus, with an emphasis on trigonometric, exponential, and logarithmic functions. Topics include antiderivatives, techniques of integration, applications of integration, infinite sequences and series, approximating functions, Taylor series and an introduction to differential equations. A computer algebra system such as Mathematica may be used. TI-83/84 graphing calculator is required.

Distribution: ER/GUR/MR

Offered: fall and spring semesters.

Credit for both this course and MATH 124 is not permissible.

This course is a prerequisite.

### **MATH 150 - Applied Discrete Mathematics (3 cr.)**

Topics include congruence and modular arithmetic, counting techniques, relations and functions, sets, logic, probability, graphs, trees, and graph coloring. Applications include RSA cryptography, SQL, hash tables and scheduling.

Distribution: MR

Offered: in the spring semester.

This course is a prerequisite.

### **MATH 190 - Special Topics in Mathematics (1-3 cr.)**

Topics in mathematics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **MATH 235 - Calculus III (3 cr.)**

Prerequisite: MATH 134 or MATH 124.

This is an extension of the basic concepts of calculus to functions of several variables. Topics include vectors and vector-valued functions, partial differentiation and applications, multiple integration and applications, vector fields, and line integrals. A computer algebra system such as Mathematica may be used. TI-83/84 graphing calculator is required.

Distribution: ER/MR

Offered: fall and spring semesters.

This course is a prerequisite.

### **MATH 236 - Differential Equations (3 cr.)**

Prerequisite: MATH 134.

This is a survey of the standard solution methods and applications of ordinary differential equations. The emphasis is on first and second order equations, and the topics include separation of variables, qualitative analysis, linear equations, harmonic motion, and Laplace transforms. TI-83/84 calculator, or equivalent, is required.

Distribution: ER/MR

Offered: fall and spring semesters.

This course is a prerequisite.

### **MATH 245 - Topics in Linear Algebra and Calculus (3 cr.)**

This course is a survey of topics from linear algebra and calculus. Topics from linear algebra include matrices and matrix operations, Euclidean  $n$ -space, solving systems of equations, linear transformations and orthogonal projections. Topics from calculus include polynomial, rational, exponential and logarithmic functions, limits, continuity, derivatives and optimization problems.

Offered: in the fall semester.

This course is a prerequisite.

### **MATH 251 - Advanced Discrete Mathematics (3 cr.)**

Prerequisite: MATH 150 or permission.

This is a study of proof techniques and the writing of mathematical arguments in areas such as set theory, number theory, graph theory, relations, and functions. Emphasis is placed on this theory as it relates to computer science and computer programming. Topics also include algorithmic correctness, algorithmic efficiency, recursive definitions, cardinality, and computability. Credit for both this course and MATH 281 is not permissible.

Distribution: MR

Offered: in the fall semester.

This course is a prerequisite.

### **MATH 281 - Foundations of Mathematics I (4 cr.)**

Prerequisite: MATH 124 or MATH 134.

This course is an introduction to the foundational concepts necessary for the study of advanced mathematics. Topics include logic, proof

and exploration, sets, sequences, relations, functions, combinatorics, Well-Ordering Property, Principle of Mathematical Induction, and recurrence relations. Emphasis will be placed on the deductive reasoning process and the writing of mathematical arguments.

Distribution: MR

Offered: in the fall semester.

Changed from 3 cr. to 4 cr. in Fall'13.

This course is a prerequisite.

Credit for both this course and MATH 251 is not permissible.

### **MATH 282 - Foundations of Mathematics II (3 cr.)**

Prerequisite: MATH 251 or MATH 281 or permission.

A continuation of MATH 281. Topics include functions, Pigeonhole Principle, cardinality, permutations, symmetry, probability, number theory and introductory concepts in modern algebra. Continued emphasis will be placed on the deductive reasoning process and the writing of mathematical arguments.

Distribution: MR

Offered: in the spring semester.

This course is a prerequisite.

### **MATH 290 - Special Topics in Mathematics (1-3 cr.)**

Topics in mathematics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **MATH 302 - MTEL Prep (2 cr.)**

This course will provide additional resources to help prospective secondary mathematics teachers prepare for and pass the MTEL Mathematics test. The course will examine the content and structure of the test as well as identify topics requiring further focus and study. Both multiple choice and open-response questions similar to the official test will be used and students and the professor will prepare and present solutions to the class.

Offered: in the spring semester.

### **MATH 306 - Linear Algebra (3 cr.)**

Prerequisite: MATH 124 or MATH 134 or MATH 251 or permission.

Topics covered in this course include vectors and matrices, systems of linear equations, vector spaces, determinants, eigenvalues and eigenvectors, and transformations. Applications in many fields are discussed. The computer is used at the discretion of the instructor. TI-83/84 calculator is required.

Distribution: MR

Offered: in the fall and spring semester.

### **MATH 310 - Theory of Interest (3 cr.)**

Prerequisite: MATH 134

This is a course specifically designed to provide students with additional preparation for the actuarial examinations. Topics are selected from the areas of financial mathematics and actuarial models depending upon the needs of the students. The course may be repeated for credit subject to the permission of the instructor.

Offered: Fall semester

Formerly "Topics in Actuarial Science" 1-3 cr

### **MATH 333 - Independent Study in Mathematics (1-3 cr.)**

See "Independent Study (p. 24)".

### **MATH 334 - Independent Study in Mathematics (1-3 cr.)**

See "Independent Study (p. 24)".

### **MATH 350 - Engineering Analysis I (3 cr.)**

Prerequisite: MATH 235 and MATH 236.

This course studies selected topics from vector calculus, line and surface integrals (including Theorems by Green, Gauss, and Stokes), Fourier series and integrals, and partial differential equations. The emphasis is on engineering applications.

Distribution: MR

Offered: in the fall semester and in the spring on demand.

### **MATH 363 - Theory of Computation (3 cr.)**

Prerequisite: MATH 251 and CS 202, or permission of the instructor.

This is a study of the mathematical background and methods needed in computer science especially in the specification, design, analysis, and verification of algorithms. Topics include predicate calculus, solution of recurrences, generating functions, finite state machines and formal languages, and introduction to computability and complexity.

Distribution: MR

Offered: in alternate spring semesters.

### **MATH 369 - Linear Programming (3 cr.)**

Prerequisite: MATH 251 or MATH 281, or permission.

A linear program (LP) calls for the optimization of a linear function subject to linear inequality constraints. This course studies the theory and applications of LPs. Topics include modeling using LPs, polyhedra, the simplex method, duality, parametric and sensitivity analysis, LP software, and applications to game theory, network flows, and statistics. Students will also read and report on recent journal articles describing applications of linear programming to the solution of real-world problems.

Offered: on demand.

### **MATH 371 - Modern Aspects of Geometry (3 cr.)**

Prerequisite: MATH 251 or MATH 281, or permission.

This is an examination of various topics in geometry. Topics selected depend on the interests of the instructor and the needs of the students involved. Possible topics include finite geometries, Euclid's Elements (Book I), advanced topics in Euclidean geometry, Euclidean constructions and impossible constructions, transformations of the plane, non-Euclidean geometry, and projective geometry.

Distribution: MR

Offered: in alternate spring semesters.

### **MATH 372 - Probability (3 cr.)**

Prerequisite: MATH 235.

An introduction to probability at the calculus level. Topics include axioms of probability, basic combinatorics, conditional probability, independence, discrete and continuous random variables, expected

value and variance, joint distributions, moment generating functions, laws of large numbers, and central limit theorem.

Offered: every spring semester

This course is a prerequisite.

### **MATH 373 - Statistical Modeling (3 cr.)**

Prerequisite: MATH 235.

This course emphasizes the design and testing of statistical models for the purpose of describing variation in its proper context. Topics include basic statistics and descriptors of variation, simple and multiple linear regression models, confidence intervals, hypothesis testing, and ANOVA. Although mathematical theory is discussed, the emphasis is on analysis of real-world data and assessment of models. Statistical software such as R is used throughout.

Distribution: MR

Offered: in alternate spring semesters.

### **MATH 375 - Creative Problem Solving (3 cr.)**

Prerequisite: MATH 251 or MATH 281, or permission.

The course will discuss creative problems from all areas of mathematics. Students will learn problem-solving techniques, will combine some of the seemingly disparate parts of their mathematics background, and will gain an appreciation of new areas of mathematics, by looking at some of the fundamental questions that illustrate the key ideas. There will be emphasis on student presentation and analysis of solutions, and students will learn how to present mathematical arguments while developing their mathematical creativity.

Offered: in alternate fall semesters.

### **MATH 377 - Elementary Number Theory (3 cr.)**

Prerequisite: MATH 251 or MATH 281, or permission.

This is the study of integers and their properties. The course provides a simple account of classical number theory as well as some of its historical background including divisibility; greatest common divisors; prime factorization; congruences; theorems of Wilson, Fermat, and Euler; pseudoprimes; multiplicative functions; and primitive roots. Other topics include recent applications of the classical subject area in cryptography and computer science.

Distribution: MR

Offered: in alternate spring semesters.

### **MATH 378 - Combinatorics (3 cr.)**

Prerequisite: MATH 251 or MATH 281, or permission.

Combinatorics concerns the mathematical theory of counting. This course emphasizes enumeration, but existence and construction issues will also be discussed. Topics include basic principles of combinatorics, distributions, inclusion-exclusion, generating functions, Polya theory, combinatorial designs, and error-correcting codes. Further topics can be selected from: Fibonacci numbers, partially ordered sets, Ramsey theory, and applications to graph theory.

Offered: in alternate fall semesters.

### **MATH 379 - Graph Theory (3 cr.)**

Prerequisite: MATH 251 or MATH 281, or permission.

This is an introduction to graph theory and its applications through a modeling process. Topics include degrees, isomorphic graphs, trees, connectivity, traversability, matchings, planarity, coloring, digraphs, Ramsey Numbers, networks, and distance.

Offered: in alternate fall semesters.

### **MATH 390 - Special Topics in Mathematics (1-3 cr.)**

Prerequisite: Junior standing and permission of the instructor.

Topics offered depend upon student interests as well as particular interests of instructors. The course is offered as often as faculty time and student interest permit. May be repeated for credit if topic differs.

### **MATH 412 - Introduction to Topology (3 cr.)**

Prerequisite: MATH 251 or MATH 281, or permission.

This course covers introductory topics in the general theory of topological spaces. Topics include closed sets, closure, limit points, basic open sets, subspaces, continuity, homeomorphisms, product spaces, connectedness, compactness, and separation properties. There is an emphasis on writing formally correct mathematical proofs.

Offered: on demand.

### **MATH 418 - Introduction to Modern Algebra (3 cr.)**

Prerequisite: MATH 251 or MATH 281, or permission.

This is an introduction to the axiomatic study of the algebraic structures of groups, rings, and fields. Topics include groups, subgroups, permutation groups, cosets, normal subgroups, group homomorphisms, factor groups, rings, subrings, polynomial rings, ideals, ring homomorphisms, factor rings, integral domains, fields, and the Fundamental Theorem of Algebra. There is an emphasis on writing formally correct mathematical proofs.

Distribution: MR

Offered: in the fall semesters.

### **MATH 420 - Mathematical Modeling (3 cr.)**

Prerequisite: MATH 372 or permission.

This is an introduction to the construction and refinement of mathematical models. Techniques vary but typically include continuous modeling using differential equations as well as discrete modeling using linear programming and operations research. Applications may include models from population dynamics, environmental science, disease epidemiology, resource allocation, network flows, and financial planning.

Offered: in alternate spring semesters.

### **MATH 421 - Real Analysis (3 cr.)**

Prerequisite: MATH 235

This is an introduction to the rigorous treatment of analysis. Topics covered include the real number system, sequences, limits of functions, continuity, differentiation, integration, infinite series, sequences, and series of functions. There is emphasis on writing formally correct mathematical proofs.

Distribution: MR

Offered: in the spring semester.

### **MATH 427 - Complex Analysis (3 cr.)**

Prerequisite: MATH 235 or permission.

This is an introductory course in the theory of functions of a complex variable covering standard topics: the algebra and geometry of complex numbers, differentiation, integration, power series expansions, residues, and poles.

Offered: on demand.

### **MATH 451 - Senior Project I (1 cr. )**

Prerequisite: Senior standing.

Senior students will work with a faculty member of their choice on a research topic of interest. At the end of the spring term, the student will submit a paper and give an oral presentation to the faculty in the Department of Mathematics and to his/her peers based on the research done over the course of two semesters.

Distribution: MR

Offered: fall semester.

### **MATH 452 - Senior Project II (2 cr. )**

Prerequisite: Senior standing.

Senior students will work with a faculty member of their choice on a research topic of interest. At the end of the spring term, the student will submit a paper and give an oral presentation to the faculty in the Department of Mathematics and to his/her peers based on the research done over the course of two semesters.

Distribution: MR

Offered: spring semester.

This course satisfies one of the Writing Intensive Course requirements for Arts and Sciences students.

### **MATH 480 - Internship in Mathematics (1-3 cr.)**

See "Internships (p. 25)".

### **MATH 481 - Internship in Mathematics (1-3 cr.)**

See "Internships (p. 25)".

### **MATH 490 - Seminar (3 cr.)**

Prerequisite: Permission of the instructor.

Topics discussed depend upon the interest of the students. Seniors or unusually well qualified juniors may be admitted to the course only by permission of the department.

Offered: on demand.

## **ME - MECHANICAL ENGINEERING**

### **ME 202 - Statics (3 cr.)**

Prerequisite: MATH 134, PHYS 133.

This course is designed both to teach problem-solving techniques and to provide students with the necessary background to take succeeding courses in solid mechanics. Students will become familiar with the analysis of two- and three-dimensional force systems using both scalar and vector techniques. These systems include frames, machines, trusses, and simple structures. Additionally, students will have the ability to draw free body diagrams and apply the principles of static equilibrium to both particles and rigid bodies and to analyze problems involving friction. Students will determine the centroids of lines, areas and volumes and the moments of inertia of areas and masses using calculus and composite section methods. A project of a typical statics problem is required. The methods of assessing students

include homework assignments, quizzes, examinations, projects, and a final exam.

### **ME 203 - Dynamics (3 cr.)**

Prerequisite: ME 202, MATH 236 or concurrently.

This course is designed to provide students with a clear understanding of the theory and applications of dynamics. The course depicts realistic situations encountered in engineering practice. Students will learn how to apply Newton's Second Law of Motion to study the effects caused by an unbalanced force acting on a particle; use the principle of work and energy to solve problems involving forces, displacements, and velocities; determine the power and efficiency of machines; solve problems involving impact of bodies; and analyze problems involving the planar kinematics and kinetics of rigid bodies. A project of a typical dynamics problem is required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

### **ME 205 - Measurement Computing (2 cr.)**

Prerequisite: ENGR 105 or equivalent and PHYS 134.

This introductory and hands-on experience course is offered to all students who have some knowledge or experience in programming. Concept of event driven programming is introduced during class lectures while its applications to data collection and analysis are demonstrated during laboratory sessions. Students will learn how to use Object Oriented programming capabilities of Microsoft Visual BASIC to develop true 32-bit applications for data acquisition and control, which can run under Microsoft Windows 32-bit platforms. Practical application exercises related to data acquisition and control, database management, and analysis will be selected from the fields of engineering. There will be one 75-minute laboratory exercise every week where students will practice designing user interfaces, debugging codes, and running programs and interfacing transducers to PC. Computer projects will be assigned. The method of assessing student learning will include computer assignments, performance during laboratory sessions, and quizzes. One class hour and 1.5 laboratory hours.

Distribution: MR

### **ME 208 - Mechanics of Materials (3 cr.)**

Prerequisite: ME 202

Corequisite: MATH 235.

This introductory course is offered to both Mechanical Engineering majors and nonmajors and is designed to increase the students' awareness of the static behavior of deformable bodies and to provide them with the necessary background to take advanced courses in solid mechanics. Students will determine pertinent mechanical properties of materials from stress-strain diagrams; analyze statically indeterminate members; analyze the effect of temperature change in members; determine the state of stress and strain at a point resulting from uniaxial, biaxial, and triaxial loading; determine stresses and displacements in axially, flexurally, and torsionally loaded members; determine the stresses in thin-walled pressure vessels; determine the principal stresses, the maximum in-plane shear stresses, and the absolute maximum shear stress in members subjected to combined loadings; and determine the critical stress in ideal columns subjected to various types of supports. An individual written report analyzing an aspect of mechanics of materials and a group project involving design, building, and testing are required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

Distribution: MR

**ME 303 - Thermodynamics I (3 cr.)**

Prerequisite: CHEM 105 and MATH 235.

This introductory course is offered to both Mechanical Engineering majors and non-majors and is intended to familiarize students with the fundamental concept of the first and second law of thermodynamics. Students will learn how to determine the thermodynamic properties of real and ideal substances by using thermodynamic property tables and mathematical relationships. The concepts of energy, heat, work, entropy, reversible, and irreversible processes are introduced and applied to real engineering systems and thermodynamic cycles. Students are expected to use software packages to perform the assigned computer projects. Quizzes, homework assignments, a midterm, and a final exam will be used to assess a student's performance.

Distribution: MR

**ME 304 - Thermodynamics II (3 cr.)**

Prerequisite: ME 303.

This intermediate course is offered to Mechanical Engineering majors and nonmajors and is designed to teach thermodynamic analysis of various power and refrigeration cycles. The first and second law analyses of the Carnot, Rankine, Otto, Diesel, Brayton, Sterling, and Ericsson cycles will be studied. Reheating and regeneration concepts will be discussed and applied to the Rankine cycle. Maxwell relations are used to establish relationships among thermodynamic properties. Students learn how to analyze nonreactive ideal gases such as the air-water vapor mixture. Each student is expected to work on an independent design project dealing with power or refrigeration systems and submit a final written report. The method of assessing students includes homework assignments, quizzes, exams, computer projects, and a design project.

Distribution: MR

**ME 309 - Materials Science (3 cr.)**

Prerequisite: CHEM 105 and PHYS 134.

This course introduces the fundamental concepts of material science and engineering. Students are provided with information concerning the interrelationship between the microstructure of a material, its properties, and its processing. The analysis of mechanical properties, the manufacturing process, the material specifications for a selected application or component, and the advantages and limitations of the selected material are presented. Major topics include: material selection, crystallographic structure, diffusion, solidification, phase diagrams, microstructure, and mechanical properties of different classes of materials. The course is presented in a series of classroom lectures, selected videos, case studies, and independent investigations. A project and a technical poster presentation are required. The methods of assessing students include quizzes, exams, homework assignments, and applications of principles to case studies.

Distribution: MR

**ME 311 - Mechatronics (3 cr.)**

Prerequisite: ME 203, and ME 205 or permission of instructor.

Mechatronics is the synergistic integration of mechanism, electronics, computer control, and information technology to achieve a functional system. This course centers around the modeling and analysis of the basic hardware and software components of PC-based data acquisition and control, and electro-mechanical systems including sensors, actuators, signal processing, microcontrollers, mechanisms, and PID motion controls. Hands-on experience of the applications and programming of simple mechatronic systems is provided. The

method of assessing students includes quizzes, homework assignments, exams, and laboratory reports.

Distribution: MR

**ME 313 - Mechanical Laboratory I (2 cr.)**

Prerequisite: ME 203 or concurrent, ME 208 or concurrent, IE 212 or concurrent; or permission of the ME laboratory coordinator.

This course is the first in a three-course sequence designed to give students hands-on experience in the use of laboratory instruments and in the collection and interpretation of data. Experimental methodology and communication of experimental results are stressed throughout the course. The course also serves to enhance the technical writing skills of the student. A student works in a team to perform laboratory experiments in dynamics, mechanics of materials, measurement techniques, data acquisition, and manufacturing. A written report or technical memorandum is submitted either by each student or by the group. The assessment is based upon the quality of both the writing and engineering content of the written reports.

Distribution: MR

One class hour, one three-hour lab.

**ME 314 - Mechanical Laboratory II (2 cr.)**

Prerequisite: ME 303; ME 313; ME 316 or concurrently; or permission of the ME Lab Coordinator.

This course, the second in a three-course sequence, builds on the skills developed in ME 313. Experimental methodology and communication of experimental results are also stressed throughout this course. A student works in a team to perform laboratory experiments in material science, mechanics of materials, fluid mechanics, alternative energy, data acquisition, SPC and manufacturing. A written report or technical memorandum is submitted either by each student or by the group. Additionally, each student works on an interdisciplinary team design project under the supervision of faculty project advisors. Periodic written progress reports and a final written report are submitted. A final oral report is presented before an assembly of faculty and students. The assessment is based upon the quality of both the writing and engineering content of the written reports.

Distribution: MR

**ME 316 - Fluid Mechanics (3 cr.)**

Prerequisite: ME 203, and ME 303 or permission of instructor.

This introductory course is offered to both mechanical engineering majors and nonmajors and is designed to provide students with the background and tools required to develop a physical feel for the phenomenon of fluid motion, to develop practical methodologies for the solution of engineering flow problems encountered in modern technology, and to prepare students to enter professional practice. Students become familiar with pressure measurement; hydrostatic forces on submerged surfaces; developing and using the continuity, momentum, and energy equations; dimensional analysis and dynamic similitude; analysis of flow in closed conduits; calculating the drag force on various two- and three-dimensional bodies; and understanding boundary layer theory, model testing, and fluid measurement techniques. A team design project involving a typical fluid dynamics problem is required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

Distribution: MR

**ME 318 - Design of Solar Energy Systems (3 cr.)**

Prerequisite: ME 303.

This course is an introduction to the theory and application of various solar energy systems, including principles of solar energy collection, conversion, storage, and distribution. Topics such as solar air and water heating and cooling applications, their components and systems in addition to Passive solar strategies and concepts are also highlighted in this course. The course aims at enhancing the students understanding on solar energy availability, collection, and potential utilization of solar energy in improving the indoor environmental quality of built-up spaces. A project involving the design of an energy independent home is required. The methods of assessing students will include homework, quizzes, examinations, classroom discussions, design projects, and a final exam. 3 class hours.

Distribution: MR

**ME 320 - Mechanical Vibrations (3 cr.)**

Prerequisite: ME 203 or ME 207; ME 208; MATH 350.

This course is an introductory treatment of vibrating systems. Students learn to analyze both free and forced, undamped and damped, single degree-of-freedom systems using both equilibrium and energy methods. The method of mass and spring equivalence as applied to both translational and rotational systems is also presented. The study of the response of rotating machinery, dynamic transmissibility, and vibration isolation systems subject to sinusoidal inputs are included. Students learn mathematical methods of analyzing nonsinusoidal inputs using Fourier series; Fourier transforms and convolution methods are introduced to solve two degree-of-freedom systems using matrix methods and to apply the technique to the design of a vibration absorber. An introduction to continuous systems using Rayleigh's and other approximate numerical methods are made. The means of assessing students include homework assignments, quizzes, in-class exams, and a comprehensive final exam.

Distribution: MR

**ME 322 - Manufacturing Processes (3 cr.)**

Prerequisite: Junior or Senior standing in Engineering

This is an introductory course that introduces the fundamentals of a variety of manufacturing processes. Students will focus on both the theoretical and practical aspects of manufacturing processes and materials selection while receiving an introduction to the language of manufacturing. The student will learn to design, analyze, and control each manufacturing process, and quantify its capabilities, typical applications and its advantages and limitations. The topics highlighted in this course are: material selection, metrology, and quality control, casting, forming, material removal, joining, heat treating, and the integration of these techniques into a manufacturing system. The course is presented in a series of classroom lectures, selected videos, case studies, and laboratory experiments which provide students with hands on manufacturing experience. Each student will be assessed by their performance on quizzes, exams, homework assignments, and applications of the learned principles to case studies and laboratory experiments.

Distribution: MR

**ME 324 - Design of Mechatronic Systems (3 cr.)**

Prerequisite: ME 311

Mechatronics is a modern discipline that transcends the boundaries between Mechanical, Electrical, Computer Engineering, and Information Technology. It is defined as the science of intelligent

and integrated systems in which engineers integrate mechanical, electrical and computer engineering to design, develop, fabricate and test complex automated systems. The evolution of this area is particularly a consequence of the tremendous growth in the area of computers, intelligent sensors, electronic signal conditioners, PC and PLC-based controllers. Because of the emphasis upon system integration, this course will center on system integration with practical industrial applications. This intermediate, cross-discipline, project-based course which is offered to mechanical engineering juniors provides a real-life experience related to the practice of mechatronics engineering. Students will continue using their knowledge and skill of Visual Basic.NET or LabView in conjunction with an off the shelf A/D board to develop Human Machine Interface (HMI) and collection and analysis routines. Finally, student will be introduced to the design and applications of relational database management systems using MySQL or Microsoft SQL servers.

Distribution: MR

**ME 333 - Independent Study in Mechanical Engineering (3 cr.)**

See □ Independent Study □ on p. 32 of catalogue

Distribution: MR

**ME 410 - Advanced Mechanical Engineering Application Techniques (3 cr.)**

Prerequisite: MATH 350; ME 208; ME 316 or concurrently; ME 320 or concurrently.

This course is a study of the development and application of advanced solution techniques to engineering problems. The course includes the linearization, and/or solution of key differential equations in solid mechanics, fluid mechanics, and the thermal sciences. Solution procedures studied include the use of finite difference approximations, linear algebra, Laplace transforms, complex functions, conformal mapping, and advanced calculus. Engineering applications include fluid dynamic flowfield predictions (CFD), approximation techniques for stress and vibration in mechanical systems, and an introduction to analysis of mechanical engineering control systems. An individual written report analyzing an aspect of an application technique is required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

**ME 415 - Wind/Water Turbine Fundamentals (3 cr.)**

Prerequisite: ME 303 and ME 316.

This course introduces wind and water turbines for power generation, with a focus on current Horizontal Axis Wind Turbines (HAWT). Fluid machinery design concepts are developed which include: lift/drag mechanism, control volume theory, Euler's pump equation and fluid machinery similitude. Application of control volume theory to wind and water turbine design and optimization is formulated, and applied to several case studies. The Betz limit and current HAWT wind turbine aerodynamic limitations are formulated. Key mechanical and electrical components are studied with a focus on overall system performance. New and novel wind/water turbine concepts are discussed and analyzed.

Distribution: MR

**ME 417 - Heat Transfer (3 cr.)**

Prerequisite: ME 303 and ME 316.

This senior level course is offered to both Mechanical Engineering majors and nonmajors and is designed to convey the basic principles of heat transfer by incorporating a broad range of engineering applications. Students will use conduction, convection, and radiation equations to determine heat transfer rates over and through plane, cylindrical, and spherical surfaces; determine the optimum thickness of insulation; analyze the effect of heat generation on temperature distribution and heat rate; determine the performance of extended surfaces; calculate the temperature distribution and evaluate the heat rate for two-dimensional steady-state conduction; determine the temperature and heat transfer rate for one-dimensional and multidimensional transient conduction; determine the heat transfer rate over a cylinder, sphere, noncircular cylinders, and on a tube bank in the cross-flow of a gas; and perform engineering calculations that involve energy balance and appropriate convection correlations for internal flows and radiation exchange between surfaces. A team project involving a heat transfer experiment and design of cooling fins for a leaded cylindrical wall is required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

Distribution: MR

### **ME 419 - Experimental and Analytical Stress Analysis (3 cr.)**

Prerequisite: ME 208; MATH 350; ME 435 or concurrently.

This senior level course builds on the material presented in ME 208 and develops the students' ability to apply the principles of advanced mechanics of materials to problem solving while applying common experimental techniques for solution verification. The analytic studies will involve the study of three-dimensional states of stress and strain, unsymmetric bending of beams; stresses and deflections of curved beams and beams on elastic foundations; deflection and slope in beams using Castigliano's theorem; and stresses in thick walled cylinders. The experimental studies include the basic theory and installation techniques of electric resistance strain gauges, photoelastic coatings, and applications of load and deflection measuring techniques. Applications of these techniques in the verification of analytical solutions is emphasized throughout the course. Methods of assessing students include homework assignments, laboratory reports, quizzes, a midterm, and a comprehensive final exam.

### **ME 420 - Wind/Water Turbine Aerodynamic Design (3 cr.)**

Prerequisite: ME 415 and ME 316.

This course applies control volume theory, Euler's fluid machinery equation and fluid dynamic similitude to the aerodynamic design of wind and water turbines. Control volume theory is used to generate turbine performance goals and realistic design constraints. Key aerodynamic relationships for wind/water turbine concepts are formulated and applied to real wind turbine applications. Both turbine cascade theory and turbine blade element theory are developed. Cascade theory applications include turbine performance estimates using available predictions and the use of fluid dynamic similitude. Blade element theory includes turbine blade design using airfoil lift/drag polars. Blade solidity and rotational speed are investigated for optimum performance.

### **ME 421 - Green Engineering: Materials Selection in the Life Cycle Design Process (3 cr.)**

Prerequisite: ME 208 and ME 309.

The course focuses on the environmental impact of engineered products and processes and will develop a systemic approach for the design or re-design of these products for improved sustainability. Topics will include materials and product design, materials selection methodologies, principles of green engineering and eco-design, along with Life Cycle Analysis (LCA). Open-ended design problems and case studies will illustrate these concepts. The methods of assessing students include homework, quizzes, and design project presentations and reports.

### **ME 422 - Control Systems (3 cr.)**

Prerequisite: MATH 350 and ME 203.

This is an introductory course in the analysis and design of controls for mechanical systems. Students learn to apply advanced mathematical procedures such as matrix algebra, complex variables, and Laplace transforms to model both mechanical and control systems. Control system representation and performance are studied. Students learn methods of modeling and testing systems for stability, time domain analysis and design specifications, frequency response, and feedback characteristics. Computer application and modeling are used extensively in the course. Several computer projects are assigned. The method of assessing students includes class participation, homework, examinations, projects, and a final exam.

### **ME 423 - Product Development and Innovation (3 cr.)**

Prerequisite: Senior standing in Engineering.

This course will cover new product innovation from both an entrepreneurship and intrapreneurship perspective. Students will learn about generating and identifying business opportunities, assessing concept ideas from technical, market, and financial perspectives; designing and developing new products; testing prototypes from technical and market perspectives; and developing a marketing plan including launch, monitoring, and measurement provisions. Interdisciplinary teams of business and engineering students will apply these principles to develop product concepts, prototype products, final designs, and marketing plans for a new consumer or business product. The final designs and plans will be presented to an expert panel of business executives, investors, and faculty.

Can not receive credit for taking BME 471 and BUS 423.

### **ME 425 - Design of Machine Elements (3 cr.)**

Prerequisite: ME 208, ME 309 or BME 240/BME 340.

This senior level course is designed to introduce students to the methodologies involved in the analysis and design of simple machine parts. The impacts of social, economic, and material constraints on the design process are also considered. Students use failure theories to determine the state of stress in members made of ductile or brittle materials subjected to either steady, alternating, or combined steady and alternating stresses; construct fatigue diagrams and fatigue failure curves; and use Miner's Equation to analyze the state of stress in materials subjected to various loading cycles. Topics include the design of circular and noncircular shafts subjected to steady and fluctuating loads, the determination of the characteristics of clutches and brakes to satisfy operating conditions; the specification of springs subjected to either steady or fluctuating loads to satisfy design specifications; and the specification of threaded fasteners. A project involving the design of machine elements is required. The method of assessing students includes homework assignments, quizzes, examinations, and projects.

Distribution: MR

**ME 426 - Gas Dynamics (3 cr.)**

Prerequisite: ME 303, ME 316, and senior standing.

This course introduces students to the analysis and design procedures currently used for solving engineering problems in compressible fluid flow. Students learn how to combine the concepts of dynamics, thermodynamics, and fluid mechanics to generate useful analyses for the design of fluid machinery. Students use control volume theory and several derived compressible flow analyses to develop design procedures for wind tunnels, exhaust pipe tuning, aircraft inlets and nozzles, shock tubes, and gas turbines. Several case studies encompassing contemporary design problems from industry are used in the classroom to enhance the learning process. An individual design project using these methods is assigned. The method of assessing students includes classroom participation, homework assignments, examinations, and a final exam.

**ME 427 - Kinematics and Control of Electro-Mechanical Systems (3 cr.)**

Prerequisite: ME 203 and EE 205

This is an introductory level course in electric drive systems. Advances in power electronics has permitted the development of adjustable-speed drives which provide significant performance and efficiency improvements in such areas as pumps and compressors, precision motion control in automated factories, wind-electric systems in generating electricity, and hybrid-electric vehicles, to name a few. To understand what a variable-speed drive is and how it works we will study such things as mechanical models related to rotating machines, review of associated electric circuits' theory, overview of electric converter operation, electro-mechanical energy conversion principles, and what needs to be considered in controlling the various types of electrical machines available to us. Successful completion of this course should provide the student with a strong background at the systems integration level of electric drives. Methods of assessment include homework, quizzes, and tests.

**ME 430 - Metrology: The Science of Measurement (3 cr.)**

Prerequisite: Senior standing in Biomedical, Industrial, or Mechanical Engineering.

This course is an introduction to the fundamentals of metrology, the science of measurement. Students will be introduced to real-world applications in topical areas including process certification, conventional and advanced inspection tools and techniques, gage repeatability and reproducibility (Gage RR), and re-engineering techniques of precision machine components using Faro Arm, White Light, Coordinate Measurement Machines (CMM), and Non-Contact Lasers. This course provides students with the ability to make judgments regarding the proper selection and usage of metrology tools and processes for advanced measurement techniques. It also, facilitates the application of metrology skills to advanced project work in the engineering curricula, as well as to the needs and practices of industry. The methods of assessing students include homework, quizzes, examinations, classroom discussions, hands-on laboratories, and a final exam.

**ME 437 - Design Projects (3 cr.)**

Corequisite: ME 439.

Selected students work on an independent design project in the semester prior to enrolling in ME 440. This course is intended to

provide students with the opportunity for a two-semester project sequence with ME 440. See description for ME 440.

Distribution: MR

**ME 439 - Professional Awareness (1 cr.)**

Prerequisite: Senior standing.

This course is designed to make students aware of some of the problems, concerns, and responsibilities of an engineer as a professional. In addition, students are guided in formulating a proposal for a Senior Design Project in preparation for project work in ME 440. Students participate in discussions, led by invited speakers, on topics that enable them to write a professional résumé, interview for a job, generate an effective and substantive report, and make an effective technical oral presentation. Students are exposed to ethical issues in engineering environments; made aware of the necessity of protecting their work with either patents, copyrights, trademarks, and trade secrets and of not infringing on the similar rights of others; and apprised of issues of safety in the work place, product liability, and the importance of professional registration. Faculty and representatives from industry present ideas for Senior Design Projects and each student chooses a project and develops and writes a project proposal under the supervision and guidance of a faculty advisor. The assessment in this course is based on students' participation in discussions, the submission of short papers on some of the issues raised in the presentations, and the quality of the project proposal and oral presentation. One class hour.

Distribution: MR

**ME 440 - Senior Design Projects (3 cr.)**

Prerequisite: ME 439 and graduating senior status.

This is a capstone design course that prepares students for entry-level positions. In this course, each student works on an independent engineering project under the supervision of a faculty advisor. Students apply the design process and communicate the results of their project work in both an oral and written form. Oral reports are presented before an assembly of faculty and students. Students apply engineering design principles either by working on a product, improving a product, or designing experiments to investigate causes of either an observed phenomenon or a problem in engineering. Students are required to demonstrate their achievements using appropriate laboratory exhibits. Students who select industry-sponsored projects have the opportunity of working with the industrial advisor in an actual engineering environment. The assessment in this course is based on the students' level of commitment demonstrated throughout the semester, the level of achievement attained in the project, the recording of activities in a log book, and the quality of the written report and oral presentation. Meeting hours by arrangement.

Distribution: MR

**ME 444 - Computer Applications in Mechanical Engineering (3 cr.)**

Prerequisite: ME 417 or concurrently; and senior standing.

This advanced course is offered to Mechanical Engineering majors. Students learn to use computational methods and numerical techniques in conjunction with spreadsheet packages to solve practical engineering problems encountered in solid mechanics, fluid mechanics, heat transfer, dynamics, machine design, measurements, and vibrations. The development of computer algorithms/macros for either design or analysis is also emphasized. Students use case studies to investigate problems requiring a multidisciplinary approach. A total of 10 computer projects will be assigned. Each student is

expected to work on two independent design projects and submit a final written report for each project. The methods of assessing students include computer assignments and the design projects.

### **ME 445 - Design of Alternative Energy Systems (3 cr.)**

Prerequisite: ME 303, ME 316, and ME 417 or concurrently.

This course is an introduction to the theory and application of various alternative energy systems, including solar, wind, fuel cells, geothermal, and ocean waves. Students will become familiar with calculating the thermal performance of various alternative energy systems, and learn the various limitations and practical examples where each is used. A project involving the design of an energy independent home is assigned. The methods of assessing students include homework, quizzes, examinations, classroom discussions, a design project, and a final exam.

### **ME 447 - Fundamentals of Flight (3 cr.)**

Prerequisite: ME 203, ME 303 or concurrently, and ME 316 or concurrently, or permission of instructor.

This course is an introduction to the fundamentals of flight, with a focus on engineering aspects of flight. Topics include basic aerodynamics of sub-sonic flight, airfoil and wing design, airplane performance at various flight attitudes and conditions, aircraft stability and control, airplane systems and instruments, airport and flight environments, navigation, and aviation weather. Basic wind tunnel experiments and a flight simulator are also used to demonstrate the concepts covered during classroom sessions. The methods of assessing students include homework, quizzes, examinations, classroom discussions, a team-based aerodynamic design project, and a final exam.

### **ME 449 - Computer-Aided Engineering (3 cr.)**

Prerequisite: Senior Engineering standing.

This course is offered to all engineering majors. Students learn the fundamentals of conceptual design and engineering analysis/simulation. Computer hardware and software required to perform solid modeling and finite element analysis are presented. Commercial software packages such as SDRC Master Series and Fluent are used during the laboratory sessions to provide students with hands-on experience related to the concepts learned during class lectures. Students will use these commercial tools to generate solid models and import the geometry into the simulation module to perform finite element analysis or design optimization. Each student will complete 14 solid modeling and finite element assignments outside of the class and laboratory periods. Additionally, each student will work on an independent design project and submit a final written report. The methods of assessing students include computer assignments, performance during laboratory sessions, and the design project. One class hour and three hours lab.

Distribution: MR

### **ME 455 - Applications of Mechatronic Systems (3 cr.)**

Prerequisite: ME 311 and ME 324

This advanced course is intended to equip students with an in-depth knowledge and understanding of key mechatronic concepts and their applications to the robust design of mechatronic products and systems for consumers and industry. Core aspects are combined with practical industrial applications and are presented in an optimal way for understanding. A collection of case studies drawn from a variety of industries (complete with parts, lists, setup, and instructions) are used to support the mechatronics design methodology.

This course which builds on the skills introduced in ME 311 and ME 324 will help students to deepen their knowledge of system integration and Mechatronics system design process. It also develops concepts related to robotics applications, plus advanced topics of mechatronic system design like design for testing and fault-tolerant design. The course, like ME 324, also provides a real life experience related to the practice of mechatronics engineering.

### **ME 460 - Noise Control and Engineering Acoustics (3 cr.)**

Prerequisite: Junior or senior standing in Engineering.

Noise has become a major factor in influencing the marketability and competitiveness of industrial products such as cars and washing machines. In addition many products are required to satisfy strict legal and regulatory noise limits, e.g. aircraft take off noise. This course introduces to engineering students the fundamentals of acoustics, vibrations, and noise control. It then uses these principles in designing effective noise-control solutions to common engineering problems. Students will learn the effects of noise on people. Students will perform several laboratory and field experiments. Several case studies encompassing contemporary design problems from industry are used in the classroom to enhance the learning process. An individual design project using these methods is assigned. The method of assessing students includes classroom participation, homework assignments, examinations, and a final exam.

### **ME 466 - Applied Computational Fluid Dynamics (3 cr.)**

Prerequisite: ME 304 and ME 316.

This is a study of fluid machinery design. Topics include boundary layer theory; procedures for analyzing fluid flow losses; compressible flow effects; design concepts and analyses for airfoils, airfoil cascades, compressors, and turbines; model testing and evaluation; and introduction to gas turbine analysis and design. A design project involving the use of analytical and experimental methods is required. The methods of assessing students include homework, quizzes, examinations, classroom discussions, a design project, and a final exam.

### **ME 480 - Internship in Mechanical Engineering (3 cr.)**

See "Internships (p. 25)".

### **ME 482 - Mechanical Engineering Research (1-3 cr.)**

Prerequisite: Junior or Senior Standing

See Undergraduate Research (p. 25)

Variable credits 1-3 cr.

### **ME 490 - Special Topics in Mechanical Engineering (3 cr.)**

A study of an advanced topic in engineering of special interest to mechanical engineering majors.

## **METR - METEOROLOGY**

### **METR 101 - Introductory Meteorology (3 cr.)**

This is an introductory course in meteorology for the non-technical student. Topics include the earth-sun system, the earth's atmosphere, the earth's heat budget, weather measurements, clouds, horizontal air

movement, stability, fronts, short-term weather forecasting, and climate. Two class hours, three-hour lab.

Laboratory fee \$100.

## MK - MARKETING

### **MK 200 - Principles of Marketing (3 cr.)**

Prerequisite: Sophomore standing.

Cross-Listed as: HONB200

This course is an exploration of the role of marketing both within the firm and within society. The course examines concepts, functions, and institutions involved in the process of developing and distributing products and services to consumer, industrial, and international markets.

Distribution: BUSR/MR

Offered: in the fall and spring semesters.

This course is a prerequisite.

### **MK 301 - Buyer Behavior (3 cr.)**

Prerequisite: MK 200/HONB 200

This course examines the marketing of goods, services, ideas, places, people, and events to traditional and organizational consumers. Special emphasis is placed on buyer behavior theories with marketing management implications, and data collection for problem discovery relative to buyer behavior.

Distribution: MR

Offered: in the fall and spring semesters.

### **MK 311 - Multinational Marketing (3 cr.)**

Prerequisite: Junior standing and MK 200/HONB 200.

This course is an introduction to the complexities and implications of foreign markets, the contemporary environment, problems, and practices in international and global marketing. Emphasis is on decision-making and policy formulation including demographic, cultural, economic, political, legal, technological, logistical, and competitive aspects of doing business outside the home country.

Offered: in the fall semester.

Formerly MK 411

### **MK 317 - Promotional Strategy (3 cr.)**

Prerequisite: MK 200/HONB 200

This course integrates marketing communication theory, concepts, and research with in-depth treatment of all elements of the promotional mix-advertising, sales promotions, direct marketing, public relations and publicity, and personal selling. The course covers the fundamentals of marketing communications.

Distribution: MR

Offered: in the fall and spring semesters.

### **MK 318 - Marketing Research (3 cr.)**

Prerequisite: MK 200/HONB 200 and BIS 220 (or equivalent).

This course is a study of the quantitative and qualitative techniques of marketing research and their effective use in marketing management. The course emphasizes the flow of marketing information, the

development of sound primary research, and the adaptation of research tools to management planning and decision making.

Distribution: MR

Offered: in the spring semester.

### **MK 320 - Price and Product Strategy (3 cr.)**

Prerequisite: EC 111 or EC 112, MK 200/HONB 200, BIS 220, and MK 301.

Marketing is about the exchange process of products and services for monetary consideration between buyers and sellers. This course examines the creative and management processes, approaches, and analytical tools and techniques involved in creating products/services and setting the prices for them. The teaching pedagogy employs interdisciplinary student teams that identify customer needs and create product/service design and pricing solutions for them. While the major focus will be on the development and pricing of new products, other product and pricing issues such as product life cycle, product development and pricing, product line pricing, branding, and price-quality relationship will be covered.

Distribution: MR

Offered: in the spring semester.

### **MK 322 - Sales and Sales Management (3 cr.)**

Prerequisite: MK 301.

This course is an examination of the role of personal selling in the marketing mix. Planning, training, organizing, forecasting, and reporting of individual sales personnel and group sales activities are emphasized.

Offered: in the spring semester.

### **MK 323 - Distribution Strategy (3 cr.)**

Prerequisite: MK 301.

This course examines channels of distribution as organizational networks that create value for the customer through the generation of possession, time, and place utilities. The approach will be both strategic and managerial-strategic in the sense that marketing channels are value adding chains that create competitive advantage, managerial in the sense that channels must be designed, developed, and maintained as the marketing environment changes.

Distribution: MR

Offered: in the fall semester.

### **MK 333 - Independent Study in Marketing (3 cr.)**

See "Independent Study (p. 24)".

### **MK 334 - Independent Study in Marketing (3 cr.)**

See "Independent Study (p. 24)".

### **MK 340 - Promotion Design and Applications (3 cr.)**

Prerequisite: MK 200/HONB 200 and junior standing

This is a course designed to give students experience applying promotions and graphic design theory to the development of promotional materials such as print advertisements, sales support materials, newsletters, flyers, logo design, business communication materials, and web pages. Students will be introduced to graphic design computer software used for creating marketing and sales materials.

Offered: in the fall and spring semesters.

### **MK 346 - Relationship Marketing (3 cr.)**

This course is an examination of relationship marketing strategies and techniques to develop long-term relationships with customers, suppliers, and other relevant stakeholders. Students will analyze the elements of relationship marketing and relate those elements to contemporary marketing communication issues. Topic areas include customer communication patterns, customer database management, interpretation of customer databases, database suppliers and end users, the impact of relationship marketing on quality, service, and the marketing mix, measuring and tracking customer satisfaction, building and maintaining customer loyalty, and the organizational Prerequisites for relationship marketing.

### **MK 370 - Social Media Marketing (3 cr.)**

Prerequisite: BIS 202 and MK 317.

This course investigates the dynamic topic of social media marketing, the technological innovation that has changed the way businesses market themselves in a digital world.

An overview of social media marketing and the development of social media marketing strategy will be the primary focus of the course. Additional topics include, new technologies in social media marketing, the evaluation of social media marketing promotional tools, and the implementation of social media marketing campaigns. This course will help students to gain a better understanding of the value of social media marketing as a viable and often times necessary marketing resource.

Formerly "Electronic Marketing-Issues and Strategies"

### **MK 390 - Special Topics in Marketing (3 cr.)**

This course is a study of advanced topics in marketing of special interest to marketing or marketing communication/advertising majors, but not carried in the catalog on a regular basis.

Distribution: MR

### **MK 421 - Marketing Management (3 cr.)**

Prerequisite: MK 318 and senior standing.

This course focuses on the problem-solving and decision-making process of marketing managers as they endeavor to harmonize the objectives and resources of the organization with the needs and opportunities in the marketplace. Case analysis is used to investigate managerial strategies and tactics and their implementation in a variety of marketing situations.

Distribution: MR

Offered: in the fall semester.

### **MK 422 - Campaign Planning and Management (3 cr.)**

Prerequisite: MK 317, MK 340 as pre- or corequisite, and senior standing.

This course is an investigation of the role of integrated marketing communication, the application and purchase of various media, and the impact on the client, consumer, business, and society. The focus of the course is to provide students with an overview of and practical experience with the use and effectiveness of marketing media such as television, radio, outdoor, print, and newer technologies. Integrated marketing communication strategies are developed and investigated.

Distribution: MR

Offered: in the fall semester.

### **MK 440 - Marketing Seminar (3 cr.)**

Prerequisite: Senior Marketing or Marketing Communications/Advertising standing and MK 421 or MK 422.

This course is intended to be taken during the student's final semester. This senior level capstone course is designed to help students develop a real-world perspective of competing in the marketplace. Students will use a course imbedded marketing computer simulation to learn how to analyze and assess a particular brand's market status, make decisions in several key marketing areas, experiment with alternatives, and see the results of their recommended choices.

Distribution: MR

Offered: in the spring semester.

### **MK 480 - Internship (3 cr.)**

See "Internships (p. 25)".

Distribution: MR

### **MK 481 - Internship (3 cr.)**

See "Internships (p. 25)".

Distribution: MR

### **MK 485 - Marketing Communication/Advertising Internship (3 cr.)**

Prerequisite: Marketing Communication/Advertising majors.

See "Internships".

## **ML - MILITARY LEADERSHIP**

### **ML 100 - Introduction to Army Physical Fitness (1 cr.)**

This course is based on the Army Physical Fitness Training Program. It is designed to introduce students to the ethos and approach to fitness within the military and to augment their training as future leaders if they choose to pursue a commission in the United States Army. This course is open to all students.

### **ML 101 - Foundations of Officership (1 cr.)**

This is an introduction to basic leader and officer competencies to establish a foundation for continued study. Learn basic life skills pertaining to personal fitness, time management, and interpersonal communication. Includes introduction of Army values and expected ethical behavior. Presents the unique duties and responsibilities of officers and the expectation of selfless service.

### **ML 102 - Basic Leadership (1 cr.)**

This is an introduction of a generic model of problem-solving; instruction in basic skills that underlie effective problem-solving; relate the problem-solving model and basic skills to the resolution of military problems. Fundamental leadership concepts are introduced including factors that influence leader and group effectiveness.

### **ML 201 - Individual Leadership Studies (2 cr.)**

This course emphasizes development of problem-solving and critical thinking skills through experiential learning activities. Application of

effective written and oral communication, feedback, and conflict resolution skills.

### **ML 202 - Leadership and Teamwork (2 cr.)**

This course focuses on self-development guided by knowledge of self and group processes. Experiential learning activities are designed to challenge current beliefs, knowledge, and skills.

### **ML 301 - Military Leadership I (3 cr.)**

Overview of military leadership at a hands-on tactical level and theoretical level. Tactical leadership phase: focus on the small unit leader and skills required for successful leadership of unit from a fire team through platoon level. Theoretical leadership phase: focus on basic leadership principles, communication concepts, and motivation theory.

### **ML 302 - Military Leadership II (3 cr.)**

This is an introduction to military leadership and management. Development of practical managerial/leadership skills in planning, organizing, delegation, and control and development of instructor skills through instruction training, performance-orientated training, and individual classroom presentations.

### **ML 333 - Independent Study in Military Leadership (1-3 cr.)**

See "Independent Study (p. 24)".

### **ML 334 - Independent Study in Military Leadership (1-3 cr.)**

See "Independent Study (p. 24)".

### **ML 401 - Leadership and Officership I (3 cr.)**

This course provides an introduction of Army staff organization, functions, and processes. Personnel and training management; includes counseling techniques and Army career management perspectives. Refines leadership skills to lead people and manage resources.

### **ML 402 - Leadership and Officership II (3 cr.)**

This course focuses on military law and ethics, constitutional basis of powers, basic principles of criminal law and ethics, rules of evidence, military judicial structuring within the Army, and issues dealing with problems faced by the newly commissioned officer.

## **MUS - MUSIC**

### **MUS 101 - Introduction to Music (3 cr.)**

A nontechnical course guides students in approaching classical music of the 16th - 20th centuries. Topics include the diversity of musical forms, historical backgrounds, composer biographies, and selected musical examples.

Distribution: GUR/MR

Offered: every semester.

Formerly "Music Appreciation"

### **MUS 102 - The Art of Singing (3 cr.)**

Intended for students with little or no singing background, this course is designed to be a "lab choir." Students will study basic techniques of good ensemble vocal production, and will learn fundamentals of music reading, musicianship, and choral singing. Lecture rehearsals may be augmented with assigned listening and video screenings.

Offered: every year.

### **MUS 110 - Beginning Guitar (3 cr.)**

This course is designed as an introduction to guitar for those with little or no experience on the instrument. Skills to be developed include learning basic first position chords, reading Tablature, playing melodies with a pick, learning basic strumming styles, and playing in a group. All techniques and music theory will be taught in the context of songs. An acoustic guitar is preferred for classroom use.

Offered: every semester.

### **MUS 120 - American Popular Music (3 cr.)**

This course is designed to be an introduction to the art of song as found in a wide range of American forms such as folk, musical theater, jazz, pop, and rock. Attention will be paid to the origins of music and the contexts in which it has been performed. The course aims to help students identify not only various genres but well-known singers and songs as well, and, for musical theater, some of the shows the songs are from. Poetic content and artistry of lyrics will be examined. Basic concepts of musicianship will also be covered (rhythm, meter, pitch, style, harmony, voice parts, instrumentation, etc.), as they pertain to the recordings.

Offered: in alternate years.

Formerly MUS 320

### **MUS 141-148 - University Singers (1 cr.)**

Prerequisite: Permission of instructor.

Students receive credit for participating in rehearsals and performances of the jazz choir.

### **MUS 151-158 - Campus Chorus (1 cr.)**

Permission of instructor required. Students participate in the performance of the campus chorus.

### **MUS 161-168 - Pep Band (1 cr.)**

Permission of instructor required. Students participate in the performances of the University's pep band.

### **MUS 181-188 - Concert Band (1 cr.)**

Prerequisite: Permission of instructor required.

Students participate in the practice and performance of the University's concert band.

### **MUS 190 - Special Topics in Music (1-3 cr.)**

Topics in music that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **MUS 201 - Basic Music Theory and Composition (3 cr.)**

An introduction to the art and science of music theory covering musical notation, rhythm, and harmony. These techniques are then

put to practical use through the art of composing. The students will be able to write their own music and hear them performed in class.

Offered: every year.

### **MUS 210 - Intermediate Guitar (3 cr.)**

Prerequisite: MUS 110 or permission.

This course will introduce students to notes and chords beyond first position. The first unit is on power chords and barre chords. The second unit introduces students to basic finger style guitar and finger picking, with a special focus on acoustic blues and Travis-picking. All techniques and music theory will be taught in the context of songs. Skills to be developed include reading Tablature and chord charts, learning basic chord theory, and playing in a guitar ensemble. An acoustic guitar is preferred for classroom use.

Offered: every spring.

### **MUS 230 - The Music of Social Protest (3 cr.)**

An exploration of the historical contexts, and the political, psychological, and artistic components of the music, both in the United States and around the world. Through sound recordings, film viewings, and readings, students will become familiar with some of the major genres, artists, and musical compositions that comprise the body of music of social protest. Issues of commercialization and the global market will be discussed in relationship to protest music.

Offered: in alternate years.

### **MUS 240 - World Music (3 cr.)**

This course is an introduction to the music of the world's people, including South and Central America, Africa, and Asia. Music will be studied in the context of a people's history and cultural traditions. Includes extensive listening, film viewing, and cultural studies.

Offered: in alternate years.

### **MUS 250 - CMSS Individualized Musical Instrument Instruction (3 cr.)**

Prerequisite: permission of the coordinator of music.

Fee: \$300. Private instruction at the Community Music School of Springfield (CMSS) in such instruments as bass (electric and string), cello, clarinet, drums, flute, guitar (acoustic and electric), piano, saxophone, trombone, trumpet, and violin. Twelve 50 minute sessions. (If a student withdraws prior to the second lesson, \$254 of the fee shall be reimbursed. If a student withdraws after the second lesson but prior to the third, the student shall be reimbursed \$200 of the fee. If a student withdraws after the third lesson, the student shall not receive a reimbursement of any of the fee.) Students solely responsible for selecting the day/time of the lesson by dealing directly with the CMSS. Students are responsible for their own transportation to and from the CMSS. MUS 250 is offered in the fall, MUS 251 in the spring term. May be taken more than once for credit.

Offered: every semester.

\$300

### **MUS 251 - CMSS Individualized Musical Instrument Instruction (3 cr.)**

Prerequisite: permission of the coordinator of music.

Fee: \$300. Private instruction at the Community Music School of Springfield (CMSS) in such instruments as bass (electric and string), cello, clarinet, drums, flute, guitar (acoustic and electric), piano,

saxophone, trombone, trumpet, and violin. Twelve 50 minute sessions. (If a student withdraws prior to the second lesson, \$254 of the fee shall be reimbursed. If a student withdraws after the second lesson but prior to the third, the student shall be reimbursed \$200 of the fee. If a student withdraws after the third lesson, the student shall not receive a reimbursement of any of the fee.) Students solely responsible for selecting the day/time of the lesson by dealing directly with the CMSS. Students are responsible for their own transportation to and from the CMSS. MUS 250 is offered in the fall, MUS 251 in the spring term. May be taken more than once for credit.

Offered: every semester.

\$300

### **MUS 290 - Special Topics in Music (1-3 cr.)**

Topics in music that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **MUS 331 - Rock and Roll: 1950 to 1990 (3 cr.)**

An exploration of the evolution of rock and roll from the blues and folk influence to hip hop. Major artists will be studied, as well as the role of advancements in sound technology and the growth of music as an industry.

Offered: in alternate years.

### **MUS 390 - Special Topics in Music (1-3 cr.)**

Topics in music that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

## **NSCI - NEUROSCIENCE**

### **NSCI 212 - Introduction to Behavioral Neuroscience (3 cr.)**

Prerequisite: PSY 101.

This is a systematic study of the physiological basis of behavior with an emphasis on the role of the central nervous system. The course serves as an introduction to cellular and behavioral neuroscience for psychology and neuroscience majors. Topics include structure and function of the central nervous system (brain, neurons and synapses), sensation and perception, psychopharmacology, neuroanatomy and neurochemistry of learning and memory, emotions, and psychological disorders.

Distribution: MR

Formerly PSY 312.

### **NSCI 247 - Scientific Communication (3 cr.)**

Prerequisite: ENGL 133, NSCI 212 or permission of the chair.

This course is designed to develop communication skills in the sciences. Many forms of scientific communication will be examined including traditional manuscripts, poster presentations, digital presentations and federal grant composition. This course satisfies the writing intensive course requirement for Arts and Sciences students.

Distribution: A&SR

### **NSCI 248 - Reproductive Endocrinology and Physiology (3 cr.)**

Prerequisite: BIO 101 or BIO 108

This course addresses reproductive strategies of non-humans, human reproductive anatomy and physiology, human reproductive endocrinology and human reproductive medicine. This latter topic will occupy a large portion of the term. We will broadly introduce physiological systems of hormone regulation and modulation as well as reproduction. Students will learn the science behind contemporary issues in reproductive medicine and make comparisons of infertility statistics from the World Health Organization with those from the American Society for Reproductive Medicine (via CDC).

Distribution: A&SR

### **NSCI 250 - Neuroscience Lab Rotation I (1 cr.)**

Prerequisite: NSCI 212.

In this course the students have the opportunity to rotate into a faculty's neuroscience lab and acquire basic technological skills and knowledge of the research in progress.

Distribution: MR

### **NSCI 251 - Neuroscience Lab Rotation II (2 cr.)**

Prerequisite: NSCI 250.

In this course the students have the opportunity to rotate into a faculty's neuroscience lab and acquire basic technological skills and knowledge of the research in progress. The student will begin to take the lead on some experiments and show proficiency in animal handling and care.

Distribution: MR

### **NSCI 267 - Neurobiology (4 cr.)**

Prerequisite: NSCI 212 and BIO 108.

This course is an introduction to molecular and cellular principles of neurobiology and the organization of neural networks. Topics include developmental and synaptic plasticity. The course will include laboratory experience electrically recording nerve cells, computer simulations and modeling, and examining the use of molecular techniques in neurobiology.

Distribution: MR

### **NSCI 312 - Cognitive Neuroscience (3 cr.)**

Prerequisite: NSCI 212 or Permission of Chair

This course will provide a comprehensive study of the neural systems that underlie human perception, emotions, memory, and language; and of the clinical disorders that result from damage to these systems. Following a review of neural cell physiology and neuroanatomy, the course will focus on the manner in which basic cognitive functions are disrupted subsequent to brain injury. Current diagnostic methods will be studied, including an examination of how to interpret research/clinical findings and detect inherent limitations.

Distribution: MR

### **NSCI 324 - Animal Learning Lab (4 cr.)**

Prerequisite: NSCI 212 or PSY 313, or Permission of Chair

The basic principles of operant conditioning are demonstrated in two non-invasive behavioral experiments using standard operant conditioning equipment for rodents. Course content will cover operant and respondent conditioning, extinction, shaping, schedules of reinforcement, discrimination training, and inhibitory learning. Students will be required to prepare IMRAD formatted papers (Introduction, Methods, Results, And Discussion) based on their

experimental results. Students will be responsible for conducting their own experiments (recording and analyzing data) and presenting relevant research articles in the student journal club.

Distribution: MR

### **NSCI 333 - Independent Study in Neuroscience (3 cr.)**

See "Independent Study (p. 24)".

Distribution: MR

### **NSCI 350 - Neuroscience Lab Placement I (3 cr.)**

Prerequisite: NSCI 250/NSCI 251.

In this course the students will further increase their knowledge and skill level in a faculty's neuroscience lab. The student will conduct research more independently; assist in the training and supervision of other students; and read, comprehend, and lead journal club discussions of relevant research articles.

Distribution: MR

### **NSCI 351 - Neuroscience Lab Placement II (3 cr.)**

Prerequisite: NSCI 250/NSCI 251.

In this course the students will further increase their knowledge and skill level in a faculty's neuroscience lab. The student will conduct research more independently; assist in the training and supervision of other students; and read, comprehend, and lead journal club discussions of relevant research articles.

Distribution: MR

### **NSCI 380 - Neural Systems and Behavior (3 cr.)**

Prerequisite: NSCI 212, PSY 312, BIO 108 or permission of the chair.

In this course students will examine the link between systems level neuroscience and behavior. The course will focus on models used in research, and especially non-human models (e.g. dolphins, lobsters, etc). The course will address the basic circuits, electrophysiological phenomena, and modulators of neural systems as they pertain to animal behavior. Students will consider matters of neuroethology through discussion of recent advances in the literature/scientific publications.

### **NSCI 401 - Genetic & Molecular Tech in Neurosci (4 cr.)**

Prerequisite: NSCI 212 and NSCI 267 or Instructor's Approval

This practice-based, laboratory course introduces students to a selection of advanced techniques and methods used in contemporary genetic and molecular neuroscience. The common fruit fly, *Drosophila melanogaster*, will be examined and utilized as our model organism because it offers unparalleled genetic tools, rapid lifespan turn-over, and relatively simple anatomy and physiology. Some of the techniques that students will practice include: immunohistochemistry and immuno-fluorescence (fixation, primary and second antibody conjugation), fluorescence microscopy (excitation, emission, and filter cube physics), inverted microscopy (physiologic microscopy, activation of synapses and calcium indicator dyes), both end-point and quantitative Polymerase Chain Reaction (PCR), "fly pushing" (produce mutant strains), and evaluation of custom cassette inserts to the fruit fly genome (e.g. GAL4/UAS, GAL80 / temperature sensitive control, and geneswitch lines).

Distribution: MR

**NSCI 405 - Seminar in Neuroscience (4 cr.)**

Prerequisite: NSCI 267 and PSY 309.

This capstone seminar will cover current approaches and techniques in the field of neuroscience. Guest speakers and Western New England faculty in neuroscience and related areas will present their research. In this course, students critically review the relevant literature, develop skills in oral presentation of scientific data and analysis of experimental results, and interact with faculty members working in fields associated with the topics discussed. The role of the instructor is to provide perspectives or guide the discussions, but the emphasis is on efforts by the students. The students are expected to critically read the designated papers and sufficient other references to place the paper in context, then clearly and critically present its results and conclusions and lead a round-table discussion with the other students.

Distribution: MR

**NSCI 450 - Senior Neuroscience Thesis I (4 cr.)**

Prerequisite: NSCI 350/NSCI 351.

In the first semester of this course the student will prepare and present a research proposal, and begin data collection for their senior research project. In the second semester the student will complete the data collection, analyze their results, and write a complete APA thesis of their senior research project. The student will assist the sponsoring faculty in preparing the paper for a conference presentation and for publication, if required.

Distribution: MR

**NSCI 451 - Senior Neuroscience Thesis II (4 cr.)**

Prerequisite: NSCI 350/NSCI 351.

In the first semester of this course the student will prepare and present a research proposal, and begin data collection for their senior research project. In the second semester the student will complete the data collection, analyze their results, and write a complete APA thesis of their senior research project. The student will assist the sponsoring faculty in preparing the paper for a conference presentation and for publication, if required.

Distribution: MR

**PEHR - PHYSICAL EDUCATION HEALTH AND RECREATION****PEHR 151 - Personal Health and Wellness (1 cr.)**

This is an exploration of current health issues and self-responsibility in achieving optimal health particularly as it pertains to college students. The foundation of the course is the development of a Personal Wellness Plan. Students will evaluate the outcomes of this program. Key topics include exercise, nutrition, weight management, dietary supplements, eating disorders, substance abuse, alcohol, sexual health, stress, tobacco, and consumer health. All students are required to take this course during their freshman year.

Distribution: CR/GUR

This course is a prerequisite.

**PEHR 153 - Racquetball (1 cr.)**

This course is designed to teach the lifetime activity of racquetball. The student will learn all aspects of the game including: safety and etiquette, basic equipment and clothing, grips, how to control the ball,

strokes, strategies, and rules of the game. Grading is weighted more on effort than ability, so as not to deter the beginner from trying this course. A written exam is included in the course.

Distribution: A&SR/CR/GUR

**PEHR 154 - Walking and Jogging (1 cr.)**

This course is designed to emphasize the importance of walking and jogging, which are both lifetime activities. The student will learn stretching techniques, how to choose the correct shoe and appropriate clothing, proper nutrition for a runner, and many other important aspects of walking and jogging. The course is designed to start with walking and then gradually increase to walking and jogging intervals. It culminates with a required 30-minute jog. A written exam is included in the course.

**PEHR 156 - Swimming for Fitness (1 cr.)**

Prerequisite: Must have the ability to swim.

This course is designed for students who enjoy swimming as a form of cardiovascular exercise. There will be a basic stroke review; a swimming test and students will learn how to design a program to help them develop their aerobic fitness level in the pool. Grading will be based upon participation, program development, and a written test.

**PEHR 158 - Life Guarding (1 cr.)**

Prerequisite: Must have the ability to swim 300 yards using the front crawl, continuously.

This course is designed to give students an opportunity to gain American Red Cross certification in life guarding, First Aid, CPR-Professional Rescuer, and Automated External Defibrillation.

There will be a fee for materials and certification of approximately \$60.

**PEHR 159 - Fundamentals of Martial Arts (1 cr.)**

This course is designed to teach students about the traditional lineage of this famous art. It provides students with the knowledge and basic skills of martial arts (self-defense) i.e. breath control; pressure point control; and how to read, write, and speak some "Cantonese." It also provides students with an understanding of the five elements of life (fire, wood, earth, metal, and water) and how these elements are incorporated into their life. They will also be taught tolerance, patience, and forbearance. They will also learn the importance of trust, respect, integrity, collaboration, and communication. Grading will be based upon attendance, participation, and a written examination.

**PEHR 160 - Basketball (1 cr.)**

This course is designed for students at all skill levels that desire to learn more about the game, have a chance to play, and further develop their skills. Grading is based upon regular participation; and knowledge of the basic rules, strategies, and history of the game. A written exam is included in the course.

**PEHR 161 - Personal Fitness-Strength Training (1 cr.)**

This course is designed to give students an opportunity to develop a basic cardiovascular and strength-training program to achieve personal fitness goals. The program focuses on the health related components of personal fitness. Students will be introduced to a variety of fitness equipment and free weights. Each student will develop a basic fitness program. Class time will include both group

and individual routines. Grading will be based upon participation, a fitness assessment, and a final test or project.

### **PEHR 163 - Games Children Play (Required for Elementary Education Majors) (1 cr.)**

This course is designed for but not limited to elementary education majors. Any student interested in working with children in a play setting may wish to enroll in this course. The course includes learning the dynamics of play and the "affective, cognitive, and motor" skill development of children. Students will also learn how to supervise children at play and integrate academic skills into a play environment. Students will also be introduced to the Massachusetts Comprehensive Health Education Frameworks. All students will be expected to teach a game to their fellow students. This course will include a written exam and students will be graded on participation, their teaching lesson, and a final exam. Elementary Education majors are required to take this course.

Distribution: MR

### **PEHR 165 - R.A.D. Rape Aggression Defense (1 cr.)**

This is a comprehensive course that begins with awareness, prevention, risk reduction, and avoidance. It progresses to the basics of hands-on defense training. The Rape Aggression Defense System is dedicated to teaching women defensive concepts and techniques against various types of assault. It utilizes easy, effective, and proven self-defense tactics. Women will be equipped to make an educated decision regarding their personal safety. Participation, an exam, and a Dynamic Simulation with a final paper will determine grades.

### **PEHR 167 - Tennis (1 cr.)**

This course is designed for students with skills ranging from beginner to advanced that wish to develop their skills and play both singles and doubles. Rules and strategies will be emphasized as well. Grading is based upon participation, and knowledge of the basic rules and strategies of the game. A written exam is included in the course.

### **PEHR 168 - Soccer (1 cr.)**

This course is designed to instruct participants in the basic skills (techniques and tactics) of soccer as well as develop their appreciation and understanding of the "world's game." Students will be evaluated on class participation, one exam, and a presentation on a past FIFA World Cup.

### **PEHR 171 - Volleyball (1 cr.)**

This course is designed to instruct participants in the basic skills (techniques and tactics) of volleyball as well as develop their appreciation and understanding of this popular indoor and outdoor game with local roots. Students will be evaluated on class participation, and two brief exams on playing rules, court dimensions, and history of the game.

### **PEHR 181 - Performance Strength Training-Advanced Conditioning (1 cr.)**

This course is designed for students interested in increased performance in athletics and advanced weight training techniques. Students must have at minimum a basic weight training background and a desire to perform exercises and routines at high intensity levels for a skill component. This course concentrates on skill related components of personal fitness. The student becomes familiar with calculating body composition, developing a cardiovascular program,

and sport specific exercise routines. Basic anatomy (muscle structure and function) and a program design and implementation will be included. Grading will be based upon developing and implementing the training program for someone at an advanced fitness level.

### **PEHR 185 - Softball (1 cr.)**

This course is designed for students with a basic skill level in softball that desire to play the game recreationally in a coeducational setting. Students will be expected to enhance their skill, learn the "Slow Pitch" game, and understand the basic rules and strategies of the game. A written exam will be included and participation, and knowledge of the rules and strategies of the game will determine grades. [Up to two PEHR courses may be taken at the 200 level or beyond, for a total of six credits. These additional courses can be taken after the completion of the PEHR 100 level requirements.]

### **PEHR 201 - Principles and Practices of Successful Coaching (3 cr.)**

Prerequisite: Completion of two credit PEHR freshman requirement.

Upon completion of this course, students will have a knowledge and understanding of the principles essential in coaching at the middle school, high school, or club level. Students will acquire the skills in five basic components necessary to be a successful coach. They are: the principles of coaching, the principles of behavior, the principles of teaching, the principles of physical training, and the principles of management. The course will include two exams, and observational and experiencing research paper on current issues in sports, and the development of a philosophy statement.

### **PEHR 202 - Care and Prevention of Athletic Injury/Sport First Aid (3 cr.)**

Prerequisite: Completion of PEHR 100 level requirement-2 credits.

Upon completion of this course, students will have a knowledge and understanding of the principles of care and prevention of athletic injury essential for coaching at the youth, middle, high school, or college level. Students will acquire skills in the following areas of learning: role of a coach in healthcare, basic first aid and CPR skills, and sport first aid for specific injuries. The course will include 10 hours of field experience with the Western New England training staff. It will be taught by one of our certified athletic trainers.

### **PEHR 480 - Internship in Athletic Coaching (3 cr.)**

Prerequisite: Athletic Coaching Minors only. 12 credits toward minor, PEHR 201, 2.5 GPA, junior standing, or permission of the instructor.

This course will provide the student with the opportunity to gain hands-on experience through a coaching experience. The student is placed in an amateur sport environment and their coaching experience is communicated to the faculty sponsor via faculty-student meetings, on-site visits, and a final paper. The internship in athletic coaching is an academic course with the primary goal of joining theory from the classroom with practice from the work experience. Students are encouraged to select an internship site that reflects the level of coaching that most interests them.

### **PEHR 481 - Internship in Athletic Coaching (3 cr.)**

Prerequisite: Athletic Coaching Minors only. 12 credits toward minor, PEHR 201, 2.5 GPA, junior standing, or permission of the instructor.

This course will provide the student with the opportunity to gain hands-on experience through a coaching experience. The student is placed in an amateur sport environment and their coaching experience is communicated to the faculty sponsor via faculty-student meetings, on-site visits, and a final paper. The internship in athletic coaching is an academic course with the primary goal of joining theory from the classroom with practice from the work experience. Students are encouraged to select an internship site that reflects the level of coaching that most interests them.

## PH - PHILOSOPHY

### PH 103 - Introduction to Philosophy (3 cr.)

This is a critical examination of basic assumptions about reality, knowledge, and values. Questions to be discussed include "Does God exist?" "Are we a combination of body and soul?" "Do we have free will?" "What do we know?" "Can moral beliefs be objectively true or false?" and "What is the best form of government?"

Distribution: MR

Offered: every semester.

### PH 110 - Critical Thinking (3 cr.)

Not open to students who completed PH 204. This is a study of informal reasoning techniques. Topics include methods of understanding and evaluating deductive and inductive arguments, ways of detecting fallacious reasoning, and skills helpful in making practical judgments. Emphasis is on enabling students to think more clearly and reason more precisely. Does not satisfy the ethical perspectives requirement of the GUR or the Humanities requirement for A & S.

Distribution: MR

Offered: every semester.

### PH 120 - East Asian Traditions (3 cr.)

Cross-Listed as: REL 120

This course will introduce the student to the philosophical and religious worldviews found in the traditions of China, India and Japan.

We will carefully read selections from some classic and contemporary texts from these traditions, as well as secondary discussions of their key ideas. We will mainly focus on Confucian, Daoist, Indian (Vedic-Hindu and Buddhism) and Japanese Shinto and Samurai worldviews.

We will ask how these perspectives and worldviews address fundamental questions such as: the nature of reality and human nature, the self, knowledge, how to live well, and the good society.

The ideas found in these Eastern (or Asian) traditions have an enduring relevance, and offer us ways to order and value human experience very different from our contemporary social life.

Distribution: MR

Offered: every semester.

Formerly "Introduction to Asian Thought"

### PH 190 - Special Topics in Philosophy (1-3 cr.)

Topics in philosophy that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### PH 204 - Symbolic Logic (3 cr.)

This is an examination of formal methods for determining the validity of arguments and inferences. Topics include truth tables, truth trees, and natural deduction in both sentence logic and predicate logic.

Does not satisfy the ethical perspectives requirement of the GUR or the Humanities requirement for A & S.

Distribution: A&SR

Offered: every spring.

Formerly PH 104.

### PH 208 - Ethics (3 cr.)

Prerequisite: Sophomore standing.

This is an introduction to the basic concepts and principles of ethics as developed from ancient to modern times. The course covers theories of the good life such as hedonism, stoicism, and self-realization; the challenge of relativism; and theories of right and wrong, such as utilitarianism. Concepts to be discussed may include virtue and vice, moral duty, moral rights, and moral responsibility.

Distribution: GUR/MR

Offered: every semester.

### PH 210 - Ethics for Social Workers (3 cr.)

Prerequisite: SW 100

This course presents students with principles drawn from moral philosophy and social work to be used in identifying, assessing, and resolving ethical dilemmas in social work practice. The course covers basic theories of ethics including utilitarianism and Kantian ethics as well as conceptions of virtue and vice. Case studies in social work are used throughout, applying theory to practice.

Offered: every spring semester.

### PH 211 - Business Ethics (3 cr.)

Prerequisite: Sophomore standing.

This is an examination of ethical problems confronting people in business and the professions. Issues include employee rights and duties, professional and corporate responsibility, affirmative action, environmental pollution, worker health and safety, advertising, government regulation, competing conceptions of justice, and alternative economic systems. This course can be taken to fulfill the PH 211 requirement. Cannot take both PH 211 and MAN 240 for credit.

Distribution: BUSR/GUR/MR

Offered: every semester.

Formerly PH 310.

### PH 214 - Ethics Across the Continents (3 cr.)

Prerequisite: Sophomore standing.

This course explores the ethical traditions not only of the United States and Europe, but also of Asia, Africa, and South and Central America, both secular and religious. The course will compare the main U.S. & Western European ethical perspectives of ethical naturalism, utilitarianism, and Kantian ethics with the main Asian traditions of Buddhism, Hinduism, and Confucianism, as well as those of indigenous African cultures.

Distribution: BUSR/GUR/MR

Offered: every semester.

**PH 218 - Contemporary Moral Problems (3 cr.)**

Prerequisite: Sophomore standing.

This is a critical examination of moral issues such as abortion, capital punishment, euthanasia, poverty and economic justice, pornography and censorship, racism and affirmative action, sexism and sexual equality, the just war, animal rights, and environmental protection. The course covers the social dimensions of these issues and the ethical principles that apply in reaching sound conclusions regarding them.

Distribution: A&SR

Offered: every semester.

Formerly PH 307.

**PH 230 - Social and Political Philosophy (3 cr.)**

Prerequisite: Sophomore standing.

This is an examination of basic questions of social and political philosophy focusing on issues of justice, equality, liberty, and rights. Combining the work of classical and modern political thinkers, the course addresses such questions as the following: "Should all people be treated equally?" "What makes a society just?" "How much liberty should people have?" "What rights do people have?" "What is the best form of government?" and "Is capitalism preferable to socialism?"

Distribution: MR

Offered: in alternate years.

Formerly PH 303.

**PH 231 - Biomedical Ethics (3 cr.)**

Prerequisite: Sophomore standing.

A critical examination of basic concepts, such as autonomy and privacy, and ethical issues in biomedical ethics, such as informed consent, euthanasia, assisted suicide, cloning, stem cell research, research and experimentation on animals, rights to healthcare, and the just allocation of medical care. Attention will also be paid to the application of major moral theories.

Offered: in alternate years.

Formerly PH 309.

**PH 240 - Gandhi and King (3 cr.)**

Prerequisite: Sophomore standing.

Cross-Listed as: REL 240

A critical examination of the life, times, and thought of Gandhi and King. Special attention will be paid to Gandhi's campaigns to end apartheid in South Africa and the British occupation of India, as well as King's part in the U. S. civil rights movement. The course will focus on their ethical, political, and religious thought, and their commitment to nonviolence.

This course will satisfy the ethical perspectives requirement of the GUR.

Offered: every other year.

**PH 241 - Philosophy and the Environment (3 cr.)**

Prerequisite: Sophomore standing.

This course introduces students to the philosophical and ethical analysis of environmental issues, such as pollution, use of scarce

natural resources, environmental justice, and climate change. In addition to focusing on environmental threats to human well-being, it explores the issue of humanity's duties to future generations, as well as to other species and their ecosystems. Other issues include corporate responsibility for the environment and appropriate forms of activism in defense of the environment.

Distribution: GUR/MR

**PH 290 - Special Topics in Philosophy (1-3 cr.)**

Topics in philosophy that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**PH 301 - Great Philosophers (3 cr.)**

Prerequisite: PH 103 or PH 204 or permission of the instructor.

This course is a critical examination of the thought of several philosophers including Plato, Aristotle, Aquinas, Descartes, Spinoza, Locke, Hume, Kant, and Russell. Topics may include moral and political thought, philosophy of religion, philosophy of mind, theory of knowledge. This course is normally offered only in the Off-Campus Program.

**PH 304 - Philosophy of Religion (3 cr.)**

Prerequisite: Sophomore standing.

Cross-Listed as: REL 304

This course consists of analysis, interpretation, and evaluation of religious responses to the world of human experience. Topics include the concern of religion with reason, order and pattern, moral insight, and art, and the context of the problems for which religion proposes solutions. Some attention is given to the history of the subject.

Offered: every year.

**PH 316 - Philosophy and Climate Change (3 cr.)**

Prerequisite: Junior standing.

In this course we will evaluate the scientific evidence for the claim that greenhouse gases are increasing global temperatures, and critically analyze some of the philosophical, economic, and political issues that arise given the possibility of anthropogenic global warming (AGW). Topics include probable consequences and effects of global warming, legitimating appeals to expertise and authority, the concepts of risk, uncertainty, and probability, rational decision-making under conditions of uncertainty, the precautionary principle, cost/benefit analyses of inaction, mitigation (prevention), and adaptation, atmospheric justice, causal and moral responsibility, ethical obligations and duties, and rights.

Satisfies A & S Writing Intensive requirement.

**PH 333 - Independent Study in Philosophy (1-3 cr.)**

See "Independent Study (p. 24)".

**PH 334 - Independent Study in Philosophy (1-3 cr.)**

See "Independent Study (p. 24)".

**PH 340 - Ancient Philosophy (3 cr.)**

Prerequisite: Junior standing.

This course introduces students to some of the major figures and schools in ancient and medieval philosophy, including Socrates,

Plato, Aristotle, Stoicism, Epicureanism, Augustine, and Aquinas. Topics include metaphysics, epistemology, and ethics.

Distribution: MR

Offered: every other year.

Formerly "Ancient and Medieval Philosophy"

### **PH 341 - Modern and Contemporary Philosophy (3 cr.)**

Prerequisite: Junior standing.

This course introduces students to some of the major figures and schools in modern and contemporary philosophy, and may include such giants as Descartes, Locke, Hume, Kant, Mill, Hegel, Nietzsche, and Russell. Topics include metaphysics, epistemology, and ethics.

Distribution: MR

Offered: every other year.

### **PH 390 - Special Topics in Philosophy (1-3 cr.)**

Prerequisite: Junior standing or permission of the instructor.

Topics offered depend upon student interests as well as particular interests of instructors. The course is offered as often as faculty time and student interest permit. Recent topics have included "Philosophy of Mind," "Philosophy of Love," and "Aesthetics." The course may be repeated for credit if topic differs.

### **PH 480 - Internship in Philosophy (3 cr.)**

See "Internships (p. 25)".

Distribution: MR

### **PH 481 - Internship in Philosophy (3 cr.)**

See "Internships (p. 25)".

Distribution: MR

## **PHYS - PHYSICS**

### **PHYS 101 - Elements of Physics (3 cr.)**

This is a conceptual, inquiry based introductory survey of physics. It is designed to acquaint the student with typical qualitative reasoning and quantitative methods as encountered in the physical sciences. All subfields of physics will be explored.

Two class hours, three-hour lab.

Laboratory fee \$100.

### **PHYS 105 - Basic Physics (3 cr.)**

Prerequisite: Open to Elementary Education majors only.

This is a course for students in preparation for elementary school teaching. It covers the content knowledge associated with and the methods used in science in the context of an inquiry-based introductory course in basic physical sciences. The student is expected to acquire knowledge of the basic laws of physics, and apply them also to other sciences like astronomy, meteorology, and geology.

Distribution: MR

Two class hours, three-hour lab.

Laboratory fee \$100.

### **PHYS 123 - Physics of the Life Sciences 1 (4 cr.)**

Prerequisite: MATH 123.

This course is a calculus-based introduction to the fundamental principles of mechanics, thermodynamics, and some nuclear physics covering applications to chemistry, biology, and the life sciences. Emphasis is placed upon problem solving, deduction of solutions from first principles, and simple model building. Students gain an understanding of Kinematics, statics, energy, and momentum, Newton's laws, fluid motion, temperature, heat and thermodynamic laws, and nuclear physics as relevant to medical applications.

Distribution: GUR/MR

Three class hours, three-hour lab.

Laboratory fees \$100.

### **PHYS 124 - Physics of the Life Sciences 2 (4 cr.)**

Prerequisite: PHYS 123.

This course is a calculus-based introduction to the fundamental principles of electricity and magnetism, geometric and wave optics, and modern physics covering applications to chemistry, biology and the life sciences. Emphasis is placed upon problem solving, deduction of solutions from first principles and simple model building. Students gain an understanding of electric forces, potentials and currents, electromagnetic induction and light, geometric and wave optics for sound, light and matter, and modern ideas relating to the structure of matter.

Distribution: GUR/MR

Three class hours, three-hour lab.

Laboratory fees \$100.

### **PHYS 131 - Elements of Mechanics I (3 cr.)**

Corequisite: MATH 109

One unit of secondary school physics is recommended. This is an introductory course dealing with Newton's laws of motion and their applications. Linear and rotational kinematics and dynamics are presented with particular emphasis on the laws of conservation of linear momentum, angular momentum, and energy. Mechanical oscillations are discussed.

Distribution: ER/GUR/MR

This course is a prerequisite.

Formerly "Mechanics"

### **PHYS 132 - Elements of Mechanics II (4 cr.)**

Prerequisite: PHYS 131, and MATH 131 or MATH 133 or concurrently.

This is a discussion of concepts in mechanics such as linear motion, Newton's laws, energy, momentum, rotation, simple harmonic motion, and waves with an emphasis on problem-solving.

Distribution: ER/GUR/MR

This course is a prerequisite.

Three class hours, three-hour lab.

Laboratory fees \$100.

### **PHYS 133 - Mechanics (4 cr.)**

Prerequisite: MATH 123, MATH 124, MATH 133, or concurrently.

One unit of secondary school physics is recommended. This is an introductory course dealing with Newton's laws of motion and their applications. Linear and rotational kinematics and dynamics are presented with particular emphasis on the laws of conservation of linear momentum, angular momentum, and energy. Mechanical oscillations are discussed.

Distribution: ER/GUR/MR

This course is a prerequisite.

Three class hours, three-hour lab.

Laboratory fee \$100.

### **PHYS 134 - Electricity and Magnetism (4 cr.)**

Prerequisite: PHYS 133; MATH 123, MATH 124, MATH 132, or MATH 133.

This course is the study of electrostatics, electric and magnetic fields, DC circuits, electrical measurements, electromagnetism, electrical and magnetic properties of matter, and AC circuits.

Distribution: ER/GUR/MR

Three class hours, three-hour lab.

Laboratory fees \$100.

### **PHYS 151 - General Astronomy (3 cr.)**

Prerequisite: BIO 101, CHEM 101, CHEM 105, PHYS 101, GEOL 101, or METR 101.

This is an introductory course designed to acquaint students with an elementary description, in both qualitative and quantitative terms, of the solar system and the behavior and characteristics of the stars and galaxies. (NSP)

Formerly PHYS 113

### **PHYS 152 - Energy and Mankind (3 cr.)**

Prerequisite: PHYS 101/PHYS 123/PHYS 131/PHYS 133, METR 101, CHEM 101/CHEM 105, GEOL 101, or BIO 101.

This course acquaints students with various sources of energy available to mankind. We will follow the various kinds of energy from the source to the consumer. We will consider the technical aspects of energy generation and distribution, the environmental and social consequences of use, future potential to benefit mankind, and the fundamental role energy plays in our society. Examples of energy sources to be investigated are nuclear, solar, hydroelectric,

geothermal tidal, fossil fuel, wind, and magneto-hydrodynamics. (NSP)

### **PHYS 153 - Space Exploration (3 cr.)**

Prerequisite: PHYS 101, PHYS 103, PHYS 123, PHYS 133, CHEM 101, CHEM 105, BIO 101, METR 101, or GEOL 101.

The goal of this natural science perspective course is to introduce students to the basic principles, issues, and science goals in space exploration, including the history and development of the space program, with particular reference to manned versus unmanned space exploration, spacecraft design, launch and navigation, imaging and remote sensing. Public perception of space science and analysis of the costs, risks and benefits of space exploration will be discussed, including reference to ethical and legal implications of topics such as the use of radioisotope fuel sources, 'space junk', and mining rights in space. Basic concepts from physics and astronomy will be covered as needed. (NSP)

### **PHYS 154 - Oceans (3cr.)**

Prerequisite: PHYS 101, PHYS 103, PHYS 123, PHYS 133, CHEM 101, CHEM 105, BIO 101, METR 101, or GEOL 101.

The goal of this natural science perspective course is to provide students with a focus for better understanding and appreciating the oceans as a key part of the overall Earth environment. Students will gain background knowledge useful for evaluating future societal issues including global climate changes and pollution. Scientific information from geology, chemistry, physics, and biology will be incorporated to illustrate how each of these disciplines relates to the ocean. Topics covered in this course will include plate tectonics and the ocean floor, chemical properties of seawater, ocean circulation, waves and water dynamics, tides, ocean ecosystems, and marine life. (NSP)

### **PHYS 155 - Meteorology (3 cr.)**

Prerequisite: PHYS 101, CHEM 101, CHEM 105, GEOL 101, or BIO 101.

This is an introductory course in meteorology for the nontechnical student. Topics include the earth-sun system, the earth's atmosphere, the earth's heat budget, weather measurements, clouds, horizontal air movement, stability, fronts, short-term weather forecasting, and climate.(NSP)

### **PHYS 156 - Sound and Music (3 cr.)**

Prerequisite: Any of following: PHYS 101, PHYS 103, PHYS 123, PHYS 133, CHEM 101, CHEM 105, METR 101, GEOL 101, or BIO 101.

This course provides an introduction to the physical aspects of musical sound. The goal of this natural sciences perspectives course is to provide course participants with a theoretical understanding of the physical basis of musical sound allowing for further research, music-making, or appreciation as listeners. Beginning with the physical properties of sound waves such as wave speed, frequency and amplitude, we will examine how these affect musical concepts of pitch, timbre, mode, and consonance/dissonance. We will look at mechanisms of sound production in various musical instruments and explore the effects of auditorium acoustics, electronic enhancement, and sound recording and reproduction, looking at the variety of ways in which physical phenomena are used to create music. (NSP)

### **PHYS 190 - Special Topics in Physics (1-3 cr.)**

Topics in physics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **PHYS 290 - Special Topics in Physics (1-3 cr.)**

Prerequisite: Sophomore standing.

Topics in physics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **PHYS 301 - Optics (3cr.)**

Prerequisite: PHYS 124 or PHYS 134

This course is designed to provide juniors (and seniors) in engineering and the sciences with a solid foundation in optics and its applications. Specific topics covered are the theory and application of geometrical optics, fiber optics, optical instrumentation, electromagnetic waves, interference, diffraction, polarization, photon theory of light, and the basic principles and applications of lasers. Laboratory activities are used throughout the course to explore and emphasize important concepts.

### **PHYS 333 - Independent Study in Physics (1-3 cr.)**

See "Independent Study (p. 24)".

Laboratory fees may be required.

### **PHYS 334 - Independent Study in Physics (1-3 cr.)**

See "Independent Study (p. 24)".

Laboratory fees may be required.

### **PHYS 390 - Special Topics (1-3 cr.)**

Prerequisite: Junior standing.

Topics in physics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **PHYS 440 - Undergraduate Research (1-3 cr.)**

Prerequisite: Permission of the Department, approval of the dean.

See "Undergraduate Research (p. 25)". Students who show an interest and aptitude for independent and creative work may engage in undergraduate research. Students are expected to write a report based on this work. Class hours by arrangement.

Laboratory fees maybe required.

## **POSC - POLITICAL SCIENCE**

### **POSC 101 - Introduction to Contemporary Global Issues (3 cr.)**

Cross-Listed as: INST 101

The course examines numerous social, cultural, economic, and political issue areas from the vantage points of global community and global citizenship. Areas such as the regulation of business, the spread of technology, environmental pollution, health, poverty, crime, human rights, immigration, education, and democracy as well as war and peace are analyzed within the context of globalization.

Distribution: MR

This course is a prerequisite.

### **POSC 102 - American National Government (3 cr.)**

This course is an introduction to national-level politics in the United States that emphasizes learning concepts and tools of analysis. Students will study the basic structure of the U.S. Constitution and the system of government that it establishes. This will include an examination of federalism, government institutions, and themes associated with citizen participation. Emphasis will also be placed on analyzing current political events.

Distribution: A&SR/GUR/MR

This course is a prerequisite.

### **POSC 190 - Special Topics in Political Science (1-3 cr.)**

Topics in political science that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **POSC 201 - Comparative Politics (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 or sophomore standing.

This is an introduction to basic concepts of comparative political analysis. An appreciation for the diversity of political systems across the world is emphasized through case studies taken from Europe, Latin America, Asia, and Africa.

Distribution: MR

### **POSC 203 - International Relations (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 or sophomore standing.

This is an introduction to the elements essential for analyzing and understanding international behavior, organization, diplomacy, politics, law, and the multistate system.

Distribution: MR

This course is a prerequisite.

### **POSC 205 - Public Administration (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 or sophomore standing.

This is an introduction to public administration both as a field of study and in its practical applications in government. Areas of study include bureaucratic organization, budgeting, and public management. Problems of public service delivery are explored in relation to the contemporary American political scene.

Distribution: GUR/MR

This course is a prerequisite.

### **POSC 207 - Western Political Thought (3 cr.)**

Prerequisite: POSC 101, or INST 101, POSC 102, three credit hours of European history or sophomore standing.

A survey of the great political philosophers including Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, Hegel, Marx, and modern political writers.

Distribution: MR

### **POSC 209 - American Political Thought (3 cr.)**

Prerequisite: POSC 102.

This is a study of American political thinkers from the colonial period to the 20th century.

**POSC 210 - State Politics in America (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 or sophomore standing.

This is a general survey of politics in state and local government. Topics given special consideration include the power of governors and mayors, variations in state/local legislative assemblies, budgeting and taxation issues, intergovernmental relations, citizen ballot initiatives, and policy issues including education, criminal justice, the environment, transportation, and public welfare.

Distribution: MR

**POSC 212 - Political Analysis (3 cr.)**

Prerequisite: POSC 102 and sophomore standing.

This course will introduce students to the ways in which scholars try to systematically describe and explain political phenomena. How is the study of politics a science? How do political scientists develop hypotheses and test them in such areas as citizen participation, the effects of news media and campaign ads on political attitudes, and the behavior of legislators, governors, and presidents in policy-making? The course will cover the elements of research design as well as survey, experimental, and qualitative approaches to the study of politics. Students also will learn how to analyze data using descriptive statistics, t-tests, correlations, and multiple regression.

**POSC 218 - Public Policy in America (3 cr.)**

Prerequisite: POSC 102.

This is an examination in the setting of American politics of the process surrounding public decision-making and implementation. Attention is devoted to specific policy issues (environment, healthcare, education, etc.) and the way in which these are addressed in the public sector by interest groups, bureaucrats, and elected politicians.

Distribution: MR

This course is a prerequisite.

**POSC 225 - Law and Judicial Politics (3 cr.)**

Prerequisite: POSC 102. Not open to students w/POSC 325, POSC 326 or CJ 234.

This course will explore the basic principles and categories of American law, its processes and institutions. We will look at the legal profession, the guardians of the law, from their education to their roles in the legal system, and we will examine our courts and judges and the politics that surround their work.

**POSC 230 - When Cultures Collide (3 cr.)**

Prerequisite: Sophomore standing.

Cross-Listed as: LSOC 230

This course examines how modern nation-states can and should come to terms with issues of cultural and religious diversity, and it considers whether, under what conditions and to what extent cultural and religious minorities can and should be accommodated, integrated and/or assimilated in society. This course looks at a variety of contemporary political and legal case studies, including, but not limited to, immigration policy, child brides, polygamy, female and male circumcision, cultural and religious attire and the use of cultural evidence in court.

**POSC 235 - British Press and Politics (3 cr.)**

Cross-Listed as: COMM 235

This course examines the interaction between British news media and the national government. Students of American media and politics may be surprised to learn that the constitutional guarantee of free press that Americans take for granted is not codified in a single document in Great Britain. Instead, the media-government relationship has evolved over time largely through practice, with print media today policing themselves through the Independent Press Standards Organisation and electronic media laboring under tighter government control. We will examine the relationship between British media and government in comparison with their counterparts in the United States. The course will consist of a mix of lecture notes, class discussions, case studies and field trips. Students will complete short homework assignments and quizzes while in London, and they will submit a more in-depth research paper after they return to the United States.

This course satisfies the Social/Behavioral Science perspective requirement. This course can also be taken at the 300-level with permission of instructor.

Taught in summer session in London.

**POSC 290 - Special Topics in Political Science (1-3 cr.)**

Topics in political science that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**POSC 310 - Politics of Developing Societies (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 and junior standing.

This is a study of the developing societies of the world in the context of rapidly changing socioeconomic conditions and competing political ideologies. Objectives center on a consideration of the cyclical dynamics of democracy and authoritarianism, the rise of revolutionary pressures, and the role of the international economy in shaping domestic politics.

Distribution: MR

**POSC 312 - Politics of Ethnic Conflict: Africa (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 and junior standing.

This is a study of the modern state in Africa, tracing it from colonial origins to the present with a focus on challenges of plural ethnic societies. Thematic content reflects the comparative influence of authoritarianism, and economic underdevelopment shared by all of these societies.

**POSC 316 - Politics of Europe (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 and junior standing.

This is an analysis of the governmental and party structures of Great Britain, France, Germany, and Russia with comparisons to the United States. Special attention paid to European Union institutions.

Distribution: MR

**POSC 318 - Politics of The Middle East (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 and junior standing.

This is a study of the Middle East and North Africa in terms of the shared traditions of Arabic and Islamic culture, authoritarianism, and foreign intervention. Specific issues discussed include the Palestinian-Israeli conflict, the Persian Gulf, Islamic fundamentalism, terrorism, and the impact of oil production.

### **POSC 321 - The U.S. Congress (3 cr.)**

Prerequisite: POSC 102 and junior standing.

This course introduces the world of legislative politics on Capitol Hill, including the people who serve there, congressional organization and procedure, Congress's relationship to other institutions like the President and the courts, and its struggle to solve, while reflecting, the nation's most difficult problems. Students who have successfully completed POSC 320 cannot receive credit for this course.

### **POSC 322 - The U.S. Presidency (3 cr.)**

Prerequisite: POSC 102 and junior standing.

This course examines the history of the Presidency, but the focus is on the office in its current form. Topics include presidential management of the media and public opinion, decision-making in the White House and the President's interaction with other governmental institutions.

### **POSC 324 - Parties and Elections (3 cr.)**

Prerequisite: POSC 102 and junior standing.

This is a study of the electoral process including the roles of candidates, parties, and political managers. Course exercises relate to current campaigns and elections.

### **POSC 325 - Constitutional Law (3 cr.)**

Prerequisite: POSC 102 and POSC 225 or CJ 234

This is a study of constitutional principles as decided by the U.S. Supreme Court. Emphasis is on the Court's roles as arbiter of federalism and separation of powers and interpreter of the Bill of Rights and the Civil War Amendments.

Distribution: MR

### **POSC 326 - Civil Liberties (3 cr.)**

Prerequisite: POSC 102 and POSC 225 or CJ 234

This is a further study of constitutional law focusing on the First Amendment to the U.S. Constitution (Freedom of Speech, Press, and Religion). A secondary focus is on civil rights, affirmative action, and reproductive rights cases.

Distribution: MR

### **POSC 333 - Independent Study in Government (1-3 cr.)**

See "Independent Study (p. 24)".

### **POSC 334 - Independent Study in Government (1-3 cr.)**

See "Independent Study (p. 24)".

### **POSC 338 - Challenges in Local Government Management (3 cr.)**

Prerequisite: POSC 102 and junior standing.

This is a detailed study of the tasks and responsibilities of public administrators and managers in the political context of state and local government. Emphasis is given to the practical application of administrative decision-making, personnel management, relations with elected officials, and improving service delivery.

Distribution: MR

### **POSC 340 - International Law and Organization (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 and junior standing.

This is analysis of international law and organization in the 20th century. Special attention is paid to landmark cases and principles as well as to the structure and processes of the United Nations, European Community, and other experiments in international organization.

Distribution: MR

### **POSC 342 - Environmental Politics (3 cr.)**

Prerequisite: POSC 102 and junior standing.

This is an examination of how political institutions have addressed the issues of environmental quality, waste management, clean air, and energy policy. The focus of the course will be on environmental politics in the United States.

Distribution: A&SR/MR

### **POSC 345 - International Human Rights (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 or LSOC 101, or permission of instructor.

This course offers a comprehensive introduction to the politics, law, institutions and actors of international human rights. Among the areas to be discussed are theories of rights; the history and practice of international human rights standards, instruments, and institutions; critiques of international human rights; and a variety of specific human rights issues, such as torture, war crimes child soldiers, women's rights and religious freedom.

### **POSC 346 - Politics and the European Union (3 cr.)**

Prerequisite: POSC 101 and Junior standing.

The course offers a look at international politics at an advanced level of analysis, and is intended for those Political Science, International Studies, and History majors who have had previous exposure to related subjects at the Freshman and Sophomore level. Students who successfully complete the requirements of this course will have a broader understanding of trends and development in international politics and Europe.

### **POSC 350 - American Foreign Policy (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 and junior standing.

This is an analysis of American foreign relations. The emphasis is on the formulation and consequences of foreign policy as well as the role of diplomacy abroad and in the United Nations.

### **POSC 355 - Comparative Foreign Policies (3 cr.)**

Prerequisite: POSC 101 or INST 101 or POSC 102 and junior standing.

This course is a comparison and contrast of the decision-making processes and foreign policy institutions of the major powers and

selected other states. Emphasis is on understanding contemporary developments in light of the watershed political changes in Europe after the fall of the Berlin Wall.

**POSC 390 - Special Topics in Political Science (1-3 cr.)**

Prerequisite: POSC 101 or POSC 102 and junior standing.

Topics offered depend upon student interest as well as particular interests of instructors. The course is offered as often as faculty time and student interest permit. Recent topics have included "Ethnic and Minority Politics", "Politics and Religion", and "Liberalism versus Conservatism." May be repeated for credit if topic differs.

**POSC 480 - Internships in Political Science (1-3 cr.)**

See "Internships (p. 25)".

**POSC 481 - Internships in Political Science (1-3 cr.)**

See "Internships (p. 25)".

**POSC 490 - Seminar in Political Science (3 cr.)**

Prerequisite: Senior standing and 15 credit hours of political science or permission of instructor.

This is an exploration of selected topics in political science with an emphasis on developing research and analytical skills. These skills are incorporated into a research project on a topic selected by the student. This course may be repeated if the topic differs. All senior political science majors are required to enroll in this course.

Distribution: MR

**PSY - PSYCHOLOGY**

**PSY 101 - Introduction to Psychology (3 cr.)**

This is a survey of the primary topics of psychology including its historical evolution, aims, and methods. Topics include the physiological bases of behavior, social determinants, and psychology's applications in various fields of human activity.

Distribution: A&SR/BUSR/GUR/MR

This course is a prerequisite.

**PSY 150 - Introduction to Psychology Research (1 cr.)**

Prerequisite: Permission of the chair.

In this course the student will become familiar with basic research techniques, design, and protocols conducted in the laboratory, as well as with the ethics of research procedures.

**PSY 151 - Introduction to Psychology Research II (1 cr.)**

Prerequisite: Permission of the chair.

In this course the student will become familiar with basic research techniques, design, and protocols conducted in the laboratory, as well as with the ethics of research procedures.

**PSY 190 - Special Topics in Psychology (1-3 cr.)**

Topics in psychology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**PSY 201 - Developmental Psychology (3 cr.)**

Prerequisite: PSY 101.

This is a study of behavior changes from infancy through adulthood. Topics examined include prenatal development and the development of motor, perceptual, social, emotional, and cognitive behavior. The interaction of genetic, physiological, and environmental variables at each stage is considered. Topics of contemporary interest such as developmental disabilities, parenting, and education are briefly considered.

Distribution: MR

Formerly PSY 211.

**PSY 207 - Statistics for the Behavioral Sciences (3 cr.)**

Prerequisite: MATH 100 or higher.

This is an introduction to the descriptive and inferential techniques for presenting, analyzing, and interpreting data gathered in the social sciences. Topics include correlation and regression; sampling and sampling distributions; hypothesis testing; and tests of significance, including t tests, ANOVA, effect size, and SPSS.

Distribution: MR

**PSY 212 - Adolescent Development (3 cr.)**

Prerequisite: PSY 201 or concurrently.

This course explores the adolescent experience through the examination of a variety of theories that look at physical, emotional, and intellectual development, and also the domains of family life, peer relationships, schooling, community, and cross-cultural experience.

**PSY 214 - Social Psychology (3 cr.)**

Prerequisite: PSY 101 and PSY 201 or concurrently.

This is a study of the individual in society including interactions and role-relationships with group members. The emphasis is on sociocultural factors affecting behavior and their effects on motivation, beliefs, prejudices, opinions, interpersonal perceptions, verbal, and non-verbal communication.

Distribution: MR

Formerly PSY 314.

**PSY 216 - Gender Issues in Psychology (3 cr.)**

Prerequisite: PSY 101.

This class will examine the effect of gender on our everyday functioning by critically discussing and analyzing readings on gender issues in everyday life. Topics include inequality, eating disorders, stereotypes and stigma in the media, women's illnesses, and violence against women.

**PSY 218 - Psychology in the Media (3 cr.)**

Prerequisite: PSY 101.

This course will examine some central psychological concepts that are represented in the movies, television, and the popular press, and compare them to empirical findings in the psychological literature with the goal of teaching students to become critical consumers of media information. Topics covered will include development, psychopathology, relationships, discrimination, stress, memory, and learning.

**PSY 220 - Health Psychology (3 cr.)**

Prerequisite: PSY 101 and PSY 201 or permission of the chair.

This course will explore the relationship between psychological factors and physical and mental health illness. Included will be discussions of stress reactivity, psychoneuroimmunology, the role of cognitive behavior, stress hardiness, and prevention. Students will also learn and practice a variety of intervention protocols, including the relaxation response.

### **PSY 250 - Intermediate Psychology Research (1-3 crs. )**

Prerequisite: Permission of the chair.

In this course the students will increase their knowledge and skills in general research protocol, ethics, and techniques by assisting one of our faculty with their research in designing and performing experiments.

Variable credit course - 1 to 3 credits.

### **PSY 251 - Intermediate Psychology Research II (1-3 crs. )**

Prerequisite: Permission of the chair.

In this course the students will increase their knowledge and skills in general research protocol, ethics, and techniques by assisting one of our faculty with their research in designing and performing experiments.

Variable credit course - 1 to 3 credits.

### **PSY 290 - Special Topics (1-3 cr.)**

Topics in psychology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **PSY 301 - Introduction to Interviewing (3 cr.)**

Prerequisite: PSY 101 and junior standing.

This is an overview of the techniques of interviewing. The course is intended to familiarize students with interviewing skills in a wide range of business and human service situations. Topics include theoretical orientations, ethical issues, and community applications.

### **PSY 302 - Organizational Psychology (3 cr.)**

Prerequisite: PSY 101 and junior standing.

This is a study of the behavior of individuals within complex social systems. The focus is upon groups and their responses to various organizational structures. Concerns of the industrial psychologist, recruitment, selection, training, and incentives are also treated.

Formerly PSY 204.

### **PSY 304 - Educational Psychology (3 cr.)**

Prerequisite: PSY 101 and junior standing.

This is a psychological analysis of the educational process with special attention to the nature of learning and the classroom environment. Topics examined include cognitive and emotional development, learning theory, social adjustment, as well as current educational issues affecting learning and development.

Distribution: MR

### **PSY 305 - Psychology of Women (3 cr.)**

Prerequisite: PSY 101 and junior standing.

This is an examination of the social, cultural, political, and biological influences on female development, attitudes, relationships, and other behavior. The course also considers the cultural and historical significance and validity of gender expectations in the development of women.

### **PSY 307 - Psychological Assessment (3 cr.)**

Prerequisite: PSY 101 and PSY 207 or BIS 220 or the equivalent.

This course considers the application of the basic principles associated with psychological tests and assessment measures as a systematic means of sampling, describing, and understanding individual behavior. Tests of ability, achievement, aptitude, and personality are presented along with the importance of situating test results within a broader ecological framework. Additional topics include historical considerations, continuing controversies, collection and evaluation of observational data, basic principles of test construction, and appropriate test selection.

### **PSY 309 - Research Methods (3 cr.)**

Prerequisite: PSY 101 and PSY 207 or permission of the chair.

This is a study of the methodology of psychological research from the conception of a hypothesis to the publication of the results. Attention is given to the advantages and limitations of various research designs, the ethical guidelines of research, and the writing style requirements (APA) for psychology papers.

Distribution: MR

### **PSY 310 - Research Methods II (3 cr.)**

Prerequisite: PSY 309.

This course is a continuation of PSY 309. Students undertake a critical review of a research area of their choice and design an original research proposal based on their findings and ethical principles of the American Psychological Association. The proposals are presented as papers written in the style of the American Psychological Association and as posters.

### **PSY 311 - Child Behavior Management: Theory and Practice (3 cr.)**

Prerequisite: PSY 201 and PSY 313 or permission of the chair.

This is an examination of the basic principles of behavior management with children. Emphasis is on the practical application of learning principles and communication theory with the goal of developing psychologically healthy relationships between parents, or other caregivers, teachers, and children. Topics include how to communicate effectively with a child, how to reward appropriate behavior, how to use token systems, time-out, and other strategies for dealing with disruptive or other inappropriate behavior in the family, school setting, or clinic.

### **PSY 312 - Physiological Psychology (3 cr.)**

Prerequisite: PSY 101, PSY 201 or permission of the chair.

This is a systematic study of the physiological bases of behavior with an emphasis on the role of the central nervous system. Topics include the structure and function of the nervous system, sensation and perception, neuroanatomy and the biochemistry of learning, memory, emotions, affective disorders, and substance abuse.

### **PSY 313 - Learning (3 cr.)**

Prerequisite: PSY 101 or permission of the chair.

This is an examination of the theoretical principles of operant and respondent conditioning using human and comparative studies from laboratory, educational, and therapeutic settings.

Distribution: MR

### **PSY 315 - Cultural Psychology (3 cr.)**

Prerequisite: PSY 101 and junior standing.

This is a culture sensitive approach to the development of individuals and groups in various cultural settings. The emphasis is on cultural diversity and its influence upon various psychological processes at both the individual and collective levels.

### **PSY 317 - Psychology of the Exceptional Person (3 cr.)**

Prerequisite: PSY 101 and junior standing.

This is a survey of the unique needs and problems of exceptional people including those who have mental retardation, learning disabilities, autism, giftedness, sensory handicaps, cultural disadvantages, and emotional disturbance, as well as those who belong to multiple categories of exceptionality. The course extends beyond identification criteria and treatment and considers these individuals as they function in, influence, and are influenced by their families, schools, and larger cultural contexts.

### **PSY 319 - Forensic Psychology (3 cr.)**

Prerequisite: PSY 101 and junior standing.

In this course, principles and theories of psychology as they apply to the civil and criminal justice systems will be studied. Topics of investigation will include: role and responsibilities of forensic psychologists, criminal profiling, lie detection, police interrogation and confession, insanity, domestic violence, sexual abuse, the death penalty, and public policy.

### **PSY 321 - Sports Psychology (3 cr.)**

Prerequisite: PSY 101 and junior standing.

This course focuses on psychological theories and interventions used to research and enhance sports performances, the social psychological aspects of sports, and the psychological effects of participating in sports and exercise programs.

### **PSY 322 - School Psychology (3 cr.)**

Prerequisite: PSY 101 and PSY 201 or permission of the chair.

This course is designed to introduce students to the field of school psychology. Students will gain an understanding of the various roles and functions of school psychologists, as well as changes and challenges in school psychology training and practice. Other topics include the history of the field, role of professional organizations, multicultural assessment in the schools, and ethics and law for school psychologists.

### **PSY 323 - Applied Behavior Analysis (3 cr.)**

Prerequisite: PSY 313.

This is an application of the principles of learning theory to behavior change with specialized populations and a variety of behavior disorders. This course includes a number of practicum exercises, an individualized self-adjustment project and paper, and several class presentations.

### **PSY 324 - Drugs and Behavior (3 cr.)**

Prerequisite: PSY 313 and NSCI 212, or permission of the chair.

This is a course in behavioral pharmacology with an emphasis on examining the pharmacokinetics and behavioral effects of recreational and prescribed psychoactive drugs.

### **PSY 325 - Teaching Individuals With Developmental Delays (3 cr.)**

Prerequisite: PSY 313.

This course applies the science of Behavior Analysis to teaching individuals with developmental delays, in particular, Autism Spectrum Disorders. Students will learn the diagnostic criteria and various manifestations of these disorders and the impact of these disorders on the family and community. Students will observe and conduct discrete trial teaching for a variety of basic programs. Students will learn about incidental teaching and will create lessons plans to teach and/or generalize skills. Students will also collect and analyze a variety of behavioral data.

### **PSY 326 - Abnormal Psychology (3 cr.)**

Prerequisite: PSY 101 and junior standing.

The concept of abnormality is considered from a perspective that views the contribution of both constitutional factors and life experiences to the manifestation of behavioral disorders. Major categories of disorders, relevant research findings, various theoretical orientations, and treatment options are presented. Within these topics, attention is paid to the importance of such forces as culture, race, ethnicity, gender, age, and socioeconomic status as they relate to our understanding of normal and abnormal development.

Distribution: MR

Formerly PSY 306.

### **PSY 327 - The Psychology of Tolerance, Social Justice and Hate Crimes (3 cr.)**

Prerequisite: Junior standing.

This course is designed for students who are interested in social justice and multi-cultural issues, especially those issues that foster and nurture tolerance and combat the culture of violence and hatred that can permeate society.

### **PSY 328 - Childhood Disorders and Interventions (3 cr.)**

Prerequisite: PSY 201 and PSY 313.

This course is designed to familiarize students with contemporary research and professional issues associated with the assessment and treatment of clinical disorders among children and adolescents (e.g., pediatric feeding disorders, conduct disorders, depression, anxiety, and substance abuse). The target audience will include students interested in graduate training or careers that may involve clinical research, child psychology, or the implementation of evidence-based practices with children and adolescents.

### **PSY 329 - The Psychology of Language (3 cr.)**

Prerequisite: PSY 101 and PSY 201 or permission of the chair.

This course will examine the role of language and reading in human behavior. Students will learn about the structural aspects of language, including brain structures responsible for language and reading, as well as how humans interpret, remember, and utilize language to engage in everyday behavior. Topics include reading and language

development and utilization, as well as why we sometimes have problems with these skills.

**PSY 330 - Addiction: Assessment & Treatment (3 cr.)**

Prerequisite: PSY 101 and junior standing or permission of the chair.

This course will provide students with the opportunity to gain an understanding of the etiology of substance abuse disorders, as well as the opportunity to learn the skills necessary to screen for, assess, and provide or refer to treatment persons with such disorders.

**PSY 331 - Conservation Psychology (3 cr.)**

Prerequisite: PSY 101 and PSY 214 or permission of the chair.

Conservation psychology is the scientific study of the reciprocal relationship between humans and nature. This course will immerse students in current psychological theory and research as it pertains to understanding human conservation behavior, methods to modify negative environmental behavior, and research related to understanding the human impact on nature and nature's impact on humans.

**PSY 332 - Community Psychology (3 cr.)**

Prerequisite: PSY 101 and junior standing, or permission of the chair.

Community psychology is an applied area of psychology that studies the real-world interaction between the individual and their community. Social issues and social policy play an integral role in an individual's health and well-being. This course emphasizes citizen participation and empowerment, social change, social justice, program evaluation and program development. Utilizing a service learning framework students will engage in a community program/project to experience the course material in action.

**PSY 333 - Independent Study in Psychology (1-3 cr.)**

See "Independent Study (p. 24)".

**PSY 334 - Independent Study in Psychology (1-3 cr.)**

See "Independent Study (p. 24)".

**PSY 342 - Analysis of Behavior: Principles and Classroom Applications (4 cr.)**

Prerequisite: Enrollment in New England Center for Children (NECC) program.

This is an introduction to behavior modification and operant techniques, including clarification of more commonly used terms, with specific reference to application in the classroom. An overview includes the procedures and practices that have been successful in schools, communities, and work settings. Field work is required. Course available only to students enrolled in the cooperative program at the New England Center for Children.

**PSY 346 - Applied Programming I (4 cr.)**

Prerequisite: Enrollment in NECC program.

This course allows students to design, test, and evaluate instructional programs for the teaching of specific subject matter for remedial application to behavior problems and to test instructional theory. Supervision is provided through a weekly programming research and data seminar in collaboration with the student's advisor. Course available only to students enrolled in the cooperative program at the New England Center for Children.

**PSY 348 - Systematic Inquiry in Applied Research (4 cr.)**

Prerequisite: Enrollment in NECC program.

This course requires each student to collect a comprehensive bibliography on a significant topic in applied behavioral research, and to complete a thorough review via written and oral presentations. It emphasizes the integration and analysis of experimental findings and theoretical foundations of the research area, the critical evaluation of current research, and the identification of potentially fruitful future work. Course available only to students enrolled in the cooperative program at the New England Center for Children.

**PSY 350 - Advanced Psychology Research (1-3 crs.)**

Prerequisite: Permission of the chair.

In this course the students will further increase their knowledge and skill level of general research techniques, design, protocols and ethical procedures. The student will conduct research more independently; assist in the training and supervision of other students; and read, comprehend, and provide a synopsis of relevant research articles.

Variable credit course - 1 to 3 crs.

**PSY 351 - Advanced Psychology Research II (1-3 crs.)**

Prerequisite: Permission of the chair.

In this course the students will further increase their knowledge and skill level of general research techniques, design, protocols and ethical procedures. The student will conduct research more independently; assist in the training and supervision of other students; and read, comprehend, and provide a synopsis of relevant research articles.

Variable credit course - 1 to 3 crs.

**PSY 352 - Advanced ABA Research: Designing Healthy Environments for Young Children (4 cr.)**

Prerequisite: PSY 309 and PSY 313 or permission of the chair.

This course will involve students in the implementation and evaluation of evidence-based practices as they work with local teachers in developing academically and socially significant behavior of young children in local schools, culminating in a professional poster or manuscript describing a scientifically-sound behavioral intervention.

**PSY 353 - Advanced ABA Research: Designing Healthy Environments for Young Children II (4 cr.)**

Prerequisite: PSY 352 or permission of the chair.

This course will involve students in the implementation and evaluation of evidence-based practices as they work with local teachers in developing academically and socially significant behavior of young children in local schools, culminating in a professional poster or manuscript describing a scientifically-sound behavioral intervention.

**PSY 354 - Advanced ABA Research: Topics in Early Intervention and Disabilities (4 cr.)**

Prerequisite: PSY 309 and PSY 313 or permission of the chair.

This course will involve students in the implementation and evaluation of evidence-based practices as they work with local

teachers to solve language and literacy problems with young children in area schools, culminating in a professional poster or manuscript describing a scientifically-sound behavioral intervention.

**PSY 355 - Advanced ABA Research: Topics in Early Intervention and Disabilities II (4 cr.)**

Prerequisite: PSY 354 or permission of the chair.

This course will involve students in the implementation and evaluation of evidence-based practices as they work with local teachers to solve language and literacy problems with young children in area schools, culminating in a professional poster or manuscript describing a scientifically-sound behavioral intervention.

**PSY 356 - Advanced Social Psychology Research (4 cr.)**

Prerequisite: PSY 214 and PSY 309 or permission of the chair.

This course will further expose students to theory and research in social psychology. A significant component of this course will be exposure to and participation in all aspects of the social psychological research process, culminating in an APA style research proposal, presentation, or poster. Topics include, but are not limited to: stereotype threat, prejudice and discrimination, attribution theory, and social-cognitive models of behavior. (e.g., theory of planned behavior, health belief model, etc.)

**PSY 358 - Advanced Cognitive Psychology Research (4 cr.)**

Prerequisite: PSY 309 and PSY 313 or permission of the chair.

This is an advanced examination of the basic research and theories in learning, human memory and cognition and their applications to human behavior, culminating in an APA style research proposal, presentation, or poster. Topics include operant and respondent conditioning, memory, cognitive theory, conceptual behavior, and biological influences on learning, memory, and cognition.

Formerly PSY 413.

**PSY 390 - Special Topics (1-3 cr.)**

Topics in psychology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**PSY 414 - Conditioning and Learning Lab (3 cr.)**

Prerequisite: PSY 313.

The basic principles of operant conditioning are demonstrated using standard operant conditioning equipment with rats covering unconditioned and conditioned reinforcement, extinction, shaping, schedules of reinforcement, discrimination training, and behavior chaining. The care and ethical treatment of laboratory animals and the extension of these principles to the behavior of organisms outside the laboratory are covered. Students will be required to prepare an APA formatted paper based on their experimental results.

**PSY 416 - Counseling Skills (3 cr.)**

Prerequisite: Senior standing in Psychology or permission of the chair.

This is a survey of personality and counseling theory and the development of counseling skills. Through the extensive use of modeling, role playing, and video playback, students learn the skills of counseling. The emphasis is on the integration of theories, skills,

and practice of counseling. This is a writing intensive course in which students will prepare weekly reaction papers on each of the major personality theories of counseling and psychotherapy covered.

**PSY 418 - Behavioral Counseling Methods (3 cr.)**

Prerequisite: PSY 313 and PSY 416 or permission of the chair.

This is a survey of current, empirically supported methods of behavioral and cognitive-behavioral counseling. The emphasis is on helping clients change their behavior. Case materials include examples from a wide range of settings and client characteristics. Students will be required to prepare an APA formatted paper based on an extensive literature review.

**PSY 420 - History of Psychology and Personality Theory (3 cr.)**

Prerequisite: Senior standing in psychology or permission of the chair.

This capstone course is an examination of the history of psychology and personality theory that includes major philosophical and scientific influences such as Darwin, Wundt, Freud, Jung, Rogers, James, Skinner, and systems of psychology such as structuralism, functionalism, and behaviorism. The course traces philosophical concepts such as rationalism, empiricism, mechanism, dualism, and determinism. Students are required to complete an APA style review paper and take the psychology major field test.

Distribution: MR

**PSY 421 - Modern Theories of Psychology (3 cr.)**

Prerequisite: PSY 313 and junior Psychology standing or permission of the chair.

This is an examination of the development of modern behaviorism and cognitive psychology as the two dominant paradigms in modern psychology. Topics include scientific methodology, the role of scientific explanation in psychology, the study of verbal behavior and creativity, and applications of these paradigms to the development of educational, social, and cultural systems.

**PSY 440 - Undergraduate Research (1-4 cr.)**

Prerequisite: PSY 309, senior standing, or permission of the chair of Psychology.

See "Undergraduate Research (p. 25)".

**PSY 441 - Undergraduate Research (1-4 cr.)**

Prerequisite: PSY 309, senior standing, or permission of the chair of Psychology.

See "Undergraduate Research".

**PSY 450 - Senior Psychology Research Project (4 cr.)**

Prerequisite: PSY 309 and permission of chair.

In the first semester of this course the student will prepare and present a research proposal to the Psychology faculty and students, collect data, and work on the Introduction and Methods section of their research paper. In the second semester the student will complete the data collection, present the results to the Psychology faculty and students, and complete the research paper in APA format. The student will also assist in preparing the data for publication if applicable.

**PSY 451 - Senior Psychology Research Project (4 cr.)**

Prerequisite: PSY 309 and permission of chair.

In the first semester of this course the student will prepare and present a research proposal to the Psychology faculty and students, collect data, and work on the Introduction and Methods section of their research paper. In the second semester the student will complete the data collection, present the results to the Psychology faculty and students, and complete the research paper in APA format. The student will also assist in preparing the data for publication if applicable.

**PSY 469 - Topics in Clinical Practice I (12 cr.)**

Prerequisite: Enrollment in NECC program.

This course involves working with children with special needs under the mentorship of a faculty advisor. Students study classroom techniques and procedures and write several concept papers or complete a critical review of the literature on a specific topic. Each student is assigned teaching responsibilities under the supervision of a faculty mentor. Students participate in a weekly seminar designed to raise issues and discuss topics relevant to the practicum experience. Course available only to students enrolled in the cooperative program at the New England Center for Children. (Approximately 28 in-class hours plus 462 hours of classroom observation and teaching.)

**PSY 470 - Topics in Clinical Practice II (12 cr.)**

Prerequisite: Enrollment in NECC program.

This course involves working with children with special needs under the mentorship of a faculty advisor. Students study classroom techniques and procedures and write several concept papers or complete a critical review of the literature on a specific topic. Each student is assigned teaching responsibilities under the supervision of a faculty mentor. Students participate in a weekly seminar designed to raise issues and discuss topics relevant to the practicum experience. Course available only to students enrolled in the cooperative program at the New England Center for Children. (Approximately 28 in-class hours plus 462 hours of classroom observation and teaching.)

**PSY 480 - Internship in Psychology (1-3 cr.)**

See "Internships (p. 25)".

**PSY 481 - Internship in Psychology (1-3 cr.)**

See "Internships (p. 25)".

**QR - QUANTITATIVE REASONING****QR 112 - Quantitative Reasoning for Business (3 cr.)**

This course is designed to be broken up into two parts. The first part is to learn some methods of problem solving strategies and how a mathematical approach can assist in the endeavor of solving problems. The approach includes: stating problems clearly and concisely, determining what is important and what is irrelevant, justifying using logic, etc. Various problem solving strategies will be introduced and applied. The second part of the course will cover fundamentals of Probability Theory and Descriptive Statistics. Topics include frequency distribution, measures of central tendency, regression, and probability.

Distribution: BUSR/CR/GUR/MR

Offered: fall and spring semesters.

The TI-83/84 calculator and Excel software will be used in the course.

Credit for this course and MATH 120 or MATH 121 or MATH 117 is not allowed.

**REL - RELIGIOUS STUDIES****REL 101 - Spirituality and Religion (3 cr.)**

This course begins with the question, What is religion? Is it a set of (theological) beliefs? A group of (spiritual) practices and rituals? A way of life? Does religion necessarily involve belief in God or gods?

The course then goes on to compare a variety of religious traditions and to address such issues as how religion influences culture and how culture influences religion, the concepts of the divine and religious experience, the nature of spirituality, the origins of religion, and religion's psychological, sociological, political, and ethical functions. The course will not proselytize for religion or privilege one religious tradition over another.

The focus may vary by instructor.

Distribution: MR

Offered: every semester.

Formerly "Introduction to Religious Studies"

**REL 120 - East Asian Traditions (3 cr.)**

Cross-Listed as: PH 120

This course will introduce the student to the philosophical and religious worldviews found in the traditions of China, India and Japan.

We will carefully read selections from some classic and contemporary texts from these traditions, as well as secondary discussions of their key ideas. We will mainly focus on Confucian, Daoist, Indian (Vedic-Hindu and Buddhism) and Japanese Shinto and Samurai worldviews.

We will ask how these perspectives and worldviews address fundamental questions such as: the nature of reality and human nature, the self, knowledge, how to live well, and the good society.

The ideas found in these Eastern (or Asian) traditions have an enduring relevance, and offer us ways to order and value human experience very different from our contemporary social life.

Distribution: MR

Offered: every semester.

Formerly "Introduction to Asian Thought"

**REL 220 - Western Religions (3 cr.)**

Prerequisite: Sophomore standing.

This is an examination of the beliefs, rituals, and histories of the major religions of Europe, the United States, and the Middle East. Beginning with an overview of religion in the ancient Near East, Greece, and Rome, the course concentrates on the development of Judaism, Christianity, and Islam.

Distribution: MR

Offered: every fall.

### **REL 221 - Eastern Religions (3 cr.)**

Prerequisite: Sophomore standing.

This is an examination of the beliefs, rituals, and histories of the major religions of Asia. Particular attention is given to the development of Hinduism, Buddhism, Confucianism, and Taoism.

Distribution: MR

Offered: every spring.

### **REL 240 - Gandhi and King (3 cr.)**

Prerequisite: Sophomore standing.

Cross-Listed as: PH 240

A critical examination of the life, times, and thought of Gandhi and King. Special attention will be paid to Gandhi's campaigns to end apartheid in South Africa and the British occupation of India, as well as King's part in the U. S. civil rights movement. The course will focus on their ethical, political, and religious thought, and their commitment to nonviolence.

This course will satisfy the ethical perspectives requirement of the GUR.

Offered: every other year.

### **REL 304 - Philosophy of Religion (3 cr.)**

Prerequisite: Sophomore standing.

Cross-Listed as: PH 304

This course consists of analysis, interpretation, and evaluation of religious responses to the world of human experience. Topics include the concern of religion with reason, order and pattern, moral insight, and art, and the context of the problems for which religion proposes solutions. Some attention is given to the history of the subject.

Offered: every year.

## **SL - SIGN LANGUAGE**

### **SL 101 - Basic Sign Language, Level I (3 cr.)**

This course is an introduction to American Sign Language, introducing nonsigners to the handshape, palm orientation, location, and movement of common signs, as well as the linguistic principles of ASL.

Offered: every fall semester.

Formerly COMM 101.

### **SL 203 - Intermediate Sign Language, Level II (3 cr.)**

Prerequisite: SL 101.

This course focuses on developing fluency in contemporary ASL.

Offered: every spring semester.

Formerly COMM 203.

## **SO - SOCIOLOGY**

### **SO 101 - Introduction to Sociology (3 cr.)**

This course is an overview of the three major sociological perspectives, social science research methods, and the processes of socialization. Study of social groups, organizations, and institutions of the family, education, and economy is included. Other topics include social stratification based on class, gender, race and ethnicity, deviance, and social change.

Distribution: A&SR/BUSR/GUR/MR

This course is a prerequisite.

### **SO 190 - Special Topics in Sociology (1-3 cr.)**

Topics in sociology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **SO 201 - Social Problems (3 cr.)**

Prerequisite: SO 101.

This course is a continuation of SO 101 and covers such issues as perspectives on social problems as well as social problems such as economic inequality, family problems, crime, and environmental problems from a critical constructionist perspective.

Distribution: MR

### **SO 208 - Gender (3 cr.)**

Prerequisite: SO 101

Focusing on a balanced view between theories and "real world" applications, this course introduces students to the role that gender plays on the shaping of social institutions (including religion and education), families, groups, plus how gender intersects the variables of race, class and sexuality. Particular attention will be given to the history of gender roles, as well as how the social and biological constructs of gender impact contemporary relationships, the work environment, and crime.

### **SO 210 - Criminology (3 cr.)**

Prerequisite: CJ 101, SO 101, ENGL 132 and ENGL 133

Cross-Listed as: CJ 210

This is an examination of the various categories of offenses and offenders including casual and habitual individual offenders, organized criminal enterprises, and white-collar criminals. Current theories and research, with an emphasis on understanding the causative factors and sociological implications of criminal and delinquent behavior, are included.

Offered: Spring semester

Satisfies Writing Intensive course (WIC) requirement.

### **SO 211 - Race and Ethnicity (3 cr.)**

Prerequisite: SO 101

This is an examination of the relative socioeconomic status of various social groups and of the relations among them. Selected cross-cultural studies are reviewed, but emphasis is on the United States.

### **SO 214 - Drugs, Society, and The Criminal Justice System (3 cr.)**

Prerequisite: SO 101 or CJ 101.

This is a study of the legal and social background of the pressing problem of drugs and alcohol and their use and abuse in American society.

### **SO 235 - Domestic Violence (3 cr.)**

Prerequisite: PSY 101 or SO 101 or CJ 101 or permission of instructor.

Cross-Listed as: CJ 235

Domestic violence between adults is studied from an interdisciplinary perspective. The cycle of violence, dominance, and control are among the issues to be covered sociologically and psychologically. The legal perspective includes discussion of proactive arrest policies, restraining orders, and anti-stalking legislation that have emerged across the United States.

### **SO 290 - Special Topics in Sociology (1-3 cr.)**

Topics in sociology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **SO 300 - Applied Analytic Methods (3 cr.)**

Prerequisite: CJ 101 or SO 101, MATH 120, any 200-level CJ or SO course.

Cross-Listed as: CJ 300

This course is an introduction to the concepts and techniques of a quantitative approach to the examination of social science research questions. The examples used in this course to illustrate quantitative analyses reflect practical applications within the social sciences, which include such disciplines as criminal justice, criminology, psychology, and sociology. Quantitative analyses of social science measurements will include descriptive, inferential, and predictive techniques. Besides learning the fundamentals of quantitative techniques, students will use the computer as an integral part of this course to perform analyses using computer software. Students generally will develop skills necessary to assist them in framing and answering research questions.

Offered: Fall semester

### **SO 301 - Research Methods (4 cr.)**

Prerequisite: Junior standing, and SO 300/CJ 300

Cross-Listed as: CJ 301

This course is an introduction to scientific research in the social sciences. Its primary goals are to provide students with a foundation necessary for conducting quality research and to provide students with skills necessary to analyze and interpret research data. The course highlights the logic of research designs, the relation between experimental and nonexperimental research strategies, and the application of quantitative methods. It provides experience in collecting and analyzing research data, writing, and preparing research reports. This course will discuss and contextualize the concepts and techniques of quantification in social science research, which include descriptive, univariate, parametric, nonparametric, and inferential analyses. Students will learn to use a statistical computer-software package to perform analyses on research data.

Offered: Spring semester

### **SO 304 - Children, Family, and the State (3 cr.)**

Prerequisite: CJ 101, SO 101, and any 200 level criminal justice course or permission of chair.

Cross-Listed as: CJ 304

This is a critical look at the policy, the theory, and the practice of state intervention into families on behalf of children. The study involves a review of the legal theory underlying child protective services, an explanation of the relevant federal and state laws, an investigation of the various types of state involvement with families, an exploration of the role of social workers and departments of social services, and a practical look into how the legal system deals with families and children. Foster care and child treatment by the system will be explored.

### **SO 305 - The Sociology of Urban Life (3 cr.)**

Prerequisite: SO 101 and any 200 level sociology course or junior standing.

This is an examination of the influence of the city upon social relations, institutional life, and personality development. Attention is given to both American and non-American areas. The greater Springfield area is used as a laboratory for research.

### **SO 306 - Disability and Mental Health Issues in Criminal Justice (3 cr.)**

Prerequisite: CJ 101, or SO 101, and any 200 level course or permission of chair.

Cross-Listed as: CJ 306

This course will explore contemporary issues surrounding criminal justice response to persons having mental, cognitive, and psychiatric disabilities. Changes in the legal code governing patient rights, affirming the right of persons with mental illness to live in the community, in addition to deinstitutionalization in the 1960s set the stage for increased criminal justice involvement. Approximately 54 million Americans live with a wide variety of physical, cognitive, and emotional disabilities. The Americans with Disabilities Act (1994) entitles people with disabilities to the same services as provided to others. ADA application to criminal justice policy will be addressed.

### **SO 307 - Qualitative Research Methods (3 cr.)**

Prerequisite: SO 101, MATH 120, any 200-level CJ or SO course, and junior standing.

This course is organized to offer students basic training in qualitative research methods, including state-of-the-art computer software, grounded theory, and social network analysis. Students will also be trained in ethnographic methodology, including interview/survey techniques and ethical issues that arise due to the closer contact with research subjects or informants. Students will be required to gather, analyze and present data in a final written project.

### **SO 308 - Sociology of the Family (3 cr.)**

Prerequisite: SO 101 and any 200 level sociology course or junior standing.

This is a review of the historical development of the family as the most fundamental institution in society and the source of primary socialization. Topics include traditional and contemporary functions, problems of single-parent families, two-career families, alternative family structures, and current family policies.

### **SO 309 - Deviance (3 cr.)**

Prerequisite: SO 101 or LSOC 101 and any 200 level sociology course and junior standing.

This is an analysis of social norm violations and group responses to deviant behavior. Emphasis is on the nature of social norms and

rules; styles of social control; sources and varieties of deviant behavior; the development of unconventional ideologies and world views; and the role of deviant subcultures, associations, and organizations.

Distribution: MR

### **SO 312 - Sociology of Popular Culture (3 cr.)**

Prerequisite: SO 101 and any 200-level SO course, and junior standing.

This course will examine the social evolution of key media, entertainment, and technological influences of the past half-century, including the film and music industries. Taking an interdisciplinary approach theoretically, students will be asked to critically examine the marketing of popular culture in the form of mass media and computer technology and its effect on gender, race/ethnicity, social economic statuses, and age. Additionally, this course will look at how entertainment has an effect on and has been affected by all social institutions, including family, economics, politics, government, law, and religion.

### **SO 315 - Organizational Theory (3 cr.)**

Prerequisite: MAN 101 or SO 101.

Cross-Listed as: MAN 315

This course examines organization theory and design in order to develop skills for analyzing complicated situations in contemporary organizations. Among the important topics covered are: the history of organization theory, the character of technology, social structure, and environment with respect to organizations, the nature of power and culture, and the strengths and weaknesses of various organizational designs.

### **SO 322 - Social Theory (3 cr.)**

Prerequisite: SO 101 and any 200-level SO course, and junior standing, or chair's permission.

This is an in-depth survey of the major sociological theories from the 19th century to the present including the work of Max Weber, Emile Durkheim, Karl Marx, and contemporary American sociology. The course provides an introduction to quantitative methods: questionnaire design, interviewing, data collection, analysis, and presentation.

Distribution: MR

### **SO 326 - Sociology of Culture (3 cr.)**

Prerequisite: SO 101 and Junior Standing.

This course offers a broad interdisciplinary overview of the quickly emerging field of culture studies within sociology. This course uses key sociological paradigms and anthropological theories to explore the production and consumption of culture, taking a multi-cultural view. Students are introduced to how culture is shaped by religion, politics, economics, modernity, and technology, as well by social class and stratification. Within this course, students will also explore the methods by which culture is studied within sociology and will apply these methods to the examination of ancient/classical or contemporary culture in the United States and abroad.

### **SO 333 - Independent Study in Sociology (1-3 cr.)**

See "Independent Study (p. 24)".

### **SO 334 - Independent Study in Sociology (1-3 cr.)**

See "Independent Study (p. 24)".

### **SO 341 - The Sociology of Work (3 cr.)**

Prerequisite: SO 101 and any 200 level sociology course and junior standing.

This course explores the world of work from a practical perspective. Students will prepare themselves for careers of their choosing. They will learn how to research careers in depth, prepare effective résumés and cover letters, and use sociological methods to develop viable careers for themselves. In addition, the course explores substantive sociological issues in the world of work and helps students develop their skills of analysis, reasoning, and understanding of a fast changing environment.

### **SO 342 - Juvenile Delinquency (3 cr.)**

Prerequisite: CJ 101, or SO 101, or LSOC 101 and any 200-level course; or permission of chair.

Cross-Listed as: CJ 342

This course focuses on the history, causes, behavior, laws, and treatment of juveniles. It includes the criminal justice system, the process within the system, court decisions, and alternatives to incarceration. Where possible, on-site locations are visited. An in-depth perspective of juvenile gangs, drugs, and crime is included.

Offered: Fall semester

### **SO 349 - Multicultural Policing (3 cr.)**

Prerequisite: SO 101 or CJ 101, and junior standing, or permission of the instructor.

Cross-Listed as: CJ 349

This course is designed to familiarize the student with the "theoretical and practical" application of peace keeping in a multicultural setting. Students will explore the issues of "diversity, cultural understanding, and communication" facing the law enforcement community in a multicultural environment. Particular attention will be given to the concept of "cross-cultural law enforcement for diverse communities."

Offered: Fall semester

### **SO 373 - Population, Values, and Technology (3 cr.)**

Prerequisite: SO 101 and junior standing.

Students are introduced to (1) demography and demographic analysis to interpret social and environmental issues; (2) how social forces influence the emergence and acceptance of new technologies as well as the acceptance and interpretation of "risk"; and (3) the significance of underlying values as they affect the potential for and resistance to social changes necessary for sustainability.

### **SO 390 - Special Topics in Sociology (1-3 cr.)**

Topics in sociology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **SO 410 - Social Change (3 cr.)**

Prerequisite: SO 101 and any 200-level SO course, and junior standing, or chair's permission.

This is a study of the major social and cultural changes occurring in contemporary societies with major emphasis on the United States. Topics include social trends, planned social change and social invention, technological development as a cause of unplanned social

change, the transformation of the workplace in industrial and information societies, and social movements.

### **SO 413 - Social Inequality (3 cr.)**

Prerequisite: SO 101 and senior standing, or LSOC 101 and any 200-level SO course and junior standing.

This is a consideration of the causes of institutionalized inequality in social life. Topics include theories of social class and the distribution of social powers and privileges. Special attention is given to caste and class in America and their relationship to the development of civil rights.

Formerly "Social Inequality and Justice"

## **SPAN - SPANISH**

### **SPAN 101 - Elementary Spanish I (3 cr.)**

Prerequisite: Since this course is an introduction to the language, it is not recommended for students with more than 3 years of high school Spanish.

This is an introduction to the language including basic pronunciation, simple conversation structure, and structural analysis of sentences. Class activities will focus on speaking, listening, and reading in Spanish.

Offered: every fall.

### **SPAN 102 - Elementary Spanish II (3 cr.)**

Prerequisite: SPAN 101 or the equivalent. Since the course is considered an introduction to the language, it is not recommended for students with more than 3 years of high school Spanish.

This is a continuation of SPAN 101 at a level of increasing complexity and with some attention to writing the language.

Offered: every spring.

### **SPAN 130 - Spanish for Criminal Justice (3 cr.)**

Prerequisite: Not open to students who have completed SPAN 102 or a 200 or 300-level SPAN course or with two or more years of high school Spanish.

This is an introduction to the specialized vocabulary and basic grammatical structures needed by people working in the field of law enforcement. The course provides students with the opportunity to use their linguistic foundation to develop conversational facility in Spanish. Their conversational skills are developed through creating dialogues and presenting original skits centering on probable law enforcement situations.

Offered: once a year.

### **SPAN 140 - Spanish for Social Services (3 cr.)**

Prerequisite: Not open to students who have completed SPAN 102 or a 200 or 300-level SPAN course or with two or more years of high school Spanish.

The course introduces students to the specialized vocabulary and basic grammatical structures needed by people working in the field of social services. It gives students the opportunity to use their linguistic foundation to develop conversational ability in Spanish. Each lesson in the supplementary text focuses on a situation commonly encountered by social service professionals. Conversational skills are developed through realistic dialogues and original skits and conversations, which introduce the words and expressions that social service professionals need in their daily work.

Distribution: MR

Offered: once a year.

### **SPAN 190 - Special Topics in Spanish (1-3 cr.)**

Topics in Spanish that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

### **SPAN 203 - Intermediate Spanish I (3 cr.)**

Prerequisite: SPAN 102 or the equivalent.

This is a review of Spanish grammar and sentence structure with study and practice in the more complex structures of the language. Class time and activities will focus on building language skills and cultural knowledge through conversation, reading, speaking and composition.

Offered: every fall.

### **SPAN 204 - Intermediate Spanish II (3 cr.)**

Prerequisite: SPAN 203 or the equivalent.

This is a continuation of SPAN 203.

Emphasis is on advancing cultural awareness and conversational skills. Classroom activities will also center on developing the student's oral, writing, and reading skills.

Offered: every spring.

### **SPAN 290 - Special Topics in Spanish (1-3 cr.)**

Topics in Spanish that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

### **SPAN 305 - Advanced Conversational Spanish I (3 cr.)**

Prerequisite: SPAN 204 or the equivalent.

This course studies oral aspects of the language: colloquialisms, pronunciation, vocabulary building, and practical use of advanced Spanish. Class discussions; conversations, and presentations are used to develop cultural awareness and fluency in the spoken language.

Offered: every fall.

### **SPAN 306 - Advanced Conversational Spanish II (3 cr.)**

Prerequisite: SPAN 305 or permission of the instructor.

This is a continuation of SPAN 305 with emphasis on Hispanic culture in contemporary Latin America through a combination of conversation and writing activities.

Offered: every other spring.

### **SPAN 333 - Independent Study in Spanish (1-3 cr.)**

See "Independent Study (p. 24)".

### **SPAN 334 - Independent Study in Spanish (1-3 cr.)**

See "Independent Study (p. 24)".

### **SPAN 390 - Special Topics in Spanish (1-3 cr.)**

Topics in Spanish that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

## **SPMN - SPORT MANAGEMENT**

### **SPMN 250 - Managing Sport Organizations (3 cr.)**

Prerequisite: MAN 101/HONB 101

The course provides an introduction to the field of sport management through an application of significant management principles to sport organizations and the role of the manager in ensuring organizational performance. Key learning outcomes focus on the understanding and recognition of the: history and development of sport management as a profession and discipline; management, legal, financial, and marketing principles; vocabulary and themes of the sport industry; concepts, issues, and management practices unique to sport industries; research skills including data collection and analysis; and sport career exploration and investigation.

Distribution: MR

### **SPMN 333 - Independent Study in Sport Management (3 cr.)**

See "Independent Study (p. 24)".

### **SPMN 334 - Independent Study in Sport Management (3 cr.)**

See "Independent Study (p. 24)".

### **SPMN 341 - Sport Agency & the Professional Athlete (3 cr.)**

Prerequisite: SPMN 250 and junior standing.

This course examines the role, responsibilities and function of the sport agent in the professional sport. Topics include the history of sport agency, regulations, registration and certification, client recruitment and evaluation, contract negotiations, agent-athlete relationship, personal services including financial management, post-career counseling and community/social responsibility initiatives. The course will also explore the role of the sport agent as it relates to the league, governing bodies, players' union and the individual athlete. Ethical dimensions of sport agency as well as professional agent sport career development strategies will be considered.

Distribution: MR

### **SPMN 342 - Scouting & Player Personnel Development (3 cr.)**

Prerequisite: SPMN 250 and junior standing.

This course is designed to provide students with an introduction to the techniques relating to player evaluation and assessment in

amateur and professional sport. The course will focus specifically on the function of scouting and recruitment of amateur and professional athletes and will provide students hands-on experience in player personnel development with specific focus on the baseball industry segment. Students will explore important historical and contemporary economic development issues related to player development as well as contemporary issues relating to organizational design, management, and the development and integration of quantitative analysis methods. Course content will consist of lectures, readings, extensive class and group discussion, video, guest lecturers, and extensive player analysis fieldwork.

Distribution: MR

### **SPMN 355 - Sport Facility Planning and Management (3 cr.)**

Prerequisite: SPMN 250.

The course provides an overview of sport facility planning and management. Key learning outcomes focus on understanding managerial issues related to various sport facilities including stadiums and arenas, sport facility planning, design, and construction; sport facility finance; project feasibility; economic impact of sport facilities and events; outsourcing of operational services; application of management principles including budgeting, promotion, public relations, security and risk management, event planning, and game operations.

Distribution: MR

### **SPMN 366 - Sport Marketing (3 cr.)**

Prerequisite: MK 200/HONB 200 and SPMN 250.

This course compares and applies concepts of mainstream marketing to the sport industries and examines the marketing of sport products and the marketing of mainstream products through sport. Key learning outcomes include the understanding and use of the historical foundations of sport marketing; the application of marketing principles to the specific organizational environments of collegiate and professional sport, special events, sporting goods, and licensed product manufacturing; and facility management.

Distribution: MR

### **SPMN 390 - Special Topics in Sport Management (3 cr.)**

This course is a study of advanced topics in sport management, but not carried in the catalogue on a regular basis.

### **SPMN 420 - International Sport Management (3 cr.)**

Prerequisite: SPMN 250 or permission of instructor.

This course provides students with an in depth look at the diverse and expanding professional practice of sport management in an international context. Students will explore international sport from historical, cultural, political, and business perspectives. Emphasis is given to an examination of the Olympic movement as well as to the globalization of professional sport. Current issues related to the management of international sport organizations are examined. Opportunities for employment in international sport organizations are also identified.

### **SPMN 450 - Managing Collegiate/Scholastic Athletic Programs (3 cr.)**

Prerequisite: SPMN 250 or permission of instructor.

This course provides the student with an opportunity to combine classroom instruction with hands-on experience in sport management through a practicum in the University's Athletic Department. The course is designed to allow the student to apply theoretical knowledge to the practice of sport management through a variety of activities and assignments that may include game operations, facility management, compliance, fund raising, shadowing of athletic administrator, budgeting, event coordination, sport marketing, and media relations. Key learning outcomes focus on effective performance as a member of a sport management team, application of quality management principles to college/university/scholastic sport programs and services, development of professional skills, understanding of practice of sport management, and refinement of career direction.

### **SPMN 460 - Advanced Field Experience in Sport Management (3 cr. each.)**

Prerequisite: 3.0 overall GPA, instructor permission, and two faculty endorsements.

The goal of this course is to provide students with the opportunity to gain extensive hands-on experience in a sport organization. Students are placed in a sport business environment and their work experience is communicated to a faculty sponsor via faculty-student meetings, on-site visits, written assignments, oral presentations, final project, and formal AFE defense. Only students who have demonstrated academic excellence; a high degree of commitment to a career in the sport industry; and the necessary motivation, leadership and managerial skills to undertake the AFE course are eligible for enrollment. The AFE is a six-credit course designed to primarily be taken in the senior year. Concurrent enrollment in SPMN 460 and SPMN 461 is required.

### **SPMN 461 - Advanced Field Experience in Sport Management (3 cr. each.)**

Prerequisite: 3.0 overall GPA, instructor permission, and two faculty endorsements.

The goal of this course is to provide students with the opportunity to gain extensive hands-on experience in a sport organization. Students are placed in a sport business environment and their work experience is communicated to a faculty sponsor via faculty-student meetings, on-site visits, written assignments, oral presentations, final project, and formal AFE defense. Only students who have demonstrated academic excellence; a high degree of commitment to a career in the sport industry; and the necessary motivation, leadership and managerial skills to undertake the AFE course are eligible for enrollment. The AFE is a six-credit course designed to primarily be taken in the senior year. Concurrent enrollment in SPMN 460 and SPMN 461 is required.

### **SPMN 465 - Seminar in Sport Management (3 cr.)**

Prerequisite: SPMN 250 and SPMN 355, Sport Management majors with senior standing.

The course examines contemporary issues in sport management. Key learning outcomes focus on understanding and problem-solving applications associated with revenue development models across a variety of sport business life-cycle events; environmental forces shaping policy-making within sport organizations; ownership models and issues; sport leadership; maximization of sport organization revenue streams budget analysis human resource development practices in sport organizations including CORI/SORI checks, salary caps, player development, and volunteer training. Strategies for sport industry career determination and implementation are emphasized.

Distribution: MR

### **SPMN 480 - Internship in Sport Management (3 cr.)**

See "Internships (p. 25)".

### **SPMN 481 - Internship in Sport Management (3 cr.)**

See "Internships (p. 25)".

## **SUS - SUSTAINABILITY**

### **SUS 120 - Computer-aided Modeling and Analysis (3 cr.)**

This is an introductory course in problem identification and solution using computer-aided modeling and model analysis. Elements of the course include becoming familiar with the software the course will use, learning how to formulate a problem statement from identified needs, learning how to identify constraints (especially sustainability constraints) that limit solutions to problems, and learning how to find constrained solutions to a problem statement through computer-aided means. To facilitate understanding how sustainability principles constrain problem solutions, the course will make use of software such as EXCEL, a spreadsheet program, and SolidWorks, a solid-modeling program.

Distribution: MR

Formerly SUS 220 Computer-aided Modeling and Analysis

### **SUS 392 - Special Topics in Sustainability (3 cr.)**

Prerequisite: Junior standing

Topics in sustainability that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **SUS 405 - Legal Aspects of Sustainability (3 cr.)**

Prerequisite: SUS 101 and POSC 342.

This course has three central components, all of which are related to its pedagogical mission of providing an intensive yet practical examination of legal and policy approaches to sustainability. The first is to provide a basic understanding of the central features of the American legal system as they relate to the study and practice of environmental law. The second is to provide a basic understanding of how to approach and navigate within the legal system. The third is to understand the major federal environmental laws.

Distribution: MR

### **SUS 425 - Project Management (3 cr.)**

Prerequisite: Graduating senior in Sustainability major; prerequisite or corequisite SUS 305 Environmental Assessment.

This is the first of two required capstone courses for Sustainability majors designed to prepare students for entry-level positions. Under the supervision of a faculty advisor, each student is assigned to a project team which develops a proposal for a sustainability project. Teams are selected to maximize the interdisciplinary aspect of the sustainability major, drawing students from different concentrations. Students apply acquired skills and communicate the results of their proposal in both oral and written form. Oral reports are presented before an assembly of faculty and students. Students apply sustainability design principles either by working on a project, improving a product, or designing experiments to investigate causes of either an observed phenomenon, or a problem. In all cases, the

project will focus in some way on sustainable resources and/or sustainable communities. The proposal must be inclusive, requiring each team member to demonstrate appropriate skills acquired in their sustainability concentration. Teams that select externally-sponsored projects (business, non-profits, government) have the opportunity of working with an advisor in an actual sustainability environment.

Distribution: MR

Formerly "Senior Design Project I"

### **SUS 440 - Senior Design Project II (3 cr.)**

Prerequisite: Graduating senior in Sustainability major and SUS 425.

This is the second of two required capstone courses for Sustainability majors that prepares students for entry-level positions. This course is an extension of SUS 425, Senior Design Project I. Under the supervision of a faculty advisor, each team of students implements their proposed sustainability project. Students apply acquired skills and communicate the results of their project in both oral and written form. Students apply sustainability design principles either by working on a project, improving a product, or designing experiments to investigate causes of either an observed phenomenon, or a problem. In all cases, the project will focus in some way on sustainable resources and/or sustainable communities. Teams that select externally-sponsored projects (business, non-profits, government) have the opportunity of working with an advisor in an actual sustainability environment.

Distribution: MR

## **SW - SOCIAL WORK**

### **SW 100 - Introduction to Social Work (3 cr.)**

This is an introduction to the development of the social work profession including its body of knowledge, values, ethics, and skills. Students learn about core practice concepts such as person-in-environment, generalist practice, and systems theory, and they explore the settings where social work practice takes place, problems and issues requiring social work intervention, and social work practice at particular stages of human growth and development. The course addresses the impact of race, class, ethnicity, gender, sexual preference, abilities, and culture on human functioning. An emphasis is placed on helping students assess their motivation to pursue a career in social work.

Distribution: GUR/MR

This course is a prerequisite.

### **SW 190 - Special Topics in Social Work (1-3 cr.)**

Topics in social work that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **SW 203 - Child Welfare: Saving Children and Strengthening Families - A Multicultural Global Approach (3 cr.)**

This course will focus on societal practices and policies that positively affect child development and strengthen family stability in overcoming obstacles and barriers. The emphasis will be on traditional areas of concern such as poverty, child maltreatment, substitute family care within the context of other global issues such as child labor, child trafficking, armed conflict child soldiers, lack of education, and family/community violence. Children and families are the foundation and future of all societies. Hence, it is important and

vital to gain knowledge and understanding that will enable us to be effective social work advocates.

### **SW 204 - Social Work and Criminal Justice (3 cr.)**

This course examines the role of social workers in criminal justice settings, such as probation offices, prisons, the courts, and other aspects of the legal system. Social work values and ethics and their integration with criminal justice "host settings" will be discussed. Specific problems addressed by social work within the criminal justice system, such as juvenile delinquency, gangs, domestic violence, and other violent crimes will be reviewed.

### **SW 207 - An Invitation to the World of Aging (2 cr.)**

Prerequisite: Soph SW major, or Soph SW minor, or SW 100.

This course will provide students with knowledge about older people and the field of gerontological social work. The course will enable students to explore aging through learning beyond the classroom experiences, as well as classroom presentations and discussion. Students will be challenged to reexamine their values and beliefs about aging and older people. The course will help to prepare BSW students to work in settings that serve elderly clients.

### **SW 216 - Human Behavior in the Social Environment (3 cr.)**

Prerequisite: SW100 and three credits in psychology or sociology.

This course is a social systems approach to relations among individuals, families, groups, communities, and organizations. Emphases on at-risk populations and diversity throughout the life cycle; the impact of the social environment on behavior; including the relationship of social policy to human behavior and development.

Distribution: MR

### **SW 290 - Special Topics in Social Work (1-3 cr.)**

Topics in social work that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **SW 300 - Social Work Pre-Practicum Seminar (1 cr.)**

Prerequisite: Official acceptance into Social Work program.

This is a required upper level social work course. This course assists students in gaining the knowledge, values, and skills necessary to succeed in junior and senior field placements. Students will learn the expectations for interns in field placements, as well as the application and selection process for senior field placements. Special issues related to functioning in both social work and host agencies as a social work professional will be covered.

### **SW 301 - Social Work Interventive Methods I (3 cr.)**

Prerequisite: SW 100, SW 216, and junior standing.

Corequisite: SW 306

This is a study of the theoretical framework of generalist social work practice. The focus is on helping to socialize students into the role of the generalist social work practitioner. The course provides an analysis of professional social work values and ethics, methods for dealing with ethical dilemmas, and an introduction to the intervention process including client assessment. Students are required to participate in The Helping Relationship Project Practicum, which provides the opportunity to integrate course content with field work in an agency setting.

Distribution: MR

Fall'14 - 4 to 3 crs.

### **SW 302 - Social Work Interventive Methods II (3 cr.)**

Prerequisite: SW 301 and junior standing.

Corequisite: SW 305.

Students learn interviewing skills as they are used in social work practice. The course focuses on the application of interviewing skills in direct service, but students also learn how to apply interviewing skills to work with groups, organizations, and communities. Students learn use of self, attending, questioning, active listening, and reflection of feelings skills in the context of intentional interviewing. An emphasis is placed on cultural sensitivity in the interviewing process. Effective interviewing approaches for advocacy, telephone and referral skills, and engaging difficult clients are covered. Students use critical thinking skills to recognize and assess their use of interviewing concepts and their progress as social work interviewers.

Distribution: MR

### **SW 303 - Social Work Interventive Methods III (3 cr.)**

Prerequisite: SW 301 and junior standing.

Students learn the knowledge, values, and skills of macro level social work practice with communities and organizations. The course applies the social work problem-solving process and social work values and ethics to organizational, community, political, and social problems. Theories of community practice that address problem identification and intervention strategies on a continuum ranging from the local level to large-scale social change are covered. The course examines the role of the social service organization in the community and the impact of the community and organizational systems on human functioning. The relationship between micro and macro level practice, the social worker's ethical responsibility for promoting social justice, and macro level approaches for advocating for social justice are covered.

Distribution: MR

### **SW 305 - The Helping Relationship Project (2 cr.)**

Prerequisite: SW 301.

Corequisite: SW 302.

The purpose of this field experience, begun during the fall semester in conjunction with SW 301, is to enable students to understand how a helping relationship between a client and a social worker develops. Students will have the opportunity to continue to better develop practice with a variety of clients, and will discuss their work with clients in a weekly seminar.

Distribution: MR

### **SW 306 - The Helping Relationship Practicum (1 cr.)**

Prerequisite: SW 100, SW 216 and Junior Standing.

Corequisite: SW 301

The Helping Relationship Project is a 3 hour field-based practicum with an integrated classroom seminar. In addition to developing relationships with clients, students will use this Project as an introduction to professional social work in an agency context. Students will develop professional relationships with clients, supervisors and other agency staff, while demonstrating ethical, professionally responsible behaviors with regard to client meetings, documentation/record-keeping, time and task management, etc.

Students will be expected to complete weekly case summaries and to develop in class case presentations.

Distribution: MR

### **SW 310 - Substance Abuse and the Family (3 cr.)**

Prerequisite: Some background in sociology, psychology, or social work is preferred, but not a Prerequisite.

Students survey the field of substance abuse prevention, diagnosis, treatment, and policy. The course discusses the myths surrounding substance abuse, identifies who is at most risk, and looks at the progression from substance use to substance addiction. Students learn about the effects of substance abuse in the family and discuss differential interventions and treatment. The course looks at substance abuse policy in the United States, including the effects of the mass media on use.

### **SW 313 - Social Welfare and Social Policy (3 cr.)**

Prerequisite: SW 100, POSC 102, and junior standing.

This is an examination of the structure and policies of social institutions as they relate to social welfare and the profession of social work. Students are introduced to the history, philosophy, and development of social welfare including a close review of American social welfare institutions. The history and ideology of contemporary social welfare programs are reviewed to provide students with a framework for policy analysis and to foster skill in identifying the impact of social policies on human functioning.

Distribution: MR

### **SW 314 - Field Instruction in Macro Practice (3 cr.)**

This course, taken concurrently with SW 303, and SW 313, provides students with the opportunity to experientially learn about social work practice at the macro level. Students spend eight hours per week practicing social work in a community setting under the supervision of a skilled community worker. This experience enables students to integrate knowledge and skills from their social policy and macro methods courses while gaining practice in advocacy, community education, empowerment, and policy analysis.

Distribution: MR

### **SW 320 - Dynamics of Oppression and Empowerment (3 cr.)**

This course is an introduction to understanding issues of diversity and social justice in the United States. The course will provide students with a theoretical framework for understanding the dynamics of oppression and allow students to expand their knowledge of specific forms of oppression. In addition the course will help students develop a perspective for culturally sensitive and multi-cultural social work practice, through self-examination of their own multiple identities. Students will also develop an appreciation of the impact of race, ethnicity, class, age, religion, physical and mental abilities, and sexual orientation on the client worker relationship.

Distribution: MR

### **SW 321 - Empowerment Practice with Underserved Populations (3 cr.)**

Prerequisite: Junior standing.

This is an examination of the impact of oppression on human functioning focusing on teaching students specific practice approaches for empowerment practice with oppressed groups. The

course helps students to develop culturally sensitive social work practice skills and an appreciation of the impact of power and difference on the client-worker relationships. Students examine the social worker's ethical role as an advocate for social justice. Specific approaches for helping clients gain access to opportunities for growth are taught from micro and macro perspectives. The course helps students continue to develop culturally sensitive social work practice skills and an appreciation of the impact of power and difference on the client-worker relationship.

### **SW 383 - Women's Issues (3 cr.)**

This course is designed to give students an understanding of the nature of the difficulties that women bring to social workers. Topics such as incest, rape, eating disorders, alcoholism, woman battering, poverty, ageism, sexual harassment, and other forms of violence against women are explored from individual, family, and societal systems perspectives. Sociocultural theories of female development are contrasted with traditional theories of personality development. The unique problems of special populations of oppressed women, such as women of color and lesbians, are explored as are issues related to women outside the United States. The course gives students a framework for understanding women's oppression and addresses women's human rights as well as focusing on women's strengths.

### **SW 390 - Special Topics in Social Work (1-3 cr.)**

Topics in social work that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

### **SW 404 - Social Work Interventive Methods IV (3 cr.)**

Prerequisite: SW 301, SW 302, SW 303, and senior Social Work standing.

This course focuses on social work practice with diverse families and small groups. Students learn family systems theory and its application to the problem-solving process in social work practice. Roles of family practitioners at the BSW level are discussed with an emphasis on family preservation and family skill building programs that provide services to multiproblem families. Students learn social group work theory including types of social work groups, steps in creating a social work group, stages of group development, group dynamics, the roles of the group facilitator and group members, and the benefits of social group work. Diversity issues in social group work are discussed as well as values and ethics specific to social work with groups. Students learn about the use of groups as a modality for client empowerment.

Distribution: MR

### **SW 409 - Field Instruction in Social Work I (3 cr.)**

Prerequisite: SW 302, SW 303, and senior Social Work standing.

Corequisite: concurrent registration in SW 414.

This is an introduction to the practice of social work in an agency setting (240 clock hours). Students have the opportunity as trainees to develop an identity as a social work practitioner by actual socialization within the agency and by beginning participation in the delivery of services under the supervision and guidance of professional personnel. Students are limited to a total of six credits for SW 409 and SW 410.

Distribution: MR

These courses are graded on a pass/fail basis.

### **SW 410 - Field Instruction in Social Work I (3 cr.)**

Prerequisite: SW 302, SW 303, and senior Social Work standing.

Corequisite: concurrent registration in SW 414.

This is an introduction to the practice of social work in an agency setting (240 clock hours). Students have the opportunity as trainees to develop an identity as a social work practitioner by actual socialization within the agency and by beginning participation in the delivery of services under the supervision and guidance of professional personnel. Students are limited to a total of six credits for SW 409 and SW 410.

Distribution: MR

These courses are graded on a pass/fail basis.

### **SW 411 - Field Instruction in Social Work II (3 cr.)**

Prerequisite: SW 409, SW 410, and senior Social Work standing.

Corequisite: SW 415.

Students continue experiential learning through engagement in actual practice (240 clock hours) under the supervision and guidance of professional personnel. The placement experience allows the implementation of theoretical learning and its integration with the demands and constraints of practice. The trainee should develop a sense of competence and self-reliance as a future practitioner in social work. Students are limited to a total of six credits for SW 411 and SW 412.

Distribution: MR

These courses are graded on a pass/fail basis.

### **SW 412 - Field Instruction in Social Work II (3 cr.)**

Prerequisite: SW 409, SW 410, and senior Social Work standing.

Corequisite: SW 415.

Students continue experiential learning through engagement in actual practice (240 clock hours) under the supervision and guidance of professional personnel. The placement experience allows the implementation of theoretical learning and its integration with the demands and constraints of practice. The trainee should develop a sense of competence and self-reliance as a future practitioner in social work. Students are limited to a total of six credits for SW 411 and SW 412.

Distribution: MR

These courses are graded on a pass/fail basis.

### **SW 414 - Seminar in Field Instruction I (2 cr.)**

Prerequisite: SW 301, SW 302, SW 303, and senior Social Work standing.

Corequisite: Concurrent registration in SW 409 and SW 410.

This is a seminar emphasizing the integration of academic knowledge with fieldwork education. The focus is on helping students adjust to their new roles as social work interns. Discussion topics relevant to the knowledge, values, and skills of social work practice are generated by students in their field practica. The seminar emphasizes ethical issues faced by student interns in their field practicum settings as well as cultural competence.

Distribution: MR

Changed to 1 cr Fall'10. Changed to 2 cr Fall'13.

### **SW 415 - Seminar in Field Instruction II (1 cr.)**

Prerequisite: SW 409, SW 410, and SW 414.

Corequisite: Concurrent registration in SW 411 and SW 412.

This is a continuation of the emphasis on the integration of academic knowledge with fieldwork education. Students present problematic cases from the field in a "team conference" setting to enable them to develop critical thinking abilities with cases from a variety of settings. Through a variety of assignments, students continue their socializations as emerging BSW practitioners.

Distribution: MR

Changed to 2 cr. 5/2011. Changed to 1 cr. effective Fall'13.

### **SW 419 - Social Work and Research (3 cr.)**

Prerequisite: PSY 207 or MATH 120 and senior standing.

This course is designed to equip social work majors with a basic understanding of research procedures and analysis so that they will become more sophisticated consumers of professional research and mass media reporting. The focus is on understanding research procedures related to the social worker's own practice and agency programs. Ethical issues in social work research are addressed.

Distribution: MR

This course satisfies one of the Writing Intensive course requirements for Arts and Sciences students.

### **SW 420 - Social Work Research Seminar (2 cr.)**

Prerequisite: SW 419 and senior standing.

This one-credit seminar is designed to support students' year-long research projects. Expanding upon concepts developed in the fall semester course, Social Work and Research, students will gain the basic knowledge and skills required to implement small-scale agency-based research within their field placements. Students will engage in quantitative and/or qualitative data collection and analysis, and will draw conclusions based on a critical examination of their chosen research questions and methodologies. Students will develop reports summarizing the results of their research and prepare poster presentations for their senior reception. In addition to developing their own research reports, students will review and critique the research reports of their peers.

Credit change from 1 cr. to 2 cr. Fall 2015

## **THTR - THEATRE**

All THTR courses satisfy Aesthetic Perspective requirement.

### **THTR 101 - Acting I (3 cr.)**

Learn the fundamental techniques of the craft of acting through theatre exercises, presentations, and scene work from popular Broadway and Off-Broadway Plays.

Offered: every fall.

Formerly THTR 208.

### **THTR 110 - Introduction to Theatre (3 cr.)**

Students will explore theatre as a collaborative art through lecture, participation, and an LBC component. The disciplines of acting, directing, playwriting, design, and criticism will be surveyed through the backdrop of popular American theatre. Students will attend and review play productions on and off campus, view "live" theatre on video, view films based on popular plays read in class, participate in a group generated performance project, and experience the separate disciplines outside of class as part of their LBC requirement.

Offered: every semester.

Previously "Theatre Appreciation"

### **THTR 151-158 - Stageless Players (1 cr.)**

Students participate in the theatre productions of the Stageless Players. May be taken more than once. (151 is fall and 152 is spring.)

Formerly COMM 151-158.

### **THTR 160-168 - Improv on the Rocks (1 cr.)**

Prerequisite: THTR 220, permission of the instructor

Students performing with Improv on the Rocks must rehearse two evenings a week, perform in a minimum of four shows throughout the semester, and if during the spring term, compete in ImprovBoston's Regional Improv Troupe Tournament. A Final Paper at the end of the semester discusses the experience of performance and how the techniques from Improv Comedy Class, and the additional readings, were used in each performance.

### **THTR 201 - Acting II (3 cr.)**

Prerequisite: THTR 101 or equivalent, or permission of instructor.

This course will explore the acting techniques of Stanislavski through monologue and scene work from the great playwrights of Realism.

Offered: every spring.

Formerly THTR 308.

### **THTR 220 - Improvisational Comedy I (3 cr.)**

This course is an intensive introduction to the art and performance of short form improvisation. This course is designed to teach the fundamentals of short form improvisation, which include game playing, scene work, ensemble, and performance. In addition, students will learn the art of creating sketch comedy through journaling, observation, improvisation, and performance. The methods of Viola Spolin and the Players Workshop of Chicago, The Second City of Chicago, Keith Johnstone, and Theatre Sports will be used. The creation and presentation of four public improvisational comedy performances is the backbone of the course. The success of the class is dependent on the creation of an ensemble of players who are committed to the other as being the most important person on stage. The ensemble is more important than the individual in improvisation.

Offered: every year.

Formerly THTR 320.

### **THTR 221 - Improvisational Comedy II (3 cr.)**

This course is an intensive introduction to the art and performance of long form improvisation. Long form is at least 10 minutes in length and consists of a number of short scenes edited by the performers onstage... The individual parts of long form should be related in some fashion (Libera, The Second City Almanac of Improvisation). This course is designed to teach the fundamentals of improv scene work, game playing in scenes, basic rules of improv, several long form structures, group mind in an ensemble, and performance of the taught structures. The methods of I.O. (Formerly Improv Olympic), Viola Spolin, The Second City of Chicago, and Keith Johnstone will be used. Satisfies the aesthetic perspective of the GUR.

### **THTR 290 - Special Topics in Theatre (3 cr.)**

Topics in theatre that are not offered on a regular basis are examined.  
This course may be repeated for credit if the topic varies.

**THTR 390 - Special Topics in Theatre (3 cr.)**

Topics in theatre that are not offered on a regular basis are examined.  
This course may be repeated for credit if the topic varies.

## GRADUATE DEGREE PROGRAMS - GENERAL INFORMATION

### Requirements for the Degrees

In order to qualify for a master's degree, a student must:

- Be formally admitted to the degree program.
- Complete the required programs as approved by the dean of the degree-granting college within eight years prior to the date of graduation. All graduate courses transferred into the programs must be taken within this eight-year period as well.
- Apply no more than six credit hours of transfer credit toward 30-credit graduate programs or 12 credit hours of transfer credit toward 600-level courses in any graduate program requiring 36 or more credit hours. Normally, the final courses are to be taken at Western New England University, but in exceptional circumstances students may apply to the appropriate dean to have their final one, two, or three courses approved to be taken elsewhere.
- Take at least 24 credit hours of the master's degree graduate course requirements at the University.
- Attain an overall grade point average of 3.0 or higher. Overall average is the average of all courses that are applied toward the degree. The degree audit shows the grade point average in all courses completed to that point.
- A student continuously enrolled, with no interruption of academic program longer than one semester or two terms absence, is expected to fulfill the requirements of the catalogue current at the time of admission to the University. A student not continuously enrolled is expected to meet the requirements current at the time of readmission. A one-year leave of absence may be granted at the discretion of the appropriate dean.
- Complete an Application for Degree form, which will place the student's name on the graduation list for October, February, May or August graduation as appropriate.

### Grading System

Work in graduate courses is graded as follows:

Superior	A (4.0)		
Above Average	A- (3.7)	B+ (3.3)	
Average	B (3.0)		
Below Average	B- (2.7)	C+ (2.3)	C (2.0)
Failure	F (0)		

### Incomplete Work

An incomplete grade of "I" is awarded only when work is not completed due to circumstances beyond the student's control (such as serious illness). The student has six weeks from the last day of final class and/or examinations to satisfy course requirements. Extension may be granted only for continued circumstances beyond the student's control and must be approved by the instructor and the dean of the college. The "I" becomes "F" for work not completed after the six weeks, or by the conclusion of an approved extension period.

### Academic Performance

Graduate students are expected to maintain a high degree of academic excellence in all of their studies.

A graduate student must have a minimum grade point average of 3.0 in all courses applied toward the degree in order to qualify for a graduate degree. Subject to the approval of the dean of the college within which the student is enrolled, a course with a grade of "C+" or lower may be repeated and the grade point average will be computed on the basis of the most recent earned grade. Credit for the course will be awarded only once. The official transcript will show the complete record.

In cases where a course grade of "F" has been assigned as a penalty for academic dishonesty, the student may not replace that grade in the cumulative GPA. If the student is allowed to retake the course, the resulting grade will be counted as a separate course.

Any student who receives three or more grades of "C+" or lower, or two or more grades of "F" will be dismissed from the program. With regard to dismissal, all grades in all courses are considered. In all cases where a letter of intent to dismiss for academic reasons has been sent, the student has the right to appeal to the Graduate Committee within two weeks of the notice. If an appeal is successful and the student is allowed to continue, the conditions of continuance are spelled out for the student in a letter. If an appeal is unsuccessful, or if no appeal is filed, the student is formally dismissed and such action becomes part of the permanent record.

Graduate students who are conditionally re-admitted must fulfill all the conditions set forth by the appropriate dean at the time of admission. Those conditions are recorded on the degree audit and are duly noted when satisfied.

Graduate courses in the Colleges of Arts and Sciences, Business, and Engineering may be audited on a space-available basis by alumni who have completed bachelor's or master's degrees at Western New England University and who also have the listed prerequisites for the course selected. Alumni may register to audit classes through Student Administrative Services. Courses in the School of Law are not available for alumni auditors. The University does not maintain any record of registration by alumni auditors.

### Withdrawal

#### *W (Withdraw)*

To withdraw from a course the student must complete a drop form or application for complete withdrawal available from the Office of Student Administration Services or the appropriate college. Absence from class without completing the form does not constitute withdrawal and may result in a failing grade.

If the student withdraws from a course within the first two weeks of the semester, or during the period published in the summer session schedule, no grade is assigned. A grade of "W" indicates that the student withdrew after the second week of classes, but before the date published in the Academic 11-week Graduate Term Calendar.

A grade of "W" carries no academic penalty or prejudice.

### Award Of Degrees Policy

The University does not guarantee the award of a degree or a certificate of satisfactory completion of any course of study or training program to students enrolled in any instructional or training program. The award of degrees and certificates of satisfactory completion is conditioned upon satisfaction of all current degree and instructional requirements at the time of such award, compliance with all University policies and regulations, as well as meeting bona fide expectations of the faculty.

## Undergraduate Student Registration for Graduate-Level Business Courses

Several regulations, listed below, apply to undergraduate students wishing to register for graduate courses in business. These regulations apply to students who have not been accepted into the five-year BSBA/MBA or into the BSBA/MSA.

- A senior with a minimum cumulative average of 3.0 may elect to take two 600 level courses. The graduate courses may be taken for graduate credit providing they do not exceed the normal load of five courses.
- The graduate course cannot be counted toward the undergraduate degree or in the undergraduate cumulative average.
- The student is not considered a matriculated graduate student until officially accepted by the graduate school.
- Upon acceptance into the graduate program, the student may request transfer of these graduate courses.
- Undergraduates registering for graduate courses are responsible for submitting all proper forms, which are available from the dean's office in the appropriate college.

## Strategic Initiatives

The Center for Strategic and Academic Initiatives' primary goal is international recruitment of students and development of undergraduate and graduate degree programs (traditional, professional, online, alternative/intensive scheduling, on-site, off site, graduate full- and part-time interdisciplinary, "boutique" in nature, in-house or out-sourced, etc) as well as non-credit/certificate programs. The Center will serve as an incubator to implement credit and non-credit programs and degrees that the University determines should be launched to take advantage promptly of opportunities that are sought out or that present themselves and that permit the University to reach new audiences. In addition, the Center and the Office of Professional Development Programs is responsible for the development of new continuing education and non-credit opportunities to meet employer, employee, professional, and personal development needs within our region. This initiative may include the development and implementation of new graduate programs, and the development of other entrepreneurial opportunities.

### Professional Development Programs

The Office of Professional Development offers an array of professional development/education programs. Our conferences, seminars, noncredit courses, and certificate programs are offered through public formats and onsite at organizations. These programs are designed to help professionals quickly update or acquire the job-related skills and information that will enhance their ability to be successful in their chosen professions.

All of our onsite programs can be customized to meet your organization's needs. We welcome the opportunity to meet with you to discuss your specific training needs and design a proposal for your review. If meeting space or computer resources is an issue, let us know and we will be happy to provide these services at our Springfield campus.

For brochure requests and complete details on all of our professional development programs, call us at 1-800-660-9632 or visit our website, [www.wne.edu/pd](http://www.wne.edu/pd). (p. 29)

- Annual Tax Institute and Workshops

- Fundamentals of Engineering/Engineering-in-Training (FE/EIT) Review Course
- Law Enforcement Seminars
- Project Management Forum
- Regional Social Work Conference and Workshops

### Annual Conferences and Certificate Programs

#### *Regional Social Work Conference (29 years)*

This conference is an all-day event comprised of 40 plus individual workshops. These workshops vary in topics ranging from AIDS and domestic abuse to professional burnout and new policies. The conference also provides a forum for information exchange on contemporary issues and networking opportunities for human service professionals throughout New England.

#### *Tax Institute*

The Tax Institute provides high quality written and computer materials, oral presentations from expert speakers on detailed tax structuring, and planning techniques and their practical applications. It addresses timely topics and updates based on changes or developments in the tax law with a focus on the planning opportunities and pitfalls which may result from those changes.

### Professional Development Workshops and Trainings

#### *Fundamentals of Engineering/Engineering-in-Training (FE/EIT) Review Course*

This 10-session course reviews fundamental engineering subjects, mathematics, and basic sciences to prepare engineers for the General Fundamentals of Engineering Exam. University faculty review concepts and solve problems similar in type and complexity as those encountered on the exam. This course is offered in January in preparation for the spring exam.

#### *Project Management Forum*

In collaboration with the SNEC PMI Chapter, the Western Massachusetts Project Management Forum hosts monthly forum meetings on the Western New England University campus for project managers. Creative discussions and guest speakers provide a platform for all area project managers to network, and share ideas, strategies, and solutions to current challenges in the field of project management.

#### *Social Work Workshops*

Western New England University's Bachelor of Social Work program, Office of Professional Development, and Social Work Advisory Council sponsor professional development workshops on current issues in the human service field. These workshops have served the needs of human service professionals from Massachusetts and surrounding states by providing a minimum of five programs yearly for CEUs for social workers; license mental health, CADAC, Marriage and Family Therapist; and PDPs for educators.

For detailed information, visit our website, [www.wne.edu/pd](http://www.wne.edu/pd) (p. 29) or call 1-800-660-9632.

## GRADUATE PROGRAMS

### Graduate Programs in Arts and Sciences

#### Applied Behavior Analysis

#### Master of Science in Applied Behavior Analysis

Developed in response to the increasing demand for teachers and practitioners trained in best practices for the education and treatment of individuals with autism and related disabilities, the Master's Program in Applied Behavior Analysis at Western New England University will give working professionals the skills to fill this void. Through a combination of coursework and supervised practical experiences, students completing this program will earn a master's degree in Applied Behavior Analysis and meet the Behavior Analysis Certification Board (BACB) requirements for taking the exam to become Board Certified Behavior Analysts.

#### Program Structure

All students will be assigned doctoral-level, Board Certified Behavior Analysts as advisors upon admission to the program. Advisors and students will work collaboratively on the students' professional development. Students are expected to complete 36 total credit hours with 18 credit hours dedicated to core coursework designed to meet the BACB requirements, 9 credit hours of elective coursework, and 9 hours of practicum.

Courses will be offered in three of the four 11-week terms scheduled by the Western New England University Graduate Program (fall, winter, and spring terms). Students will be expected to enroll in 4 credit hours in each term to stay on pace to complete the Master's Program in three years.

#### Degree Requirements

##### Core courses (18 hours)

PSY 501	Principles of Behavior Analysis	3 cr.
PSY 502	Behavioral Assessment	3 cr.
PSY 503	Behavioral Interventions	3 cr.
PSY 505	Methods of Evaluation	3 cr.
PSY 506	Evidence-based Teaching	3 cr.
PSY 509	Ethics and Professional Issues	3 cr.

**Subtotal: 18**

##### Elective courses (9 hours)

PSY 504	Autism and Related Disabilities	3 cr.
PSY 507	Theoretical Foundations	3 cr.
PSY 508	Verbal Behavior	3 cr.
PSY 590	Special Topics in Applied Behavior Analysis	3 cr.

**Subtotal: 9**

##### Practica (9 hours)

PSY 520	520-PSY 528 Supervised Practicum in ABA	1 cr.
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**Subtotal: 9**

Subtotal: 36

#### Admissions

Candidates need to have earned a minimum of a bachelor's degree and must have earned at least a 3.0 grade point average in their bachelor's program. A combined score of 1000 on the verbal and quantitative sections is required for full admission to the program.

Total Credit Hours: 36

#### Typical Course of Study for the Certificate in Applied Behavior Analysis

#### Degree Requirements

##### Academic Year 1 - Fall

PSY 501	Principles of Behavior Analysis	3 cr.
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##### Academic Year 1 - Winter

PSY 502	Behavioral Assessment	3 cr.
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##### Academic Year 1 - Spring

PSY 503	Behavioral Interventions	3 cr.
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##### Academic Year 1 - Summer

PSY 511	ABA Practicum I	2 cr.
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##### Academic Year 2 - Fall

PSY 504	Autism and Related Disabilities	3 cr.
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PSY 512	ABA Practicum II	2 cr.
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##### Academic Year 2 - Winter

PSY 505	Methods of Evaluation	3 cr.
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PSY 513	ABA Practicum III	2 cr.
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##### Academic Year 2 - Spring

PSY 560	BACB Exam Preparation	1 cr.
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PSY 514	ABA Practicum IV	2 cr.
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##### Academic Year 2 - Summer

Take BA CB exam.

Communication

#### Master of Arts in Communication with Concentration in Public Relations

#### Purpose

The University offers an online Master of Arts in Communication with a concentration in public relations. The program is designed to enable public relations specialists and media strategists currently working in the field receive additional training in cutting-edge public relations approaches and advance more quickly in their careers; to help business professionals enhance their knowledge of and facility with current research methods and practices; and to allow working professionals without an undergraduate degree in or professional experience with public relations to develop the skills and background to enter this rapidly-growing field. The program uses a dynamic online environment and small class sizes to help students develop a collegial relationship with their faculty and with other students. Students will regularly sharpen their professional writing, research, and analytical skills; develop approaches to handling public relations crises; and develop a principled approach to practicing

public relations. This program is also designed to be in compliance with the Americans with Disabilities Act.

**Program Objectives**

The Master of Arts in Communication with a concentration in public relations program is intended to offer students the opportunity to:

- learn modern methods of analyzing the effectiveness of public relations strategies for both for- and non-profit organizations;
- sharpen crisis management skills;
- develop principled approaches to managing public relations campaigns;
- learn how to design and execute public relations strategies for use in multiple media platforms;
- develop writing skills necessary for effective public relations campaign management; and
- become fluent in both qualitative and quantitative research strategies.

**Structure**

- The program is designed for part-time participation; all courses are offered online.
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To complete the program, a student must take 10 courses, 30 credit hours, at least seven of which must be.

- The program uses the 11-week term calendar to include two courses per semester, summers included, with courses sequenced to run every two years/every three summers.

**Degree Requirements**

**Required Courses - 18 credits**

Students must complete thirty (30) credits to receive a Master’s degree in Communication with a concentration in Public Relations.

Eighteen (18) credits must be accumulated from required courses and twelve (12) credits must be accumulated from the list of elective courses. Up to six (6) credits may be transferred from other graduate programs with the approval of the program director and department chair. No course can be repeated for credit.

COMM 501	Principles & Practices of Public Relations	3 cr
COMM 505	Writing for Communication Professionals	3 cr
COMM 510	Communication Research Methods	3 cr
COMM 525	Ethics in Public Communication	3 cr
COMM 550	Manufacturing and Managing Public Opinion	3 cr
COMM 570	Crisis Management and Public Relations	3 cr

**Subtotal: 18**

**Elective Courses - 12 credits**

Variable credit courses (COMM 680 and COMM 699) are designed to allow students to move through the program more quickly if they desire and are in position to execute an independent study project or thesis significant enough in size and scope to warrant more than three credits. Proposals to undertake a variable credit course must be approved by the program director and have the number of credits they will be worth established prior to registration for such courses.

COMM 605	Strategic Approaches to Public Relations	3 cr
COMM 620	Strategies for Social and Digital Media	3 cr
COMM 625	Public Relations for NonProfits	3 cr
COMM 680	Independent Study in Public Relations	3 - 6 crs
COMM 699	Masters Thesis in Public Relations	3 - 6 crs

**Subtotal: 12**

All courses have connection to the Frameworks and are determined by the backgrounds of the students enrolled in the program.

Subtotal: 30

Total Credit Hours: 30

**Creative Writing**

**Master of Fine Arts in Creative Writing**

Western New England University’s low-residency Master of Fine Arts in Creative Writing offers in-depth study of how fiction is made without the time commitment of a traditional, full-time graduate program. A heightened concentration on craft provides students with exposure to every aspect of writing, including sentence craft, voice development, honing dialogue, shaping beginnings, middles and endings, and makes this program unique. This two-year program is broken down into four components, each comprised of an intense 7-day residency, followed by individualized, mentored study designed to deepen students’ understanding of craft through canonic literature read from a creator’s perspective.

**Admission**

Candidates seeking admission to the MFA in Creative Writing should possess a baccalaureate degree from an accredited institution of higher education. The review process will focus largely on the candidate’s writing sample submitted with the application for admission.

There is no application deadline. Applications are processed on a rolling basis. Once an application is complete, an admission decision will be released in 3-4 weeks. All new MFA candidates admitted to the program will be required to begin with a residency. Two will be offered annually - Summer (July) and Winter (January).

**Program Structure**

The Master of Fine Arts in Creative Writing is a two-year program that consists of four residencies and an individualized curriculum totaling 48 credits. Each year of the program is split into two parts,

each consisting of two sequenced graduate terms beginning with a 7-day residency. Residencies take place in the summer and winter. Summer residencies are held on the Western New England campus. Winter residencies alternate between the Berkshires and Dublin, Ireland.

### Degree Requirements

#### Academic Year One Part One - Requirements List

Summer Residency  
 Summer and Fall Terms (Tutorial Period)  
 Individualized Curriculum

**Subtotal: 12**

#### Academic Year One Part Two - Requirements List

Winter Residency  
 Winter and Spring Terms (Tutorial Period)  
 Individualized Curriculum

**Subtotal: 12**

#### Academic Year Two Part One - Requirements List

Summer Residency  
 Summer and Fall Terms (Tutorial Period)  
 Individualized Curriculum

**Subtotal: 12**

#### Academic Year Two Part Two - Requirements List

Winter Residency  
 Winter and Spring Terms (Tutorial Period)  
 Individualized Curriculum

**Subtotal: 12**

Subtotal: 48

Total Credit Hours: 48

Education

### Master of Education in Curriculum and Instruction

The University offers an online Master of Education in Curriculum and Instruction. The program is designed to enhance teachers' knowledge and skills with the goal of preparing educational leaders of the future. The program design uses best practices of online learning such as building a virtual learning community, active learning, both formative and summative assessments, a variety of assignments, and varied formats for sharing course content.

#### Program Objectives

The Master of Education in Curriculum and Instruction program has been designed with the goal of enhancing the knowledge and skills of teachers in order to make them educators of excellence for the 21st century. Specifically, the program seeks to offer students the opportunity to engage in the following areas of academic and professional learning:

- exploration and application of current research on strategies that increase achievement in all students
- constructivist learning experiences
- experience reading, interpreting and conducting research
- interdisciplinary planning strategies
- increased fluency in technology
- differentiated instruction approaches

- responsive teaching and multicultural awareness
- broaden repertoire of approaches for student assessment and evaluation

#### Structure

The program is a part-time graduate program with courses offered in 11-week terms. Two courses are offered each fall, winter, spring, and summer term. All coursework is conducted online. The program requires the completion of 10 courses. All students take a common core of courses: Education Research, Principles of Differentiating Instruction, Contemporary Learning Theory, Mentoring and Professional Development, Multicultural Education, and Assessment Theory and Design. Upon admission to the program students select either the elementary track (Reading Strategies for Struggling Readers (K-6), Integrating Curriculum through Children's Literature, Infusing Content Areas with Art-Elementary, Deepening Mathematical Content Knowledge), or the secondary track (Reading and Writing in the Content Areas, Ethics in Educational Practice, Adolescent Literacy and Young Adult Literature, Infusing Content Areas with Art-Secondary) to complete the required 10 courses. The program permits students to enroll in a limited number of courses without an interest in a degree.

### Degree Requirements

#### Elementary Track Requirements

The program requires 10 courses (30 credit hours).

ED 601	Research for Teachers	3 cr.
ED 602	Principles of Differentiating Instruction	3 cr.
ED 603	Contemporary Learning Theory	3 cr.
ED 604	Mentoring and Professional Development	3 cr.
ED 605	Multicultural Education	3 cr.
ED 606	Assessment Theory and Design	3 cr.
ED 610	Literacy Strategies for Struggling Readers	3 cr.
ED 611	Integrating Curriculum through Children's Literature	3 cr.
ED 612	Infusing Content Areas with Art-Elementary	3 cr.
ED 613	Deepening Mathematical Content Knowledge	3 cr.

**Subtotal: 30**

#### Secondary Track Requirements

ED 601	Research for Teachers	3 cr.
ED 602	Principles of Differentiating Instruction	3 cr.
ED 603	Contemporary Learning Theory	3 cr.
ED 604	Mentoring and Professional Development	3 cr.
ED 605	Multicultural Education	3 cr.
ED 606	Assessment Theory and Design	3 cr.
ED 614	Reading and Writing in the	3 cr.

	Content Areas	
ED 615	Ethics in Educational Practice	3 cr.
ED 616	Adolescent Literacy and Young Adult Literature	3 cr.
ED 617	Infusing Content Areas with Art-Secondary	3 cr.

**Subtotal: 30**

**Admission**

The program is designed specifically for teachers or other educators. Students will need to have attained an overall grade point average of 2.8 in their undergraduate work to become a degree candidate. Nondegree participants are welcome to take courses to further personal interest or understanding; they must have a bachelor’s degree from a regionally accredited college or university and a minimum 2.8 overall grade point average. Selection of participants will be made on the basis of previous academic records, present and potential performance in education, and supporting letters of reference, one of which must be from the candidate’s principal or supervisor.

**Master of Education in Elementary Education**

The University offers a Master of Education in Elementary Education (MEEE) program. Fully accredited by the Massachusetts Department of Elementary and Secondary Education, this program allows students to obtain a master’s degree leading to the Professional License in the elementary field. The program offers students content coursework in the areas of computer technology, English, history, mathematics, and science. In addition, there is education coursework that focuses on assessment, research, philosophy of education, administrative skills and mentoring, and adult and professional development. To be eligible to earn a degree from this program, a student will need to have previously completed an approved education program and hold an Initial License in elementary education from the Commonwealth of Massachusetts.

**Program Objectives**

The Master of Education in Elementary Education program has been designed with the goal of enhancing the knowledge and skills of elementary teachers, in order to make them educators of excellence for the 21st century. Specifically, the program seeks to provide students with the following:

- More in-depth knowledge in the essential content areas of the curriculum: English, history, mathematics, and science
- Increased knowledge and skills with computers and classroom technology
- A broader array of techniques for student assessment and evaluation, grounded in contemporary learning theory
- Increased strategies for dealing with diverse student populations
- Basic research skills for investigating the teaching-learning process in the classroom
- Skills for a mentoring role within the profession, and for a variety of administrative duties
- An understanding of how to promote ongoing personal and professional development
- A broader philosophical perspective on the profession, which will aid in the refinement of one’s own philosophy of education

**Structure**

The program is a part-time graduate program with courses offered in 11-week terms. Two courses are offered each fall, winter, spring term, at hours in the late afternoon, convenient for working professionals. The courses are sequenced to run every two years. The program requires the completion of 10 courses. The program permits students to enroll in courses without an interest in a degree.

**Degree Requirements**

**Master of Education in Elementary Education Requirements**

The program requires 10 courses (30 credit hours).

MAET 5XX	Literature for Elementary Teachers	
	or	
ENGL 5XX	English Elective	3 cr.
HIST 520	Documents of World and American History	3 cr.
ED 540	Mathematical Theories and Skills for Elementary Teachers	3 cr.
ED 545	Concepts and Methods of Natural Sciences	3 cr.
ED 535	Technology Education and Integration in the Elementary Classroom	3 cr.
ED 510	Educational Research	3 cr.
ED 515	Assessment: Theories, Strategies, and Design	3 cr.
ED 520	Administrative Skills and Mentoring	3 cr.
ED 525	Adult and Professional Development	3 cr.
ED 550	Strategic Teaching in Reading and Language Arts	3 cr.

**Subtotal: 30**

**Admission**

The program is designed specifically for elementary teachers who hold an initial license in the field. In addition to having an Initial License for elementary teaching, students will need to have attained minimum overall grade point average of 2.8 in their undergraduate work to become a degree candidate. Nondegree participants are welcome to take courses to further personal interest or understanding; they must have a bachelor’s degree from a regionally accredited college or university and a minimum 2.8 overall grade point average. Selection of participants will be made on the basis of previous academic records, present and potential performance in teaching, and supporting letters of reference, one of which must be from the candidate’s principal or supervisor.

English

**Master of Arts in English for Teachers**

**Purpose**

The Master of Arts in English for Teachers (MAET) degree program is designed primarily for middle school and secondary school teachers who have an initial license and need a master’s degree for final, professional licensure, who want Professional Development

Points, or who are interested in continuing their study of English. English majors who have graduated from college but who have not completed the requirements necessary for initial licensure, current teachers who do not have an initial license, and professionals who have decided on a career change may also be interested in the program. (In order to become qualified teachers, in addition to establishing English competencies, these students, on their own, must take certification tests, fulfill state requirements, and complete a practicum.) The program is designed to be inspiring, engaging, and challenging. By emphasizing the breadth and depth of subject matter, it deepens passion for the language arts and literature.

### Competency areas

The program stresses four competency areas: writing, speaking, reading/studying literature, and contemporary issues in the teaching of English.

#### Writing

- Becoming a more accomplished writer, including learning how to present a topic in a variety of forms, to specialized audiences
- Learning how to do intensive research, both online and in the library and demonstrating proficiency in the use of standard reference materials and journals
- Mastering the grammar, mechanics, and rhetoric of English

#### Speaking

- Advancing oral presentation skills

#### Reading/studying literature

- Understanding the hierarchy of skills involved in the reading process, with emphasis on critical analysis of literary works, emphasizing the assessing of needs and the approaches for remedies
- Becoming conversant with literary figures/schools/eras in British and American literature within historical and cultural context
- Becoming conversant with literary terminology, including characteristics of genres
- Becoming aware of different schools of literary criticism

#### Contemporary Issues in English

- Knowing the socio-cultural issues related to the English language
- Developing awareness of contrastive rhetoric
- Using technology to teach English
- Establishing connections between English and other disciplines

## Degree Requirements

### Array of Courses

Students choose 10 courses (30 credit hours) from among the courses below according to their needs. A Capstone seminar is also required.

MAET 552	Advanced Grammar	3 cr.
MAET 553	Teaching Writing in the English Curriculum	3 cr.
MAET 554	Teaching English in the Multicultural Classroom	3 cr.
MAET 556	The Reading Process in the English Curriculum	3 cr.

MAET 560	Literary Studies- Shakespeare and The Elizabethan Age	3 cr.
MAET 561	Literary Studies- Poetry	3 cr.
MAET 563	Literary Studies- Genres	3 cr.
MAET 564	Literary Studies- Cultural-Literary Connections	3 cr.
MAET 565	Literary Studies- Great Works of American Literature	3 cr.
MAET 566	Literary Studies- Modern American Literature	3 cr.
MAET 570	Seminar: Issues in The Teaching of English	3 cr.
MAET 590-596	Special Topics in MAET	1-3 cr.

**Subtotal: 30**

All courses have connection to the Frameworks and are determined by the backgrounds of the students enrolled in the program.

### Structure

- The program is designed for part-time participation; all courses are offered in the late afternoon/early evening.
- To complete the program, a student must take 10 courses, 30 credit hours, at least seven of which must be English courses and at most three of which can be education courses.
- The program uses the 11-week term calendar to include two courses per semester, summers included, with courses sequenced to run every two years/every three summers.

### Mathematics

## Master of Arts in Mathematics for Teachers

### Purpose

The Master of Arts in Mathematics for Teachers (MAMT) degree program is designed primarily for middle school and secondary school teachers who have an initial license and need a master's degree for final professional licensure, who want Professional Development Points, or who are interested in continuing their study of Mathematics. Mathematics majors who have graduated from college but who have not completed the requirements necessary for initial licensure, current teachers who do not have an initial license, and professionals who have decided on a career change may also be interested in the program. (In order to become qualified teachers, in addition to establishing Mathematics competencies, these students, on their own, must take certification tests, fulfill state requirements, and complete a practicum.) The MAMT program is designed to be inspiring, engaging, and challenging.

The broad challenge of mathematics education at all levels is to actively engage students in mathematical thinking. Mathematics education must have immediacy and relevance to attain this goal. Excellent teaching of mathematics occurs when the teacher has a broad-based, in-depth understanding of content coupled with an understanding of how pedagogy and technology can significantly enhance learning environments. This program is structured so that the scholar-teachers will be active participants in a learning process committed to content, pedagogy, and technology.

### Program Objectives

The MAMT program provides instruction and support for scholar-teachers in achieving the following objectives. It is our purpose that our students:

- 1) Learn mathematical habits of mind
  - a. Correctly apply inductive and deductive reasoning skills.
  - b. Demonstrate correct use of formal mathematical language and ability to compose a mathematical proof.
  - c. Demonstrate the ability to successfully apply mathematical computations and algorithms.
  - d. Understand the connections between different branches of mathematics, as well as between mathematics and other disciplines.
- 2) Demonstrate fluency in mathematical communication/link content knowledge to classroom experience.
  - a. Write about mathematics correctly and in a clear manner.
  - b. Develop proficiency in introducing advanced mathematical concepts to the classroom.
- 3) Use technology relevant to mathematics.
  - a. Use relevant and current technology to aid the understanding of new mathematical concepts, to solve difficult problems, and to communicate mathematics effectively.

**Structure**

The program is a part-time graduate program with courses offered in the fall, winter, spring, and summer 11-week terms. One or two mathematics courses are typically offered per term, running two days a week, late afternoon or early evening, at hours convenient for the expected teacher audience. The courses will be sequenced to run every three years, so that it would be possible to complete all degree requirements in about two years. The degree requires the completion of 10 courses. The program also allows students to commit to a longer period of stay to complete the degree and allows students to enroll in courses without an interest in obtaining the degree if they so desire. Upon admission into the program, the student will be assigned a faculty advisor who will work closely with the student in identifying a curriculum that best suits the objectives and needs of the student.

**MAMT Requirements**

The program requires 10 courses (30 credit hours), at least five of which must be core mathematics courses and at most five of which can be non-core mathematics courses. Students will be required to have an overall GPA of 3.00 or better to become a degree candidate.

**Degree Requirements**

**Core Mathematics:**

MAMT 550	Discrete Mathematics	3 cr.
MAMT 552	Geometry Revisited	3 cr.
MAMT 554	Number Theory	3 cr.
MAMT 556	Graph Theory	3 cr.
MAMT 561	Probability	3 cr.
MAMT 564	Analysis	3 cr.
MAMT 566	Algebraic Structures	3 cr.
MAMT 568	Mathematical Modeling	3 cr.
MAMT 570	The Mathematics of Symmetry	3 cr.

MAMT 590-593	Special Topics in Mathematics (if designated as core)	1-3 cr.
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**Subtotal: 15**

**Non-Core Mathematics:**

MAMT 540	Calculus Revisited: Theory and Applications	3 cr.
MAMT 542	History of Mathematics	3 cr.
MAMT 543	Linear Algebra	3 cr.
MAMT 544	Creative Problem Solving in Mathematics	3 cr.
MAMT 545	Cryptology	3 cr.
MAMT 546	Chance	3 cr.
MAMT 547	Statistics	3 cr.
MAMT 548	What is Mathematics?	3 cr.
MAMT 590-593	Special Topics in Mathematics (if designated as non-core)	1-3 cr.

**Subtotal: 15**

Total Credit Hours: 30

**Doctoral Program in Behavior Analysis**

**Doctoral Program in Behavior Analysis**

**General Information**

Developed in response to the increasing demand for scientists and practitioners of evidence-based methods for the education and treatment of individuals with autism and related disabilities, the Ph.D. program in Behavior Analysis at Western New England University will give you the skills to fill this void and become a leader in the field. Through a combination of coursework and supervised practical and research experiences, the aim of the Department of Psychology is to train researchers and scientist-practitioners in the discovery, translation, and application of knowledge toward solving human behavior problems of societal importance (e.g., autism and related disabilities). All classroom course work is done at the New England Center for Children.

**Program Goals and Objectives**

The program will allow students to successfully embark on academic and research careers, as well as careers in the delivery of behavior analysis services. Thus, the primary objectives of our program, which elucidate the core knowledge areas and skills all students are expected to know or be able to do prior to graduating, are:

1. To understand the assumptions, goals, and characteristics of behavior analysis
2. To understand the history of the field of behavior analysis and its relation to psychology and science in general
3. To understand the basic principles of learning and the past and current theoretical models which describe and attempt to explain behavior-environment relations
4. To be able to describe and apply effective behavior-analytic procedures for promoting behavior change
5. To be able to describe and apply single-subject and more traditional group designs

6. To be able to determine the influence of relevant independent variables or interventions
7. To be able to describe, depict, and analyze behavioral data and understand the current quantitative models which describe and attempt to explain behavior-environment relations
8. To be able to describe, distinguish, and apply evidence-based practices for a social problem (e.g., problems associated with autism and related developmental disabilities)
9. To understand a professional culture outside of behavior analysis that is united to better understand and improve conditions relevant to a particular social problem
10. To be able to identify, review, critically analyze, and contribute to the behavioral science and psychological literature
11. To be able to articulate and work within the ethical standards of the Behavior Analysis Certification Board and the American Psychological Association
12. To be able to effectively participate in professional behavioral science activities such as presenting, publishing, and reviewing original research
13. To be able to design and implement effective instruction at the college level

### Program Structure

All students are assigned primary and secondary advisors upon admission to the program. The doctoral program operates according to a junior colleague model. In this model, the student and advisor share equal responsibility in planning for the student's academic success and ensuring that the student is making timely progress toward the degree requirements. Thus, advisors assist students as they select required and elective courses, develop their research projects, and prepare for Ph.D. requirements (e.g., assist in selecting a review paper topic). Advisors and students also work collaboratively on the students' professional development. Specifically, advisors assist students in clarifying their goals and attaining substantive experience in teaching (e.g., identifying opportunities and mentoring), research (e.g., ensuring that the student is presenting posters, oral presentations, and is publishing their data where appropriate), and service (e.g., committee work at the local or national level, serving as a reviewer for a journal).

Students are expected to complete 54 credit hours with at least 27 of those hours being seminars (the remaining 27 may be dissertation credit, behavior analysis practica, and additional elective seminars). Courses will be offered in three of the four 11-week terms scheduled by the Western New England University Graduate Program (fall, winter, and spring terms).

Students are expected to enroll in 7 total credits in three of the four terms in each of the initial two years of the program. Students are expected to enroll in a total of 4 credits in three of the four terms in the third year of the program. Students not finished with the program by the end of the third year register for 1 credit of dissertation continuance in up to three terms of their fourth year and all subsequent years until completion of all degree requirements. The program must be completed within seven years.

### Degree Requirements

#### Core courses (15 hours)

PSY 610	Professional Issues, Ethics, and Research Design	3 cr.
PSY 620	Experimental Analysis of	3 cr.

	Behavior	
PSY 630	Descriptive and Inferential Statistics	3 cr.
PSY 640	Quantitative Analysis of Behavior	3 cr.
PSY 650	The Philosophy of Behaviorism	3 cr.

**Subtotal: 15**

#### Concentration courses (12-21 hours)

PSY 705	Early Intensive Behavioral Intervention	3 cr.
PSY 720	Assessment of Severe Behavior Disorders	3 cr.
PSY 735	Organizational Behavior Management	3 cr.
PSY 740	Developmental Psychology	3 cr.
PSY 750	Advanced Verbal Behavior	3 cr.
PSY 770	Teaching in the College Environment	3 cr.
PSY 790	Special Topics in Behavior Analysis	3 cr.

**Subtotal: 12-21**

#### Behavior Analysis Practica (9 hours)

PSY 801-809	Behavior Analysis Practica	1 cr.
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**Subtotal: 9**

#### Dissertation Research (9-18 hours)

PSY 851-856	Dissertation Research	3 cr.
PSY 857	Dissertation Research Continuance	1 cr.

**Subtotal: 9-18**

### Example Program of Study

The following table provides the anticipated schedule with which courses and program requirements may be completed.

#### Degree Requirements

##### Year 1 - Fall

PSY 610	Professional Issues, Ethics, and Research Design	3 cr.
PSY 620	Experimental Analysis of Behavior	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.

##### Year 1 - Winter

PSY 630	Descriptive and Inferential Statistics	3 cr.
PSY 650	The Philosophy of Behaviorism	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.

##### Year 1 - Spring

PSY 640	Quantitative Analysis of Behavior	3 cr.
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PSY 705	Early Intensive Behavioral Intervention	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.
Year 2 - Fall		
PSY 740	Developmental Psychology	3 cr.
PSY 851-856	Dissertation Research	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.
Dissertation Proposal may be submitted*		
Year 2 - Winter		
PSY 770	Teaching in the College Environment	3 cr.
PSY 851-856	Dissertation Research	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.
Year 2 - Spring		
PSY 750	Advanced Verbal Behavior	3 cr.
PSY 851-856	Dissertation Research	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.
Comprehensive Program of Study or Review Paper may be submitted and defended		
Year 3 - Fall		
PSY 851-856	Dissertation Research	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.
Year 3 - Winter		
PSY 851-856	Dissertation Research	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.
Year 3 - Spring		
PSY 851-856	Dissertation Research	3 cr.
PSY 801-809	Behavior Analysis Practica	1 cr.

Dissertation may be defended

### Admissions

Candidates interested in this program need to have earned a master's degree in behavior analysis or be certified as a master's-level behavior analyst by the Behavior Analysis Certification Board. Candidates must also have earned a minimum of a 3.6 grade point average (GPA) in their master's degree program and a combined verbal and quantitative score of 1100 on the Graduate Record Exam (GRE) with neither score being below 500 for full admission. The program accepts students who have met these requirements and who show strong potential as scholars and future leaders in the field of behavior analysis.

### TIMELI

### TIMELI

TIMELI is a collaborative arrangement between The Teachers' Loft located in Holyoke, MA, and Western New England University, offering a post-baccalaureate, alternative route to initial teacher licensure. It is an alternative path to licensure, accredited by the Department of Elementary and Secondary Education for a

Massachusetts initial license in secondary education in the following content areas: Biology, Chemistry, English, History, and Mathematics.

### Program Structure

This program is a part-time graduate program with courses offered in 11-week terms. Students begin in the summer with ED 561, taking one course each term. Candidates who successfully complete each course and fulfill all requirements of field experience can complete this program in one year.

### Degree Requirements

#### Courses

ED 561	Entering the Profession of Teaching	1 cr.
ED 562	Becoming a Teacher in Today's Schools	1 cr.
ED 563	Designing Curriculum through Data Collection and Inquiry	1 cr.
	Classroom Field Experience - non credit	
ED 564	Applying Inquiry Tools: Using Data to Better Practice	1 cr.

#### Content courses as determined upon admission (Will vary)

ED 571	Culminating Field Experience	1 cr.
ED 572	Culminating Field Experience	2 cr.
ED 573	Culminating Field Experience	3 cr.
ED 574	Culminating Field Experience	4 cr.
ED 575	Culminating Field Experience	5 cr.
ED 576	Culminating Field Experience	6 cr.

Field experience course credits will be determined during individual advising sessions. All students will complete 75 hours of prepracticum field work, and 300 hours of practicum field experience.

Eligible candidates for TIMELI must have a Bachelor of Arts or Bachelor of Science degree from an accredited college or university. An overall grade point average of at least a 2.8 (4.0 scale) is typically required for admission. Candidates will be asked to submit official copies of transcripts for all colleges attended, a current résumé, two letters or recommendation, a personal statement, and a \$30 application fee.

It is highly recommended that candidates for TIMELI take and pass the Communication and Literacy Massachusetts Tests for Educator Licensure (MTEL) prior to beginning the program.

For more information about the MTEL visit <http://www.mtel.nesinc.com>.

All incoming students will have an individual meeting to determine what courses they will need in addition to the pedagogy courses. An advisor will assist candidates throughout the program.

### Graduate Programs in Business

The programs of graduate study offer advanced education to enhance the professional competence of those employed in business or those preparing to enter professional careers. All graduate courses are

offered in the evening in an innovative format. All courses are offered online with optional on-campus classes, thus graduate courses can be completed online. Technological integration is achieved through the use of the innovative Kodiak Virtual Classroom, completely developed at Western New England University. The Kodiak Virtual Classroom has become an integral part of all courses regardless of the method in which they are delivered.

Study in the graduate business program will lead to a certificate in Leadership, the Master of Business Administration (MBA), Master of Science in Accounting (MSA), or Master of Science in Organizational Leadership (MSOL) degree. There are special dual degree options for students who have been accepted to the Western New England University School of Law (JD/MBA, JD/MSA), College of Engineering (MSEM/MBA), or College of Pharmacy (PharmD/MBA).

Note that if a student enrolls in any Dual Degree program, or opts to pursue more than one Business Graduate Degree, only 3 courses (9 credits) are allowed between Business Graduate Degrees. Only 3 courses (9 credits) from other College or School Degrees (Law, Engineering, or Pharmacy) are accepted into a Business Graduate Degree.

## Master of Business Administration

Managers today have to operate in a rapidly changing and uncertain environment, ready for any situation, good or bad, that requires skilled decision-making. Anticipating and responding to these changes in positive ways is what will distinguish the successful manager.

### Program Learning Goals

The Master of Business Administration (MBA) program is designed to develop and enhance the skills of those who hold or aspire to hold management responsibilities within organizations. Students attain a theoretical understanding and demonstrate a practical grasp of the management skills required to effectively negotiate a turbulent business environment. Knowledge and skills will be developed through theoretical study and experiential activities. Upon completion, successful students in the MBA program will be able to exhibit their knowledge of business and management in a global and multicultural context in the following ways:

#### Decision Making Skills and Problem Solving:

apply knowledge of the functional areas of business and integrative approaches for the development of solutions to organizational and management challenges.

#### Leadership Skills and Management Skills:

apply a variety of organizing, planning, controlling, team building, and communication skills necessary for effective management and leadership of organizations in globally diverse and dynamic environments.

#### Environmental Analysis:

demonstrate the ability to assess and evaluate dynamic internal and external elements of the competitive global environment.

#### Ethics and Social Responsibility:

demonstrate an awareness of ethical considerations in the conduct of business and an appreciation of the importance of business ethics and social responsibility in the decision-making process.

#### Quantitative Analysis:

demonstrate the ability to apply financial/quantitative analysis tools and models to solve business challenges in Accounting Finance, Business Operations, Marketing, and Strategic Management.

#### Technology Awareness:

demonstrate familiarity with concepts in the application of technology to business problems and familiarity with technology tools in support of business problem solving and decision making

#### Admissions Standard

As an AACSB International accredited institution, the College of Business requires all applicants to satisfy specific core business knowledge requirements within six months of entry into the graduate business programs. This core knowledge includes an introductory understanding of accounting, finance, and quantitative methods. Additionally, coursework in the MBA program requires a moderate level of proficiency in computer skills, including the use of Microsoft Office (specifically Word and PowerPoint) and the Internet. Of particular importance is an above average knowledge of Excel software skills. Applicants must demonstrate competency in each of the areas mentioned above in one of the following ways:

- Completion of an undergraduate business degree (typically 'B' (3.0) or better average with no grade below a 'C') in relevant core coursework.
- Completion of relevant undergraduate coursework in the following areas with acceptable performance (typically 'B' (3.0) or better average with no grade below a 'C').
  - Accounting: financial reporting
  - Finance: introduction to corporate finance
  - Quantitative Methods: introduction to statistics
- Completion of the Prerequisite Self Study modules available at Western New England University. Applicants may elect to complete self study modules that provide the necessary background to maximize the student's graduate business education experience. The self study modules are designed to be accessed online, with no required classroom involvement. These modules provide students with access to the prerequisite content material, problem sets for practice, and diagnostic self assessments. Those electing to complete the self study modules will need to validate their learning by successfully passing a final test administered through the modules (notifying the College of Business to confirm exemption from prerequisite).
- Applicants may enroll in the self study modules at any time during the year. The modules are self-paced.

## Degree Requirements

### MBA Program Structure

The MBA degree, earned after 36 credit hours of study, comprises core and elective coursework. Each area of coursework requires the following:

Core requirements: 27 credit hours

Elective requirements: 9 credit hours

Innovative course delivery is a characteristic of the College of Business Graduate programs. Students will have the opportunity to take courses in an innovative format that integrates in-class and online learning environments, or a completely online format. Technological integration is achieved through the use of the innovative Kodiak Virtual Classroom, completely developed at Western New England University. The Kodiak Virtual Classroom has

become an integral part of all courses regardless of the method in which they are delivered.

Students who meet the admission standards for entry into the MBA program but have not completed the core knowledge requirement will be admitted under Tentative Status. Applicants to the MBA program who are in the process of completing the admission process may take two graduate business courses and work on satisfying the core knowledge requirement concurrently. If core knowledge requirements are not completed, students may not continue to take any additional 600 level courses (beyond two) until the requirements have been completed.

There is an option for students currently enrolled, or accepted to, the Western New England University School of Law to complete both the Juris Doctorate and the MBA in a unique combined degree program. Interested students should contact the School of Law Admissions Office and the College of Business Associate Dean's Office for specific information. There is also an option for students currently enrolled in the Western New England University College of Pharmacy to complete both the PharmD. and the MBA.

## Degree Requirements

### Core Course Requirements 27 credit hours

Completion of the following courses is required:

MAN 605	Leadership, Problem Solving and Decision Making	3 cr.
BUS 610	Business and Its Environment	3 cr.
AC 630	Accounting for Decision Makers	3 cr.
FIN 630	Managerial Finance	3 cr.
BIS 610	Information Technology Management and Applications	3 cr.
MAN 610	Organizational Behavior and Theory	3 cr.
BIS 620	Decision Support Models	3 cr.
MK 640	Marketing Management	3 cr.
BUS 680	Strategic Management	3 cr.

**Subtotal: 27**

Subtotal: 27

The final course in the program is designed to integrate the knowledge learned in the core coursework to enhance student understanding of management practice.

Each course is three credits.

### Elective Course Requirements 9 credit hours

Students may choose to take elective courses based on their individual interests and professional needs. Throughout the program, students will be provided with a variety of elective course offerings in accounting, business information systems, finance, general business, management, and marketing. Elective courses can be taken at any time during the program. It is best, however, for students to plan on taking electives later in their MBA study after completing the majority of their foundation coursework.

## Juris Doctor/Master of Business Administration

The College of Business and School of Law at Western New England University have collaborated to offer a program unique to western Massachusetts for those students interested in attaining their MBA

while pursuing a career in law. This is a dual degree program, where students completing the requirements for each program will receive two separate degrees, one in business and one in law. Pursuing both degrees allows students to take advantage of cross credits, where 12 credits of business coursework can be applied toward the 88 credits required for the JD degree, and, nine credits of law coursework can be applied toward the 36 credits required for the MBA degree.

This is a structured program designed to meet the guidelines delineated by the American Bar Association and AACSB International accreditation. Candidates for the program must have a four-year undergraduate degree from an accredited college or university. Students are required to apply to both the MBA program through the College of Business and the J.D. program through the School of Law. Those interested in this degree option should contact the School of Law Admission Office and College of Business Associate Dean's Office for specific information on application for admissions.

## Pharmacy Doctorate/Master of Business Administration

The Colleges of Business and Pharmacy at Western New England University have collaborated to offer a program unique to western Massachusetts for those students interested in attaining their MBA while pursuing a career in pharmacy. This is a dual degree program, where students completing the requirements for each program will receive two separate degrees, one in business and one in pharmacy. Pursuing both degrees allows students to take advantage of cross credits, where 6 credits of business coursework can be applied toward the 148 credits required for the PharmD degree, and, nine credits of pharmacy coursework can be applied toward the 36 credits required for the MBA degree.

This is a structured program designed to meet the guidelines delineated by the American Council Pharmaceutical Education (ACPE) and AACSB International accreditation. Candidates for the MBA degree must have completed the PharmD degree or have a four-year undergraduate degree from an accredited college or university to be awarded the MBA. Those interested in this degree option should contact the College of Pharmacy Admission Office and College of Business Associate Dean's Office for specific information on application for admissions.

## Master of Science in Engineering Management/Master of Business Administration (MSEM/MBA)

The Colleges of Business and Engineering offer a joint MSEM/MBA for those in the engineering profession who want to advance their knowledge and improve their management career opportunities in engineering and technology-oriented companies. By pursuing the combined degree program, students earn the MSEM/MBA in 54 credits, taking advantage of 18 credits that can be applied to both degrees.

Candidates for the program must have a four-year undergraduate degree from an accredited college or university. Those interested in this degree option should contact the Admissions Office for specific information about the application process.

Total Credit Hours: 54

## Master of Science in Accounting (MSA)

### Purpose

The Master of Science in Accounting degree provides students with the opportunity to develop skills in planning, controlling, evaluation,

and analysis that characterize a successful career in accounting. Graduates of this program satisfy the requirements to sit for the CPA exam in Massachusetts. Graduates of this program who have an undergraduate degree in business are also eligible to sit for the CPA exam in Connecticut. Students taking the CPA exam in other jurisdictions must check the requirements of the respective jurisdiction.

### Program Learning Goals

Students will be able to:

1. Demonstrate competency in analytical reasoning and problem solving skills.
  - a. Apply relevant accounting knowledge, quantitative and qualitative decision making skills to resolve accounting-related issues in: financial reporting, cost accounting, auditing, and taxation
  - b. Apply relevant accounting knowledge, quantitative and qualitative skills to critically analyze financial statements.
2. Demonstrate professional perspective in understanding accounting theory and practice.
  - a. Understand the historical development of accounting theory, its impact on contemporary accounting practice, and how it relates to external and internal users.
  - b. Understand the international accounting and auditing issues currently facing the accounting profession.
3. Demonstrate proficiency in using ethical reasoning skills.
  - a. Identify ethical issues faced by accounting professionals.
  - b. Describe and analyze ethical perceptions and frameworks for responding to ethical dilemmas.
  - c. Make a choice/evaluation and be able to effectively justify it based on professional codes of conduct and/or social responsibility.
4. Demonstrate effective use of research skills in investigating accounting issues/topics.
  - a. Identify relevant information for the research issue/topic.
  - b. Locate and obtain information using professional accounting literature (e.g., FASB Accounting Standards Codification, IFRS, SAS, AS, IRC, etc.) and professional data bases.
  - c. Resolve new or emerging accounting issues in a global perspective through researching the professional standards and codes

### Admissions Standards

See graduate admissions requirements (p. 10).

### Academic Performance

The academic standards (p. 293) apply to students in the MSA program with the following exception:

Any student who receives two or more grades of “C+” or lower will be dismissed from the program.

### Structure

The MSA consists of three areas: undergraduate foundation courses, required accounting courses, and elective courses. These three areas are discussed below.

## Degree Requirements

### Undergraduate Foundation Courses 27 credit hours

AC 201/HONB 203	Financial Reporting	3 cr.
AC 202	Managerial Accounting	3 cr.
AC 305	Financial Reporting II	3 cr.
AC 306	Financial Reporting III	3 cr.
AC 309	Cost Accounting	3 cr.
AC 330	Accounting Information Systems	3 cr.
AC 413	Fundamental of Individual Tax	3 cr.
AC 419	Auditing and Assurance Services	3 cr.
FIN 214	Introduction to Finance	3 cr.

Students admitted into the MSA program must have completed the undergraduate courses with a “B” average or better and no grade below a “C.” For purposes of admission only the highest grade achieved in each of the undergraduate courses will be considered. Students who are lacking some or all of the undergraduate foundation courses may be conditionally admitted to the program but must complete all remaining undergraduate core courses within a two-year period. During this time they will be allowed to take no more than two graduate courses toward the MSA degree. Grades on the undergraduate core courses taken after admission to the program will not be included in the GPA calculations of the program. The GPA calculation of the MSA program will be based solely on graduate coursework.

### Required Courses 21 credit hours

AC 610	Cost-Based Decision-Making	3 cr.
AC 611	Municipal and Fund Accounting	3 cr.
AC 614	Fundamentals of Corporate and Partnership Tax	3 cr.
AC 620	Advanced Topics in Auditing and Assurance Services	3 cr.
AC 622	Accounting Theory & Contemp Issues	3 cr.
FIN 612	Business Analysis and Valuation	3 cr.
FIN 630	Managerial Finance	3 cr.

In addition to these courses, students complete their degree program by choosing electives or a concentration. The concentrations are Forensic Accounting and Fraud Investigation, and Taxation.

### Electives 9-12 credit hours

Students who do not pursue a concentration may complete their degree requirements by taking 9-12 credits of business electives.

Students who have not earned 24 undergraduate credit hours in non-accounting business courses are required to complete three graduate business courses (9 credit hours). These may be either accounting or non-accounting courses. (Other than AC 630)

Students who have not earned 24 undergraduate credit hours in non-accounting business courses are required to complete four non-accounting graduate business courses (12 credit hours). These courses may not begin with an AC prefix.

Total Credit Hours: 57-60

## Forensic Accounting and Fraud Investigation Concentration

### Concentration Description

The Forensic Accounting and Fraud Investigation concentration offers additional coursework in fraud investigation accounting, forensic accounting, and litigation support.

In addition to the MSA program learning goals, this concentration has the following learning goals:

- Demonstrate an understanding of the accounting and legal fundamentals of forensic accounting and fraud investigation.
- Apply the concepts, tools, and techniques employed in financial investigation, including the role of the forensic accountant in litigation support.
- Learn the concepts and techniques employed in financial investigations.

### Degree Requirements

#### Required Courses

##### A. MSA Core courses 21 credit hours

AC 610	Cost-Based Decision-Making	3 cr.
AC 611	Municipal and Fund Accounting	3 cr.
AC 622	Accounting Theory & Contemp Issues	3 cr.
AC 614	Fundamentals of Corporate and Partnership Tax	3 cr.
AC 620	Advanced Topics in Auditing and Assurance Services	3 cr.
FIN 612	Business Analysis and Valuation	3 cr.
FIN 630	Managerial Finance	3 cr.

##### B. Required Concentration Courses 9 credit hours

AC 641	Introduction to Fraud	3 cr.
AC 642	Forensic Accounting	3 cr.
BL 640	Law for Accountants	3 cr.

30 Credits Total

## Master of Science in Accounting (MSA) Program Tax Concentration

A concentration in Tax enables individuals to enter the accounting profession with additional academic preparation in taxation for income taxes. In addition to developing students' competence in taxation rule-making process, practice, administration, and policy, the concentration will enhance students' ability to perform quality tax research.

Besides the MSA program learning goals, this concentration has the following learning goals:

- Acquire technology and information literacy skills to perform quality tax research

### Degree Requirements

#### Required Courses

##### A. MSA Core courses 21 credit hours

AC 610	Cost-Based Decision-Making	3 cr.
AC 611	Municipal and Fund Accounting	3 cr.
AC 622	Accounting Theory & Contemp Issues	3 cr.
AC 614	Fundamentals of Corporate and Partnership Tax	3 cr.
AC 620	Advanced Topics in Auditing and Assurance Services	3 cr.
FIN 612	Business Analysis and Valuation	3 cr.
FIN 630	Managerial Finance	3 cr.

**Subtotal: 21**

##### B. Required Concentration Courses 9 credit hours

AC 615	Taxation of Trusts and Estates	3 cr.
AC 623	Advanced Topics in Individual Tax	3 cr.
AC 624	Advanced Topics in Corporate & Partnership Tax	3 cr.

**Subtotal: 9**

\*AC 647 must be taken prior to LAW 803/804

Subtotal: 30

Total Credit Hours: 30

## Juris Doctor/Master of Science in Accounting

The College of Business and School of Law at Western New England University have collaborated to offer a program unique to western Massachusetts for those students interested in attaining their MSA while pursuing a career in law. This is a dual degree program, where students completing the requirements for each program will receive two separate degrees, one in business and one in law. Pursuing both degrees allows students to take advantage of cross credits, where 12 credits of business coursework can be applied toward the 88 credits required for the JD degree, and, six credits of law coursework can be applied toward the 30 credits required for the MSA degree.

This is a structured program designed to meet the guidelines delineated by the American Bar Association and AACSB International accreditation. Candidates for the program must have a four-year undergraduate degree from an accredited college or university. Students are required to apply to both the MSA program through the College of Business and the J.D. program through the School of Law. Those interested in this degree option should contact the School of Law Admission Office and College of Business Associate Dean's Office for specific information on application for admissions.

Total Credit Hours: 88

## Master of Science in Organizational Leadership (MSOL)

### Purpose

The M.S. in Organizational Leadership (MSOL) is designed to develop and enhance the knowledge and skills of those who hold or desire to hold leadership positions in organizations. Students are exposed to theories and best practices involving people and processes in organizations.

**Program Learning Goals**

A student will be able to:

1. Demonstrate a working knowledge of leadership theory and current leadership best practices.
2. Critically analyze research used to evaluate the unique needs, challenges and opportunities of organizations.
3. Determine alternatives for problem solving and decision-making as they relate to human behavior issues in organizations.
4. Integrate knowledge of ethics and leadership into practice.
5. Apply knowledge of leadership theory, organizational behavior theory, and change theory as they relate to best practices in organizational leadership.
6. Demonstrate self-awareness of personal leadership style, strengths and skills, and how these impact others in an organization and a personal plan for leadership development.
7. Develop knowledge as a result of focused electives that serve students' needs for effectiveness in their organizational practice area or interest.

**Admissions Standards**

See graduate admissions requirements (p. 10).

**Academic Performance**

The academic standards (p. 293) apply to students in the MSOL program with the following exception:

Any student who receives two or more grades of “C+” or lower will be dismissed from the program.

**Structure**

The MSOL consists of:

**Degree Requirements**

Degree requirements 24 credit hours

MAN 600	Foundations of Leadership Practice	3 cr.
MAN 605	Leadership, Problem Solving and Decision Making	3 cr.
MAN 610	Organizational Behavior and Theory	3 cr.
MAN 630	Leadership and the Human Experience	3 cr.
MAN 642	Leading Change	3 cr.
MAN 651	Ethical Leadership Practice	3 cr.
MAN 652	Contemporary Issues in Leadership	3 cr.
MAN 645	Methods of Organizational Research	3 cr.

**Subtotal: 24**

Industry Focus 6 credit hours

In addition to these courses, students complete their degree program by choosing an industry focus or other electives.

Through the Industry Focus electives option, students explore in greater depth topics specific to an industry and complete an applied research project. Faculty with appropriate professional or academic expertise are available to work with students interested in the following industries: Armed Forces, Criminal Justice, Healthcare, Higher Education, Human Resources, Law Enforcement, Nonprofits, Primary and Secondary Education (K-12), Public Service, Social Services.

Students who do not pursue an industry focus may complete their degree requirements by taking 6 credits of suitable graduate courses from those offered in the College of Business or the University. Elective courses may be taken at any time during the program. It is best, however, for students to plan on taking electives later in their MSOL study after completing the majority of their foundation coursework.

MAN 680	Current Industry Issues	3 cr.
MAN 647	Applied Research Project	3 cr.

**Subtotal: 6**

Total Credit Hours: 30

**Five-year Bachelor/MBA Program**

This program allows undergraduate students in the Colleges of Arts and Sciences, Business, or Engineering to accelerate the completion of both the bachelor's and master's degrees in business. Students can earn the popular and valuable Master of Business Administration degree with just one additional year of study. This program is available to students of all majors except for Education and Social Work.

Students will earn both BSBA and MBA degrees within five years of entry as an undergraduate. Undergraduate study in business will satisfy all prerequisite coursework requirements for the MBA program.

**Program Prerequisites:**

Satisfied after completing the undergraduate business core (BIS 220, EC 111, AC 201, and FIN 214) courses with a “B” average or better and no grade below a “C”.

**Program Application and Admission Requirements:**

This program seeks students who have excelled in their undergraduate studies. Applicants must:

1. Earn an overall GPA of 3.0.
2. Complete the College of Business Graduate Studies application, and essays for the MBA program. All application materials should be submitted to the Admissions Office.
3. Forward scores for the Graduate Management Admission Test (GMAT) to the Admissions Office. Students should seek to score 500 or higher on the GMAT. Students may also apply for a GMAT waiver based on a cumulative GPA of 3.3 or higher at the time of graduation.

Applicants may take up to two graduate courses in the fall term of their senior year. A third graduate course may be taken during the senior year after a student has been admitted.

**Senior Year - Undergraduate program****Fall Semester**

- Up to 12 credits of undergraduate coursework\*
- Three credits of graduate coursework: BUS 610 (Fall graduate term)

**Spring Semester**

- Up to 12 credits of undergraduate coursework\*
- Three credits of graduate coursework: MAN 610 (winter graduate term) or MAN 605 (spring graduate term)

**Degree Requirements**

**Fifth Year - Masters Program**

Summer Term

AC 630	Accounting for Decision Makers	3 cr.
BIS 610	Information Technology Management and Applications	3 cr.
BUS 6XX	Business Elective	3 cr.
Fall Term		
FIN 630	Managerial Finance	3 cr.
MK 640	Marketing Management	3 cr.
MAN 605	Leadership, Problem Solving and Decision Making	3 cr.
	or	
MAN 610	Organizational Behavior and Theory	3 cr.

Winter Term

BIS 620	Decision Support Models	3 cr.
BUS 6XX	Graduate Internship or Small Business Consulting or Business Elective	
BUS 680	Strategic Management	3 cr.

Summer Term

BUS 6XX	Business Elective	3 cr.
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\*Business students must complete all requirements for the BSBA degree independent of the graduate coursework completed during their senior year. This may require students to take courses during summers or winter session to accelerate undergraduate studies.

**Five-year Bachelor/MBA Program – Early Acceptance**

Students who have achieved a high level of success in their high school academic performance may apply for conditional early acceptance into either program as freshmen. To qualify for this opportunity, applicants typically have earned a high school GPA of 3.5 or higher, and a combined verbal and quantitative sections score of 1200 or higher on the SAT. Once admitted, students must

1. Maintain an overall GPA of 3.3 or higher, after freshman year.
2. Successfully complete an undergraduate degree
3. Earn a “B” average or better with no grade below a “C” in the prerequisite courses.

A detailed program of study can be found in the Five-year-Bachelor MBA-Program (p. 307).

**Senior Year - Undergraduate program**

**Fall Semester**

- Up to 12 credits of undergraduate coursework\*
- Three credits of graduate coursework: BUS 610 (Fall graduate term)

**Spring Semester**

- Up to 12 credits of undergraduate coursework\*
- Six credits of graduate coursework: MAN 610 (winter graduate term) MAN 605 (spring graduate term)

**Degree Requirements**

**Fifth Year - Masters Program**

Summer Term

AC 630	Accounting for Decision Makers	3 cr.
BIS 610	Information Technology Management and Applications	3 cr.
BUS 6XX	Business Elective	3 cr.
Fall Term		
FIN 630	Managerial Finance	3 cr.
MK 640	Marketing Management	3 cr.
BUS 6XX	Business Elective	

Winter Term

BIS 620	Decision Support Models	3 cr.
BUS 6XX	Graduate Internship or Small Business Consulting or Business Elective	
BUS 680	Strategic Management	3 cr.

\*Business students must complete all requirements for the BSBA degree independent of the graduate coursework completed during their senior year. This may require students to take courses during summers or winter session to accelerate undergraduate studies. Students may be enrolled in a maximum of 17 credits at any point in time.

**Five-year Bachelor/MSA Program**

This program allows undergraduate accounting majors in the College of Business to accelerate the completion of both the bachelor’s and master’s degrees in accounting. Students will earn both their BSBA and MSA degrees within five years of entry as an undergraduate. With this option students can complete the MSA with just seven months of additional study. Undergraduate study for accounting majors will satisfy all prerequisite coursework requirements for the MSA program. Students will maintain the same academic advisor throughout their degree programs.

**Program Prerequisites:**

Satisfied after completing the undergraduate business: AC 201, AC 202, AC 305, AC 306, AC 309, AC 330, AC 413, AC 419, and FIN 214, with a “B” average or better and no grade below a “C”.

**Program Application and Admission Requirements:**

This program seeks students who have excelled in their undergraduate studies. Applicants must:

1. Earn an overall GPA of 3.0.
2. Complete the College of Business Graduate Studies application and essays, for the MSA program. All application materials should be submitted to the Admissions Office.
3. Forward scores for the Graduate Management Admission Test (GMAT) to the Admissions Office. Students should seek to score 500 or higher on the GMAT. Students may also apply for a GMAT waiver based on a cumulative GPA of 3.3 or higher at the time of graduation.

Applicants may take up to two graduate courses in their senior year. A third graduate course may be taken during the senior year after a student has been admitted.

#### Senior Year - Undergraduate program:

##### Fall semester

- Up to 12 credits of undergraduate coursework\*,
- Three credits of graduate coursework: FIN 630, AC 610, or FIN 612 (Fall graduate term)

##### Spring Semester:

- Up to 12 credits of undergraduate coursework\*
- Three credits of graduate coursework: FIN 630 or an elective (Winter graduate term), or AC 614, FIN 630, or an elective (Spring graduate term)

*\*Students must complete all requirements for the BSBA degree independent of the graduate coursework completed during their senior year. This means that additional credits beyond a normal load must be earned prior to the beginning of the senior year. Students may be enrolled in a maximum of 17 credits at any point in time.*

#### Fifth Year - Master's Program:

Students who wish to complete the program on an accelerated basis will take remaining required courses and elective courses over the summer and fall graduate terms.

#### Five-year Bachelor/MSA Program – Early Acceptance

Students who have achieved a high level of success in their high school academic performance may apply for conditional early acceptance into either program as freshmen. To qualify for this opportunity, applicants typically have earned a high school GPA of 3.5 or higher, and a combined verbal and quantitative sections score of 1200 or higher on the SAT. Once admitted, students must

1. Maintain an overall GPA of 3.3 or higher, after freshman year.
2. Successfully complete an undergraduate degree
3. Earn a “B” average or better with no grade below a “C” in the prerequisite courses.

#### Senior Year - Undergraduate program:

##### Fall semester

- Up to 12 credits of undergraduate coursework\*,
- Three credits of graduate coursework: FIN 630, AC 610, or AC 612 (Fall graduate term)

##### Spring Semester:

- Up to 12 credits of undergraduate coursework\*
- Six credits of graduate coursework: BUS 6xx or FIN 630 (Winter graduate term) and BUS 6xx or AC 614 (Spring graduate term)

*\*Students must complete all requirements for the BSBA degree independent of the graduate coursework completed during their senior year. This means that additional credits beyond a normal load must be earned prior to the beginning of the senior year. Students may be enrolled in a maximum of 17 credits at any point in time.*

#### Fifth Year - Master's Program:

Students who wish to complete the program on an accelerated basis will take remaining required courses and elective courses over the summer and fall graduate terms.

#### Graduate Leadership Certificate

##### Entry requirements

Undergraduate degree with GPA of 3.0 or undergraduate degree with evidence of ability to do graduate-level work

Personal statement of purpose

##### Degree Requirements

Certificate requirements:

MAN 600	Foundations of Leadership Practice	3 cr.
MAN 642	Leading Change	3 cr.
MAN 651	Ethical Leadership Practice	3 cr.
MAN 652	Contemporary Issues in Leadership	3 cr.

#### Graduate Programs in Engineering

The Master of Science programs provide opportunities for coursework in Electrical Engineering, Engineering Management, Mechanical Engineering, and business. At the graduate level, programs of study become less structured. Although it is possible to earn a degree strictly on the basis of coursework alone, students with research interests may undertake a three credit hour project or a six credit hour thesis project.

##### Master's Advisor

The progress of each student toward the MS degree is guided and directed by a master's advisor, who is a College of Engineering faculty member nominated by the student and approved by the assistant dean of the College of Engineering. Incoming students seeking the degree are urged to discuss their proposed concentration area of interest with faculty members in that area with a view toward selecting an advisor later in the semester.

##### Degree Requirements

The Master of Science programs require a minimum of 30 credit hours of graduate courses with a “B” (3.0) or better average. A minimum of five courses must be at the 600 level. Six hundred (600) level courses are offered in the evening on an 11-week term.

##### Course Selection

In addition to the required four core courses (12 credit hours), a student may select any graduate level course in electrical engineering or mechanical engineering for which they have the appropriate course prerequisites. The course selection must be approved by the assistant dean of engineering and/or the student's master's advisor.

**Thesis Option—Minimum Curriculum Requirements**

The curriculum for the Master of Science programs (MSEM, MSEE, and MSME) thesis option requires a minimum of 24 credit hours of graduate coursework and six hours of thesis. The student is admitted to candidacy after satisfactory completion of six hours of graduate coursework with a “B” average or better and after selecting an approved thesis topic. Upon completion of the thesis, a final oral defense of it is required.

**Non-thesis Option—Minimum Curriculum Requirements**

The curriculum for the Master of Science program (MSEM, MSEE, and MSME) non-thesis option requires a minimum of 30 credit hours of graduate coursework. Students are admitted to candidacy as soon as possible after satisfactory completion of 6 hours of graduate coursework, maintaining a “B” average or better.

**Project Option—Minimum Curriculum Requirements**

The curriculum for the Master of Science program (MSEM, MSEE, and MSME) project option requires a minimum of 27 credit hours of graduate coursework and 3 hours of project. Students are admitted to candidacy as soon as possible after satisfactory completion of 6 hours of graduate coursework, maintaining a “B” average or better. A 3 credit hour project is required. Upon completion of the project, a final oral presentation of it is required.

**Master of Science in Electrical Engineering (MSEE)**

**Degree Requirements**

**Core course requirements**

EMGT 605	Engineering Management	3 cr.
	or	
EMGT 648	Project Management	3 cr.
EE 601	Advanced Electrical Engineering Analysis	3 cr.
EMGT 643	Design of Experiments	3 cr.
EMGT 650	Systems Integration	3 cr.

**Subtotal: 12**

**Non-Thesis Option—Minimum Curriculum Requirements**

5XX	EE or CPE course	6 cr. max
6XX	EE or CPE course	12 cr. min.

**Subtotal: 18**

**Thesis Option—Minimum Curriculum Requirements**

6XX	EE or CPE course	9 cr. min.
5XX	EE or CPE course	3 cr. max.
XXX	Thesis	6 cr.

**Subtotal: 18**

**Project Option—Minimum Curriculum Requirements**

6XX	EE or CPE course	12 cr. min.
5XX	EE or CPE course	3 cr.

max.

EE 685	Electrical Engineering Project	3 cr.
		<b>Subtotal: 18</b>

\*Courses numbered at the “6xx” level are for graduate students only and are offered on an 11 week term.

Courses numbered at the “5xx” level are provided for entry level graduate students who may require a stronger foundation in a subject area before proceeding to 600 level courses. Course registration in 500 level courses must be approved by the master candidate’s advisor.

Students may tailor their curriculum to meet their career goals. Students are required to meet with their advisor to develop an academic plan of study.

**MSEE - Mechatronics Concentration**

The Mechatronics concentration in EE is directed toward both full-time and part-time students with a special emphasis on providing advanced training, experience in performing independent research on topics with theoretical as well as applied interest, and managing projects. A combination of courses from Electrical Engineering, Mechanical Engineering and Engineering Management, is offered to provide the graduates with a systems perspective.

**Degree Requirements**

**Core Course Requirements (for a total of 24 credits)**

EMGT 605	Engineering Management	3 cr.
	or	
EMGT 648	Project Management	3 cr.
EMGT 607	Quality Engineering	3 cr.
EMGT 643	Design of Experiments	3 cr.
EMGT 650	Systems Integration	3 cr.
EE 675	Advanced Motion Controls	3 cr.
EE 676	Intelligent Motion Controls	3 cr.
ME 655	Design of Mechatronic Systems	3 cr.
ME 656	Advanced Mechatronics	3 cr.

**Select two of the following EE courses (6 cr)**

EE 675	Advanced Motion Controls	3 cr.
	or	
EE 676	Intelligent Motion Controls	3 cr.
	or	
EE 677	Advanced Continuous and Discrete Systems Analysis and Controls	3 cr.
	or	
EE 678	Linear and NonLinear Systems Modeling and Simulation	3 cr.
ME 655	Design of Mechatronic Systems	3 cr.
ME 656	Advanced Mechatronics	3 cr.

**Subtotal: 24**

## Electrical Engineering Elective Courses

EE 601	Advanced Electrical Engineering Analysis	3 cr.
EE 614	Advanced Electromagnetics	3 cr.
EE 615	Antenna Theory and Design	3 cr.
EE 616	Introduction to Numerical Electromagnetics	3 cr.
EE 621	Coherent Optics	3 cr.
EE 625	Stochastic Processes - Kalman Filters	3 cr.
EE 650	Advanced Digital Signal Processing	3 cr.
EE 667	Advanced Electrical Materials	3 cr.
EE 670	Optimal Control Systems	3 cr.
EE 685	Electrical Engineering Project	3 cr.
EE 690	Special Topics in Electrical Engineering	3 cr.
EE 698-699	Thesis Research	6 cr.

## Computer Engineering Elective Courses

CPE 620	Advanced Computer Architecture	3 cr.
CPE 625	Advanced Software Engineering	3 cr.
CPE 635	Advanced Requirements Analysis	3 cr.
CPE 645	Embedded Software Systems	3 cr.
CPE 648	Software Project Management	3 cr.
CPE 650	Software Architecture	3 cr.
CPE 652	Software Generation and Maintenance	3 cr.
CPE 655	Computer Network Architecture	3 cr.
CPE 690	Special Topics	3 cr.

## Core Requirements

The following three options are available for the remaining six credits

- All Course Option:
  - EE 601 Advanced Electrical Engineering and one EE 500/600 level course from an approved list of courses
- Project Option:
  - EE 685 Project with presentation (3 credits) and EE 601
- Thesis Option:
  - EE 698-EE 699 six credits of thesis with presentation

*Note: For students who wish to select a project/thesis topic sponsored by their employer, the topic must be approved by the student's supervisor as well as their faculty advisor.*

## Master of Science in Mechanical Engineering (MSME)

## Degree Requirements

## Core course requirements

EMGT 605	Engineering Management	3 cr.
	or	
EMGT 648	Project Management	3 cr.
6XX	ME course	3 cr.
EMGT 643	Design of Experiments	3 cr.
EMGT 650	Systems Integration	3 cr.

**Subtotal: 12**

## Non-Thesis Option—Minimum Curriculum Requirements

6XX	ME course	12 cr. min.
5XX	ME course	6 cr. max.

**Subtotal: 18**

## Thesis Option—Minimum Curriculum Requirements

6XX	ME course	9 cr. min.
5XX	ME course	3 cr. max.
XXX	Thesis	6 cr.

**Subtotal: 18**

## Project Option—Minimum Curriculum Requirements

6XX	ME course	9 cr. min.
5XX	ME course	6 cr. max.
ME 685	Mechanical Engineering Project	3 cr.

**Subtotal: 18**

\*Graduate ME courses can be selected in such a way to expand a student's technical knowledge in keeping with their interest and professional needs. Students are required to meet with their advisor to develop a plan of study.

Subtotal: 66

## MSME - Mechatronics Concentration

The Mechatronics concentration in ME is directed toward both full-time and part-time students with a special emphasis on providing advanced training, experience in performing independent research on topics with theoretical as well as applied interest, and managing projects. A combination of courses from Electrical Engineering, Mechanical Engineering and Engineering Management, is offered to provide the graduates with a systems perspective.

## Degree Requirements

## Core Course Requirements (for a total of 24 credits)

EMGT 605	Engineering Management	3 cr.
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	or		
EMGT 648	Project Management	3 cr.	
6XX	ME course	3 cr.	
EMGT 643	Design of Experiments	3 cr.	
EMGT 650	Systems Integration	3 cr.	
Select two of the following EE courses (6 cr)			
EE 675	Advanced Motion Controls	3 cr.	
	or		
EE 676	Intelligent Motion Controls	3 cr.	
	or		
EE 677	Advanced Continuous and Discrete Systems Analysis and Controls	3 cr.	
	or		
EE 678	Linear and NonLinear Systems Modeling and Simulation	3 cr.	
ME 655	Design of Mechatronic Systems	3 cr.	
ME 656	Advanced Mechatronics	3 cr.	

**Subtotal: 24**

The following three options are available for the remaining six credits

All Course Option:

Two ME 500/600 level courses from an approved list of courses.

Project Option

Project with presentation (3 credits) and one ME 500/600 level course from an approved list of courses.

Thesis Option

Six credits of thesis with presentation.

Note: For students who wish to select a project/thesis topic sponsored by their employer, the topic must be approved by the student's supervisor as well as their faculty advisor.

Mechanical Engineering Elective Courses

ME 610	Measurement Systems	3 cr.
ME 619	Experimental and Analytical Stress Analysis	3 cr.
ME 620	Applied Mechanical Design	3 cr.
ME 626	Applications of Advanced Fluid Mechanics	3 cr.
ME 632	Fundamentals of Flight	3 cr.
ME 635	Design of Alternative Energy Systems	3 cr.
ME 640	Materials Selection for Engineering Design and Manufacturing	3 cr.
ME 651	Applied Computational Fluid Dynamics	3 cr.

ME 654	Computer Control of Manufacturing	3 cr.
ME 656	Advanced Mechatronics	3 cr.
ME 660	Practical Aspects of Vibrations, Noise, and Acoustics Engineering	3 cr.
ME 685	Mechanical Engineering Project	3 cr.
ME 690	Special Topics in Mechanical Engineering	3 cr.
ME 698/ME 699	Thesis Research	3 cr.

### Master of Science in Engineering Management (MSEM)

Nearly half of the engineers working in industry serve in management capacities, yet many undergraduate engineering curricula do not include information on the development of management problem-solving skills. The Master of Science in Engineering Management program addresses this need by including core courses in project management; supply chain management; and logistics, quality engineering, and statistical methods for quality assurance.

#### Program Objectives

Graduates of the MSEM program will:

- be able to plan, design, and manage technological projects;
- have increased career advancement opportunities given their coursework and experience in the program; and
- be better prepared to manage and implement change within their organization.

### Degree Requirements

#### Core Courses

EMGT 607	Quality Engineering	3 cr.
EMGT 615	Statistical Quality Control	3 cr.
EMGT 619	Engineering Supply Chain	3 cr.
EMGT 648	Project Management	3 cr.
	or	
EMGT 605	Engineering Management	3 cr.

In addition to the required four core courses (12 credit hours) above, students can expand their technical knowledge in keeping with their interest and professional needs by selecting any graduate level course in engineering management. A student may also select a maximum of three graduate courses from the Master of Business Administration (MBA) program.

#### Production and Manufacturing Systems courses

EMGT 609	Engineering Cost Analysis	3 cr.
EMGT 622	Lean Production Systems	3 cr.
EMGT 629	Advanced Manufacturing Engineering Systems	3 cr.
EMGT 631	Production and Inventory Modeling	3 cr.

EMGT 637	Ergonomics and Occupational Safety	3 cr.
EMGT 640	Energy Management	3 cr.
EMGT 642	Engineering Materials	3 cr.
EMGT 643	Design of Experiments	3 cr.
EMGT 645	Quantitative Models of Supply Chain Management	3 cr.
EMGT 647	Facility Planning	3 cr.
Quality Engineering courses		
EMGT 602	Engineering Risk Management	3 cr.
EMGT 609	Engineering Cost Analysis	3 cr.
EMGT 643	Design of Experiments	3 cr.
EMGT 644	Quality Systems and Process Improvement	3 cr.
Business and Engineering Information Systems courses		
BIS 610	Information Technology Management and Applications	3 cr.
BIS 6XX	Business Information System Elective	3 cr.
CPE 6XX	Computer Engineering Elective	3 cr.
EMGT 602	Engineering Risk Management	3 cr.
EMGT 611	Strategic Direction of Technology and Innovation	3 cr.
EMGT 620	Multi-Criteria Decision Analysis	3 cr.
EMGT 624	Engineering Management Information Systems	3 cr.
EMGT 626	Discrete Event Simulation	3 cr.
EMGT 635	Optimization Methods I	3 cr.
EMGT 650	Systems Integration	3 cr.

#### Electives

Engineering Management Electives—9 credit hours minimum\*

Engineering or Business Electives—9 credit hours maximum

30 credits total program

### Five-Year Bachelor/MSEM Program

This program allows undergraduate Engineering majors in the College of Engineering to accelerate the completion of the bachelor's degree and to earn the master's degree in Engineering Management (MSEM) with just one additional year of study.

### Master of Science in Engineering Management/Master of Business Administration (MSEM/MBA)

The Colleges of Business and Engineering offer a joint MSEM/MBA for those in the engineering profession who want to advance their knowledge and improve their management career opportunities in engineering and technology-oriented companies. By pursuing the combined degree program, students earn the MSEM/MBA in 54

credits, taking advantage of 12 credits that can be applied to both degrees.

Candidates for the program must have a four-year undergraduate degree in engineering or a closely related field from an accredited college or university. Those interested in this degree option should contact the Admissions Office for specific information about the program and the application process.

Total Credit Hours: 54

### Doctoral Program in Engineering Management

#### General Information

The Doctor of Philosophy (Ph.D.) focuses on developing skills needed to conduct rigorous research in areas related to the improvement, design, and management of projects and programs within complex human-technological systems. These systems include engineering systems, healthcare systems, service systems, and logistical/transportation systems. Through a combination of coursework and directed research the Department of Industrial Engineering and Engineering Management will provide a solid foundation and depth of engineering management theory and practice, provide breadth and depth across multiple types of human technological systems, and to contribute to the body and knowledge in engineering management.

#### Program Goals and Objectives

The goal of this program is to prepare graduates with appropriate technical depth and breadth of knowledge so that they may be successful educators, researchers, and practitioners in the management of engineering and technology. Graduates of this program will demonstrate:

A solid foundation and depth in engineering and management theory and practice;

A breadth across multiple types of human technological systems; and

An ability to contribute to the body of knowledge in engineering management.

These objectives will be assessed via coursework in related areas, class projects, dissertation completion, and publication of research work.

#### Program Structure

The following outlines the degree and curricular requirements for the program. In addition to the required coursework each student must complete a preliminary examination, a comprehensive examination, a proposal defense and finally a dissertation defense in order to obtain the degree. Students must maintain a grade point average of 3.0 on a 4.0 scale. Students may also have no more than two course grades of C or lower.

#### Credit Hour Requirements

Graduate Coursework : at least 57 credit hours beyond BS; at least 30 credit hours beyond MS; 60% of the Ph.D. courses (incl. dissertation) must be at 700 or higher level and 70% of all graduate courses (incl. dissertation) must be at 600 or higher level.

Dissertation : at least 27 credit hours.

#### Preliminary Examination

Before completing five terms at Western New England University, a student (fulltime) must pass the preliminary examination administered by the department. A student may attempt the examination no more than twice. The examination will be based on

the subject material from EMGT 619, EMGT 635, EMGT 648, EMGT 701 and EMGT 709.

**Advisor, Advisory Committee and Plan of study**

Before completing six terms at Western New England University, a student (fulltime) must select a major advisor and an advisory committee: With the assistance of the advisor, the student must prepare a plan of study that must be approved by the advisory committee and department chair before the comprehensive examination is attempted. Advisory committees will consist of at least three departmental members (one of which must be the major advisor) and at least one member from outside the department.

**Comprehensive examination**

Students must pass a comprehensive examination covering the major area of study. A student may attempt this examination no more than twice. This examination will be administered by the student's advisory committee and is intended to ensure that the student is prepared for dissertation research efforts. A student may enroll in dissertation hours only after passing the core course requirements.

**Dissertation approval examination (proposal defense)**

Students must prepare a written dissertation research proposal and present it orally. A student must be continuously enrolled in EMGT 770-799 (Dissertation) after the dissertation approval examination.

**Dissertation defense**

Students must successfully defend their dissertation through written and oral presentation. Students must complete this milestone within eight years of initial enrollment into the program.

**Degree Requirements**

Core courses (15-21 hours)

EMGT 619	Engineering Supply Chain	3 cr.
EMGT 635	Optimization Methods I	3 cr.
EMGT 648	Project Management	3 cr.
EMGT 701	Seminar / Research Methods for Engineering Management	3 cr.
EMGT 709	Advanced Engineering Cost Estimation	3 cr.

A student who enters the program and does not have a Master of Science degree in Engineering Management, or a closely related field, will need to complete the following additional courses:

EMGT 643	Design of Experiments	3 cr.
EMGT 644	Quality Systems and Process Improvement	3 cr.

**Elective Courses**

Students may take any EMGT 6XX course as an elective course however, students must complete at least three of the following courses:

EMGT 702	Systems Engineering	3 cr.
EMGT 706	Enterprise and Complex Systems for Engineers	3 cr.
EMGT 726	Advanced Modeling and Analysis of Systems	3 cr.

EMGT 735	Optimization Methods II	3 cr.
EMGT 740	Scheduling and Sequencing	3 cr.
EMGT 765	Special Topics in Engineering Management	1-3 cr.

Students may also enroll in no more than two MBA courses to satisfy any remaining course requirements. These courses require the approval of the student's advisory committee.

**Dissertation Research (27 - 36 credit hours)**

EMGT 770-799	Dissertation Research	1-3 cr.
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**Subtotal: 24-36**

Subtotal: 24-36

**Example Program of Study**

The following table provides an example schedule (student who enters program already having a MS in EMGT) with which course and program requirements may be completed.

**Degree Requirements**

Year 1 - Fall

EMGT 701	Seminar / Research Methods for Engineering Management	3 cr.
EMGT 648	Project Management	3 cr.

Year 1 - Winter

EMGT 619	Engineering Supply Chain	3 cr.
EMGT 626	Discrete Event Simulation	3 cr.

Year 1 - Spring

EMGT 702	Systems Engineering	3 cr.
EMGT 635	Optimization Methods I	3 cr.

Year 1 - Summer

EMGT 726	Advanced Modeling and Analysis of Systems	3 cr.
EMGT 650	Systems Integration	3 cr.

Year 2 - Fall

EMGT 609	Engineering Cost Analysis	3 cr.
EMGT 770-799	Dissertation Research	1-3 cr.

Year 2 - Winter

EMGT 709	Advanced Engineering Cost Estimation	3 cr.
EMGT 770-799	Dissertation Research	1-3 cr.

Year 2 - Spring

EMGT 770-799	Dissertation Research	1-3 cr.
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Year 2 - Summer

EMGT 770-799	Dissertation Research	1-3 cr.
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Year 3 - Fall

EMGT 770-799	Dissertation Research	1-3 cr.
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Year 3 - Winter

EMGT 770-799	Dissertation Research	1-3 cr.
Year 3 - Spring		
EMGT 770-799	Dissertation Research	1-3 cr.
Year 3 - Summer		
EMGT 770-799	Dissertation Research	1-3 cr.

#### Admissions

Candidates interested in this program need to have earned a masters or bachelors degree in engineering, or a closely related discipline. Candidates need to have demonstrated a competence in at least one structured programming language and have evidence of the completion of a course in probability and statistics. Candidates should have a minimum cumulative grade point average of a 3.5 in all graduate work or a minimum undergraduate cumulative grade point average of a 3.5. Candidates must submit their score from the Graduate Records Examination (GRE). The program accepts students who have met these requirements and demonstrate strong potential as scholars and future leaders in the field of engineering management

#### Graduate Certificates

#### Graduate Engineering Supply Chain Certificate

Companies are continuously working towards aligning their operations with supply chain management solutions. This certificate provides the theory, principles, and implications of supply chain management relevant for today's engineering. It is intended to provide students with an understanding of the strategic and tactical elements of supply chains. In particular this certificate is aimed for the engineering who is actively engaged in supply chain management and decision making.

The certificate consists of four, 3 credit courses.

#### Degree Requirements

Engineering Supply Chain Certificate requirements:

EMGT 619	Engineering Supply Chain	3 cr.
EMGT 645	Quantitative Models of Supply Chain Management	3 cr.
EMGT 644	Quality Systems and Process Improvement	3 cr.
EMGT 626	Discrete Event Simulation	3 cr.

**Subtotal: 12**

Subtotal: 12

Total Credit Hours: 12

#### Graduate Green Belt Certificate

The Green Belt Certificate Program is focused on creating a high performance organization through a mindset with continuous improvement at its core. This certificate provides the theory and principles to eliminate waste, reduce variability and continually search for productive solutions in organizations. An equal balance of quantitative and qualitative tools and practices are introduced which are commonly applied by today's successful organizations. After completing this sequence of courses, students should feel qualified to sit for their six sigma black belt examination.

The certificate consists of four, 3 credit courses.

#### Degree Requirements

Green Belt Certificate requirements:

EMGT 607	Quality Engineering	3 cr.
EMGT 615	Statistical Quality Control	3 cr.
EMGT 643	Design of Experiments	3 cr.
EMGT 644	Quality Systems and Process Improvement	3 cr.

**Subtotal: 12**

Subtotal: 12

Total Credit Hours: 12

#### Graduate Risk Analysis Certificate

Risk analysis is an essential planning and evaluation tool that saves time, money and can assist in disaster planning and recovery. This certificate is indented for the engineering who typically deals with the identification and management of potential problems which may jeopardize an organizations initiatives or projects. This certificate provides both a qualitative and quantitative theory and principles viewpoints and strategies associated with risk analyses.

The certificate consists of four, 3 credit courses.

#### Degree Requirements

Risk Analysis Certificate requirements:

EMGT 602	Engineering Risk Management	3 cr.
EMGT 620	Multi-Criteria Decision Analysis	3 cr.
EMGT 702	Systems Engineering	3 cr.
And		
EMGT 709	Advanced Engineering Cost Estimation	3 cr.
or		
EMGT 626	Discrete Event Simulation	3 cr.

**Subtotal: 12**

Subtotal: 12

Total Credit Hours: 12

#### School of Law

Dean Eric Gouvin

Associate Dean for Academic Affairs Beth D. Cohen

For nearly a century, Western New England University School of Law has been preparing men and women to enter the legal profession. It is the only Massachusetts law school outside of the Boston area accredited by the American Bar Association. It is also a member of the Association of American Law Schools.

Though its academic programs are rigorous, the learning environment at the School of Law promotes cooperation and interaction at every level. Faculty, staff, and administration are highly accessible and supportive.

The School of Law has more than 8,000 alumni who live and practice in 49 states, several U.S. territories, Canada, and several foreign countries.

For admissions information, contact the School of Law at 413-782-1406 or 800-782-6665 or at [www.law.wne.edu](http://www.law.wne.edu).

## Juris Doctor/Master of Business Administration (JD/MBA) Degree

After completing one year of the Juris Doctorate program, students may simultaneously work on the requirements of the Juris Doctor from Western New England University School of Law and the Master of Business Administration from Western New England University College of Business. Seven of the MBA Program's 37 credits may be satisfied through law classes, while 12 of the 88 required law credits may be satisfied through business classes.

Candidates for the program must have at least a four-year undergraduate degree from an accredited college or university. Students are required to apply to both the MBA program through the College of Business and the JD program through the School of Law.

## College of Pharmacy

Dean Evan Robinson

Associate Dean for Academic Affairs Beth Welch

Assistant Dean for Student Affairs Joshua Spooner

Assistant Dean for Pharmacy Experiential Affairs Kimberly Tanzer

The Western New England University College of Pharmacy will be prominently known for excellence in the preparation of pharmacy practitioners as educators of patients and other healthcare professionals and leaders for the betterment of patient care.

The College of Pharmacy began the professional phase of the pharmacy program in fall 2011. The College of Pharmacy curriculum is designed to prepare learners to enter the practice of pharmacy as general practitioners in a variety of practice settings and deliver optimal patient care to diverse populations. The primary intention of this comprehensive educational program is to transition dependent learners into independent professional practitioners who are dedicated to serving the community in which they live. The curriculum provides learners opportunities to develop the knowledge, skills, and attitudes necessary to become licensed professionals who will provide optimal patient care in a caring, collaborative, safe, and culturally aware manner.

The curriculum entails a competency-based framework, using integrated content and teaching, problem-based approaches when appropriate, integrated technology, and experiential exposure threaded throughout. The curriculum is designed to incrementally develop strong scientific foundations (in the biomedical, pharmaceutical, social and administrative, and clinical sciences) and professional skills. During pharmacy practice experiences, learners have many opportunities to demonstrate and apply these skills in progressively advanced methods.

The Doctor of Pharmacy program was awarded Candidate accreditation status in June 2014 from the Accreditation Council for Pharmacy Education (ACPE). For the most current information on accreditation status, please visit the College of Pharmacy website [www.wne.edu/pharmacy/](http://www.wne.edu/pharmacy/).

For admissions information, contact the College of Pharmacy at 413-796-2113 or [rxadmissions@wne.edu](mailto:rxadmissions@wne.edu) or visit our website.

## GRADUATE COURSES

Courses are listed alphabetically by prefix.

In the graduate engineering programs, the 500-level courses are open only to graduate students who have not taken the equivalent as part of their undergraduate program of study. Courses numbered 600 and above are open to all graduate students. As part of the engineering master's degree requirement, a minimum of five courses must be taken at the 600 level.

In the graduate business programs, the 500-level courses are pre-MBA courses. Courses numbered 600 and above are open only to graduate students who have successfully completed the related 500-level courses or received exemptions. Only 600-level courses may be used as electives in the graduate business programs.

### Notes

See Legend for Notes in Sequence of Courses (p. 31)

## AC - ACCOUNTING

### AC 610 - Cost-Based Decision-Making (3 cr.)

Prerequisite: AC 309 or AC 630, or their equivalent.

The objective of this course is to provide an Introduction to the aggregation of product costs, managerial control, performance evaluation, pricing, and contemporary topics such as the balanced scorecard. It builds on the technical skills developed in cost and managerial accounting courses, providing a real-world decision-making focus on the use of that information in a strategic business context. Outcomes include identification and application of cost allocation; target cost and cost-plus pricing; preparation and analysis of capital budgets; and an understanding of the issues associated with transfer pricing.

### AC 611 - Municipal and Fund Accounting (3 cr.)

Prerequisite: AC 201 or its equivalent.

This course examines accounting concepts for nonprofit organizations. Key outcomes include an understanding of generally accepted accounting principles as they apply to governmental and municipal organizations, educational institutions, hospitals, and social organizations.

### AC 614 - Fundamentals of Corporate and Partnership Tax (3 cr.)

Prerequisite: AC 413 or its equivalent.

This course provides an introduction to the federal taxation of business entities. Key outcomes include an understanding of the fundamental concepts of the federal income taxation of corporate formations, earnings, and distributions, as well as the federal taxation of partnerships, S corporations, and other pass-through entities.

Formerly "Advanced Taxation of Business Entities"

### AC 615 - Taxation of Trusts and Estates (3 cr.)

Prerequisite: AC 413 or its equivalent.

This course provides an introduction to the federal taxation of trusts and estates. The course focuses on the federal income taxation of trusts, estates, and beneficiaries, as well as the federal taxation of property transfers during life and upon death. Key outcomes include: an understanding of the fundamental concepts of the federal taxation

of trusts, gifts, and estates. Significant attention will be given to tax research and writing on selected course topics.

### AC 620 - Advanced Topics in Auditing and Assurance Services (3 cr.)

Prerequisite: AC 419 or its equivalent.

This course examines the statements on auditing standards issued by the AICPA and PCAOB. Key outcomes include an understanding of the effects of standards on audit reports, and current issues in auditing. Extensive use is made of case analysis.

### AC 622 - Accounting Theory & Contemp Issues (3 cr.)

Prerequisite: AC 306 or the equivalent

This course examines financial accounting theory on which basic U.S. generally accepted accounting principles (GAAP) and practice are based. Students will be expected to develop an understanding of internal and external forces that impact accounting policies, how controversies regarding accounting policies are resolved, and how standards are promulgated. This course also examines International Financial Reporting Standards (IFRS), which are the generally accepted principles used in many other countries, as well as the status of the convergence of U.S. GAAP and IFRS.

### AC 623 - Advanced Topics in Individual Tax (3 cr.)

Prerequisite: AC 413 or its equivalent.

This course provides an advanced study of the federal income taxation of individuals and unincorporated businesses. Key outcomes include the ability to understand selected topics which may include: alternative minimum tax on individuals, deferred compensation, depreciation recapture, intangible drilling costs, international taxation, net operating losses, passive activity losses, property transactions, tax accounting periods and methods, tax penalties, tax practice and procedure, and new developments. Significant attention will be given to tax research and writing on selected course topics.

### AC 624 - Advanced Topics in Corporate & Partnership Tax (3 cr.)

Prerequisite: AC 614

This course provides an advanced study of the federal income taxation of corporate and partnerships. Key outcomes include the ability to understand selected topics which may include: the alternative minimum tax on corporations, consolidations, closely-held businesses, dividends and other distributions, international taxation, inventory methods, liquidations, reorganizations, state and local taxation, transfer pricing, and new developments. Significant attention will be given to tax research and writing on selected course topics.

### AC 630 - Accounting for Decision Makers (3 cr.)

Prerequisite: AC 201 or its equivalent and a familiarity with computer-based spreadsheets.

This course is directed to the general MBA student and focuses on the accounting information needed to operate effectively in a competitive business environment. It explores the use of such information for planning, controlling, decision-making, and evaluating performance. It integrates the traditionally separate functions of accounting and management for the successful operation

of the business entity. Key outcomes include the ability to identify relevant costs for decision making, and to apply standard costing, cost-volume-profit analysis, budgeting, activity-based cost management, transfer pricing, and performance measurement in decentralized organizations. Quantitative tools, such as regression, are utilized for analysis. Cannot be taken by MSA students.

### **AC 633 - Independent Study (3 cr.)**

Prerequisite: Permission of the instructor.

Provides an opportunity to conduct research in an area of a student's own specific interest. An independent study must be taken with the approval of the MSA Program Director. Submission of a formal proposal is required before such approval will be granted. The expected outcome of an independent study is a paper of a quality that could be presented at a professional conference or submitted for journal publication. This course will carry three credits and may not be repeated.

### **AC 641 - Introduction to Fraud (3 cr.)**

Prerequisite: AC 201 or equivalent

This course examines the different aspects of fraud: what it is, the types of people more likely to commit it, how to fight and prevent it, how to recognize and be able to detect its symptoms, and how to investigate it. Methods of fraud inquiry and interviewing are also covered. Key outcomes include the ability to understand the above topics covered.

### **AC 642 - Forensic Accounting (3 cr.)**

Prerequisite: AC 306 and AC 330.

This course focuses on accounting and legal fundamentals for forensic accounting. Key outcomes include the ability to understand computer-aided data analysis techniques for detecting and investigating fraud cases, issues related to the collection and use of digital evidence, and collection of data from electronic devices.

### **AC 646 - Selected Topics in Taxation (3 cr.)**

Prerequisite: AC 413.

This course is a seminar on tax topics of current interest in specialized areas. Key outcomes include the ability, to understand selected topics from international taxation, deferred compensation, problems of closely-held businesses, consolidated tax returns, inventory methods, transfer pricing, and new developments in taxation, among others.

### **AC 650 - Financial Accounting (3 cr.)**

Prerequisite: AC 201 or equivalent

This course is for MBA students who want to improve their understanding of financial statements and the information they contain. Topics examined include the relevance of financial accounting for MBA students, preparation of financial statements, analysis of various financial statement elements and the impact managerial choices have on items reported in financial statements. Key outcomes include the ability to prepare and analyze financial statements, ratio analysis, and different methods of accounting for transactions.

Cannot be taken by MSA majors.

### **AC 680 - Accounting Internship (3 cr.)**

The accounting internship is an opportunity for students to apply accounting theory in real world situations. Research is an integral part of this experience. Expected outcomes include the ability to identify and define a problem, undertake research to determine the context of the problem, and to select and apply the appropriate theory toward its resolution.

## **BIS - BUSINESS INFORMATION SYSTEMS**

### **BIS 610 - Information Technology Management and Applications (3 cr.)**

Prerequisite: Graduate standing. Must be MBA, MBASP, MSA, MSATX, or MSAFF student.

This course presents current issues and development trends in utilization and management of information systems in organizations. It examines and explores new paradigms for computer application development and systems design. This course also discusses the impact of information systems and technology on organization structure, strategy, and operations. A variety of computer applications will be introduced. Topics will be selected from spreadsheet modeling, database management, knowledge acquisition and management, data modeling, and E-commerce.

### **BIS 620 - Decision Support Models (3 cr.)**

Prerequisite: BIS 220 or equivalent. Must be MBA, MBASP, MSA, MSATX, or MSAFF student.

This course introduces spreadsheet-based management science/operations research models in problem solving and business decision analysis. Key learning outcomes include proficiency in spreadsheet applications, problem interpretation, understanding of mathematical nature of models, model building and their application in spreadsheets, interpretation of modeling outcomes, and decision making.

## **BL - BUSINESS LAW**

### **BL 621 - Law and The Business Entity (3 cr.)**

This course surveys the law as it applies to business. Key learning outcomes focus on: the legal system; "white collar" crime analysis of employment law; analysis of the business entity; property law; and the protection of ideas and processes (intellectual property).

### **BL 640 - Law for Accountants (3 cr.)**

Prerequisite: AC 306.

This course focuses on the application of business law to both fraud and the legal responsibilities of accountants. Key outcomes include the ability to understand the following topics in law: sales, proprietorships, partnerships, corporations, security regulations, property transactions, secured transactions, wills, trusts, and estates.

### **BL 690 - Special Topics in Business Law (3 cr.)**

This is a study of advanced topics in business law.

## **BUS - BUSINESS**

### **BUS 610 - Business and Its Environment (3 cr.)**

Prerequisite: Graduate standing.

This course examines the social, economic, and political environment facing business and its leaders in the 21st century. Coverage includes

the economic dynamics of the global marketplace, demographic trends and their impact on the organization, public policy and regulatory issues, the relationship between business and governments, and the nature of business ethics and corporate social responsibility. The goal of this course is to enhance students' ability to meet multifaceted challenges facing managers in the business environment.

Must be MBA, MBASP, MSA, MSATX, or MSAFF student.

### **BUS 675 - Graduate Business Internship (3 cr.)**

Prerequisite: MBA student with nine credits or less, or permission of MBA director.

The graduate business internship is an opportunity for students to apply theories and principles of the business disciplines in a workplace setting. The student will work with a faculty advisor to establish specific internship learning outcomes.

### **BUS 680 - Strategic Management (3 cr.)**

Prerequisite: AC 630, BUS 610, FIN 630, MAN 600, MAN 610, MK 640, and BIS 620.

This course focuses on strategic level analysis of the firm. Key learning outcomes include: the application of corporate and business strategies through environmental analyses based on economic, political, legal, social, global, and internal organizational factors; decision making based on the firm's strategic performance using financial statements, stakeholders satisfaction, and investment decisions; the application and use of functional strategies in implementing corporate and business level strategies; and decision-making based on micro and macro environmental factors influencing the strategic management process. The course makes wide use of case studies in achieving the course objectives.

Must be MBA major.

## **COMM - COMMUNICATION**

### **COMM 501 - Principles & Practices of Public Relations (3 cr)**

Prerequisite: Graduate standing & acceptance to M.A. program

Students are introduced to the foundational elements of the discipline, examining the historical development of public relations and its roots in the sub-disciplines of interpersonal, group, and mass communication; studying the organizational roles of public relations; evaluating the sociopolitical and economic functions of public relations; and considering the broad role of public relations in contemporary culture. Students also learn current theoretical approaches to public relations and apply this knowledge both to public relations management practices and to creating a code of professional competence in the discipline.

### **COMM 505 - Writing for Communication Professionals (3 cr)**

Prerequisite: Graduate standing.

This course develops writing skills required for successful advancement in professional settings, with an eye toward achieving specific effects on target audiences. Students complete frequent writing assignments, learning how to write effective news releases and media advisories, developing technical writing skills, and creating copy for a variety of outlets across media platforms: on-line and printed magazines, newsletters, brochures, video/audio scripts,

web site copy, and speeches. Successful completion of this course will provide students with a professional portfolio of writing samples.

### **COMM 510 - Communication Research Methods (3 cr)**

Prerequisite: Graduate standing & acceptance to M.A. program

This course provides students with a variety of methodological tools to identify, create, and evaluate a variety of communication campaigns and initiatives. Students are exposed to qualitative data gathering methods such as focus groups, open-ended questionnaires, and interviews. Students learn both qualitative data analysis techniques, such as constant-comparative method and thematic analysis, and quantitative methods, such as content analysis and surveys, as well as analysis tools including tests of difference and relationship. Students also learn about the range of evaluation techniques used within the discipline.

### **COMM 525 - Ethics in Public Communication (3 cr)**

Prerequisite: Graduate standing & acceptance to M.A. program

This course investigates the philosophical underpinnings of communication ethics and perspectives. Based on those ethical perspectives and the Public Relations Society of America's code of ethics, students examine ethical and moral implications of manufacturing public opinion in corporate, nonprofit, and governmental public relations settings. Students also examine the legal implications of unethical public relations and regulations for public relations practitioners.

### **COMM 550 - Manufacturing and Managing Public Opinion (3 cr)**

Prerequisite: Graduate standing, COMM 501 and COMM 505

This course focuses critically on the relationship among public relations organizations, media industries, and the public, examining techniques that shape media discourse and indirectly influence public opinion as well as techniques that directly shape public opinion. Students learn how to conduct media research and examine the organizational structure of media firms in order to identify effective points of entry and influence for media relations messages; how to design press kits for use by media organizations; and develop strategies to appeal to target audiences within the general public both by using conventional mass media outlets and bypassing those outlets.

### **COMM 570 - Crisis Management and Public Relations (3 cr)**

Prerequisite: Graduate standing, and COMM 501

This course exposes students to a variety of public relations crises across corporate, nonprofit, and governmental settings, creating awareness of how to protect an organization's reputation and ensure the trust of key stakeholders. Students learn both how to prepare strategic communication crisis plans proactively and how to develop and implement reactive crisis communication techniques. Students also critique successful and cautionary examples of crisis management.

### **COMM 605 - Strategic Approaches to Public Relations (3 cr)**

Prerequisite: Graduate standing, and COMM 501

Students in this course learn about different strategic approaches to public relations planning, both internally and externally. Students

examine contemporary case studies that illustrate successful strategic public relations campaigns and develop a public relations campaign plan for a hypothetical client.

### **COMM 620 - Strategies for Social and Digital Media (3 cr)**

Prerequisite: Graduate standing and COMM 501

This course scrutinizes the impact of new media technologies and practices on public relations. Students examine how public relations campaigns are designed and executed in the contemporary online environment, and explore how the field of public relations is changing to take advantage of the interactivity and grassroots possibilities inherent within new media, including social networking sites, blogs and vlogs, podcasts, Twitter, wikis and mobile media.

### **COMM 625 - Public Relations for NonProfits (3 cr)**

Prerequisite: COMM 501 or permission of instructor.

This course examines marketing and public relations strategies deployed uniquely by nonprofit organizations. Students consider the sensitivity of budget constraints on nonprofits and their impact on public relations efforts; and they discover new and innovative ways to promote nonprofit organizations. Students will also learn about and critique techniques for coordinating messages and for designing strategies for raising awareness and raising funds for nonprofits. 3 credits.

Creating Public Relations (PR) opportunities for nonprofits involves creative and unique ideas to motivate any audience the organization is trying to target in a specific marketing campaign or promotional plan. COMM 625 teaches the importance of "selling enthusiasm" and shaping that required element for any PR needs in the fundamental approach of learning skills and knowledge specific to the needs of nonprofit organizations.

Participants of this course are required to read and write weekly responses from the assigned text and be an active participant in online discussions, and for the capstone project, design and plan the execution of a PR event for a nonprofit of their choice to enhance the organization's image and/or secure funding.

### **COMM 680 - Independent Study in Public Relations (3 - 6 crs)**

Prerequisite: Graduate Standing and Approval of COMM Program Director

Students taking this course will develop and implement an individual research project tailored to their own area(s) of interest within the field of public relations that advances their understanding of theoretical and/or practical aspects of public relations. The program director must approve a student's proposal and authorize the number of credits (which will vary according to the scope and complexity of the proposed project) prior to registration for this course.

### **COMM 699 - Masters Thesis in Public Relations (3 - 6 crs)**

Prerequisite: Graduate Standing and Approval of COMM Program Director

Students pursuing a Masters in Public Relations will craft a master's thesis demonstrating their ability to conduct original research, apply theoretical knowledge, and explore ethical considerations related to public relations practices. As the culmination of the program, students are expected to integrate concepts from across the curriculum into their thesis. The program director must approve a student's thesis proposal and authorize the number of credits (which will vary according to the scope and complexity of the thesis project) prior to registration for this course.

## **CPE - COMPUTER ENGINEERING**

### **CPE 620 - Advanced Computer Architecture (3 cr.)**

Prerequisite: CPE 420 or permission of instructor.

This is an advanced study of computer architecture. Topics may include stack computers, pipeline computers, parallel computers, micro-programming, performance evaluation, and distributed processing.

### **CPE 625 - Advanced Software Engineering (3 cr.)**

Prerequisite: CPE 425 or equivalent.

This course introduces advanced topics in software system design, construction, and maintenance: Students learn about approaches to incorporating new features in legacy systems, as well as reverse engineering in systems lacking sufficient documentation. The use of components is stressed as a means of isolating and extending existing systems. Students participate in a semester long team project.

### **CPE 635 - Advanced Requirements Analysis (3 cr.)**

Prerequisite: CPE 435 or equivalent.

This class examines advanced topics associated with system requirements. Approaches to automated requirements writing are explored. Approaches to formal methods used in specifying requirement are studied. Automated approaches to verifying, validating, and detecting ambiguity, as well as implementing requirements in delivered software are examined. Models employed in requirements engineering will be examined.

### **CPE 645 - Embedded Software Systems (3 cr.)**

Prerequisite: CPE 442 or equivalent and CPE 601 or equivalent.

Students learn modern methods, techniques, and tools for the specification, design, and implementation of real-time embedded systems. Students are given an overview of various platforms and automated tools for developing software for embedded systems. Processes used in the development of systems with real-time performance are introduced. Issues associated with real-time debugging are introduced.

### **CPE 648 - Software Project Management (3 cr.)**

Prerequisite: CPE 435 or equivalent.

Students learn about the issues associated with managing a software project. Students learn about the importance of establishing project scope and eliciting requirements. A detailed analysis of project planning will be conducted with emphasis on planning, estimating, scheduling, risk analysis, tracking, and control. Various approaches to managing software projects will be studied at the critical level.

### **CPE 650 - Software Architecture (3 cr.)**

Prerequisite: CPE 425 or equivalent and CPE 601 or equivalent.

This course introduces students to architectural design. Students learn how to structure data and components in order to satisfy requirements of a design. Students learn about architectural styles that a solution may utilize. Students also study the structure and interrelationships among the architectural components. Alternative solutions are considered and evaluated. The role of architecture as a facilitator for communication between designers and stakeholders is emphasized. Metrics to assess architectural quality are introduced.

### **CPE 652 - Software Generation and Maintenance (3 cr.)**

Prerequisite: CPE 425 or equivalent and EE 601 or equivalent.

Students learn effective approaches to designing systems that are easier to maintain after their initial release. Maintenance accounts for some 70 percent of a software system's life cycle. Designing new maintainable software systems is as important as dealing with existing legacy systems. Students are introduced to writing reusable software components, automatic code, and application generators, as well as their limitations, regression analysis, and reverse engineering.

### **CPE 655 - Computer Network Architecture (3 cr.)**

Prerequisite: Graduate standing.

This is a comprehensive study of the way computer networks are designed and operated focusing on basic principles that guide the development of computer networks, e.g., management of complexity, standardization of connectivity, and resource sharing. Seven textual models such as IEEE 802, DOD, TOP, MAP, and ISDN are briefly covered.

### **CPE 690 - Special Topics (3 cr.)**

This is a study of an advanced topic in engineering of special interest to computer engineering majors, but not carried in the catalogue on a regular basis.

## **ED - EDUCATION**

### **ED 510 - Educational Research (3 cr.)**

Prerequisite: Graduate standing.

This course provides an overview of the salient aspects of educational research. The techniques of conceptualizing and conducting qualitative and quantitative research methodologies will be treated. Students will examine the strengths and weaknesses of different methodologies used in research. A main focus of the course is to help students read, understand, critique, and use published reports of research to design and present an original research project relevant to the student's field. Students will be assessed on collaborative participation measures, examinations, and individual research projects.

### **ED 515 - Assessment: Theories, Strategies, and Design (3 cr.)**

Prerequisite: Graduate standing.

This course is designed to provide in-service teachers with learning theories (constructivism, learning styles, multiple intelligences, and brain-compatible learning) as a foundation for broadening their classroom assessment repertoire. Authentic models of assessment will be compared to more traditional formats, and rubric design will be explored. Current issues in assessment will also be a focus of study and discussion in this class.

### **ED 520 - Administrative Skills and Mentoring (3 cr.)**

Prerequisite: Graduate standing.

The purpose of this course is to train educators in a range of interpersonal and group process skills that can be utilized in educational organizations. Students will learn techniques for the mentoring relationship, with a focus on the skills that can help nurture another's personal and professional development, and with attention to the professional assessment process introduced by Massachusetts Department of Elementary and Secondary Education regulations. Students will also explore ways to build better working relationships among peers, learn group analysis and facilitation techniques, negotiation skills, and team-building techniques.

### **ED 525 - Adult and Professional Development (3 cr.)**

Prerequisite: Graduate standing.

This course examines key elements of adult development and socialization as they relate to an individual's professional life and growth during the early adulthood and middle adulthood periods. A range of developmental perspectives are considered, including the ways adults make meaning intellectually, psychologically, ethically, and socially. Interpersonal relations are examined, as well as issues of gender, ethnicity, and socioeconomic status. Students will be assessed by examinations and written assignments.

### **ED 530 - Philosophy of Education (3 cr.)**

Prerequisite: Graduate standing.

This course is designed to provide an introduction to some of the major philosophical approaches to education, including theories of multicultural education. While exploring a number of schools of philosophy and their implications for education, students will be encouraged to examine each approach in terms of their own experiences. Critical thinking and clarification of a personal philosophy of education are fundamental to the course. Students will analyze the social and cultural elements that have had an impact on education in the modern world, including issues of ethnicity, socioeconomic status, gender, and religion. The conservative and dynamic functions of education will also be considered. Students will be assessed by examinations, class presentations, and written assignments.

### **ED 533 - Independent Study in Education (3 cr.)**

Prerequisite: Graduate standing.

### **ED 535 - Technology Education and Integration in the Elementary Classroom (3 cr.)**

Prerequisite: Graduate standing.

Technology Education and Integration in the Elementary Classroom is a course designed to provide an in-depth analysis of technology uses in the K-6 educational setting. This course will entail telecommunications, computer software, multimedia technologies, and microcomputer technologies, and their use in teaching and learning. Upon completion of the course, students will be able to demonstrate technology uses for classroom instruction, management, and enrichment through all technology mediums, create uses for technology in all facets of the curriculum, and demonstrate technology uses for special needs students.

### **ED 540 - Mathematical Theories and Skills for Elementary Teachers (3 cr.)**

Prerequisite: Graduate standing.

This course focuses on the skills and theory in mathematics within the context of problem-solving, communication, connections, and reasoning. Different methodologies will be incorporated, including manipulatives, technology, children's literature, and journaling. Student performance will be assessed by written assignments and projects.

### **ED 545 - Concepts and Methods of Natural Sciences (3 cr.)**

Prerequisite: Graduate standing.

Open only to students in MEEE program. This course examines the principle ideas and theories of the natural sciences. It begins with an introduction to the approach used by the natural sciences to study the universe, the scientific method. Eight major ideas in the natural sciences: the basic laws of physics governing forces and motion, atomic and kinetic theory, the big bang theory of the origin of the universe, patterns of chemical change and the periodic table, the structure of the earth and plate tectonics, biological evolution, the unity of all living things from cells to ecosystems, and DNA structure and function are then examined in the context of their historical development and the scientific method. Finally, the interaction between science and the real world through technology will be explored and the method of benefit/risk analysis will be introduced. Laboratory experiments, group work, and problem solving will be emphasized.

Formerly CHEM 515

### **ED 550 - Strategic Teaching in Reading and Language Arts (3 cr.)**

Prerequisite: Graduate standing.

In this course students will develop a repertoire of effective strategies to assess and support language arts learning for elementary aged learners, especially those struggling to meet grade level expectations. Participants will practice using a variety of assessments, analyzing data and matching assessment data to lessons that most strategically facilitate students' literacy skill development. Attention will be given to cultural, cognitive, and linguistic factors that impact literacy learning.

### **ED 560 - Teacher Inquiry Seminar (3 cr.)**

Prerequisite: Enrollment/participation Teacher's Loft.

This course is intended for teachers in their second year, or beyond, who have had foundational experiences with teacher inquiry collaboration, reflective practice, and are enrolled in The Teacher's Loft. The pre K- 12 classroom teachers taking part in the course are participating in a professional forum that fosters the development of professional knowledge in a nested learning network (collaborative inquiry community, self, and classroom/school context), and documents the mandatory post-first year induction hours toward their MA state licensure. By engaging in collaborative inquiry, teachers are able to strengthen their teaching practice during the academic year. Teacher inquiry itself becomes a content focus in order for teachers to employ the sustaining professional tool of inquiry in subsequent years of their career. Teachers will complete their inquiry, write an executive summary of their project and present their inquiry at a regional, educational research conference.

### **ED 561 - Entering the Profession of Teaching (1 cr.)**

This course is designed to introduce students to the profession and practice of teaching. Topics that will be addressed include learning theory, philosophies of education with a view towards articulating a

personal philosophy, social justice and critical pedagogy lesson planning, and strategies for becoming a reflective practitioner. Course content will be explored through use of professional readings, media, presentations, discussion (whole class and small group), simulations field based experiences, and organized debate. Students will be assigned field placements (where needed) in conjunction with this class.

### **ED 562 - Becoming a Teacher in Today's Schools (1 cr.)**

This course is designed to support students in the application of strategies and methodologies encountered in Entering the Profession of Teaching. Topics that will also be explored include: lesson planning with the MA Curriculum Frameworks, classroom management, teaching with diverse populations and needs, and assessment (formative and summative). Course content will be explored through use of professional readings, media, presentations, discussion (whole class and small group), simulations, field-based experiences, and organized debate. Students will be assigned field placements (where needed) in conjunction with this class.

### **ED 563 - Designing Curriculum through Data Collection and Inquiry (1 cr.)**

In this course educators will begin transitioning from a more typical class experience towards a more teacher-inquiry driven learning community such as the Teacher Collaborative forum at The Teachers' Loft. At the beginning of the course hands-on experience will inform how data can and should inform teaching practice. A range and variety of data sources will be examined and utilized, including standardized test scores, norm-referenced test results, comparative assessment results, check-list information, rubric data, teacher documentation, and students work more broadly. This course will build on lesson planning by instructing students in content oriented teaching techniques to be used in curriculum development at the unit level. Each individual student will build confidence in interpreting data from a range of sources to improve student learning and come together around particular questions of practice that arise daily in schools. Contemporary Instructional and discussion tools (Blackboard, wikis, blogs, etc) will be taught in this course for students to achieve confidence to work online. Formal inquiry questions will be developed as the elements of inquiry are explored. Where needed, students will be assigned field placements in conjunction with this class.

### **ED 564 - Applying Inquiry Tools: Using Data to Better Practice (1 cr.)**

In this course educators will take part in a year-long Teachers' Collaborative forum at The Teachers' Loft, a learning community opportunity central to their emerging professional induction experience. Using a more typical class meeting format alternately with contemporary instructional and discussion tools (Blackboard, wikis, blogs, etc), students will examine and utilize a range of data, over the course of the academic year to inform the direction of their own professional inquiry. A range of diverse data sources will be included, including teachers own records and knowledge making, and how the data inform teaching practice will be made explicit. Each educator will establish an inquiry question, area of focus and pursue this line of inquiry throughout the entire academic year. Educators will act as peer responders, reviewers, and be responsible for not only completing but presenting their inquiry work as the capstone of the course.

### **ED 571 - Culminating Field Experience (1 cr.)**

Prerequisite: ED 561, ED 562, ED 563, and ED 564

**ED 572 - Culminating Field Experience (2 cr.)**

Prerequisite: ED 561, ED 562, ED 563, and ED 564

**ED 573 - Culminating Field Experience (3 cr.)**

Prerequisite: ED 561, ED 562, ED 563, and ED 564

**ED 574 - Culminating Field Experience (4 cr.)**

Prerequisite: ED 561, ED 562, ED 563, and ED 564

**ED 575 - Culminating Field Experience (5 cr.)**

Prerequisite: ED 561, ED 562, ED 563, and ED 564

**ED 576 - Culminating Field Experience (6 cr.)**

Prerequisite: ED 561, ED 562, ED 563, and ED 564

**ED 601 - Research for Teachers (3 cr.)**

This course will provide students with an overview on reading, critiquing and conducting educational research. The techniques of designing and conducting both qualitative and quantitative research methodologies will be studied and applied. Students will examine the strengths and weaknesses of different methodologies used in conducting and presenting educational research. Students will design, conduct and present an original research project relevant to the field of education.

**ED 602 - Principles of Differentiating Instruction (3 cr.)**

After defining the concept of differentiation, this course will focus on developing a model for differentiating instruction. Students will identify reasons for differentiating instruction; examine which aspects of curriculum should be differentiated, and develop criteria for determining fairness and effectiveness of differentiated instruction for all learners.

**ED 603 - Contemporary Learning Theory (3 cr.)**

This course is designed to engage students in studying learning theory as a foundation for understanding the teaching/learning process. Contemporary theory including: constructivism, learning styles, multiple intelligences, and brain-compatible learning, as well as more traditional theory such as behaviorism will be examined.

**ED 604 - Mentoring and Professional Development (3 cr.)**

The purpose of this course is to examine approaches to mentoring and other forms of professional development that are utilized in educational organizations. Students will learn techniques of clinical supervision (data collection, constructive feedback...), strategies for initiating and sustaining a mentoring relationship, and other skills that support induction to the profession of teaching. Students will also explore effective resources and approaches.

**ED 605 - Multicultural Education (3 cr.)**

This course is designed to engage students in exploring the philosophical, historical, and theoretical foundations of multicultural/multilingual teaching and learning. Students will learn to develop curriculum and other instructional strategies that are responsive to racial, cultural, linguistic, and social class differences that facilitate learning for all learners. Coursework will also investigate and apply a social justice perspective to the teaching/learning process.

**ED 606 - Assessment Theory and Design (3 cr.)**

This course is designed to provide as a foundation for broadening students' classroom assessment repertoire. Authentic models of assessment will be compared to more traditional formats; summative and formative assessment strategies will be examined. Students will learn to critique benefits and drawbacks of available assessment tools, as well as design their own. Current issues in assessment will also be a focus of study and discussion in this class.

**ED 610 - Literacy Strategies for Struggling Readers (3 cr.)**

In this course students will learn how to collect and analyze student data during literacy events. They will build a repertoire of strategies for fostering and strengthening children's abilities to fully participate in the processes of communicating and meaning making that fluent reading requires. Students will also examine cognitive, linguistic, and cultural impacts on the literacy learning process.

**ED 611 - Integrating Curriculum through Children's Literature (3 cr.)**

This course focuses on identifying quality children's literature to use in classroom settings from both a literary and issues approach. Students will develop a repertoire of strategies for using quality children's literature throughout the curriculum (e.g. math, science, social studies) and will learn to read children's literature with a content learning lens. Students will also practice creating lessons that effectively use literature to support and deepen content area learning.

**ED 612 - Infusing Content Areas with Art-Elementary (3 cr.)**

In this course students will develop a repertoire of activities that they can integrate into the elementary class curriculum allowing their students to experience art as another way to see, represent, and interpret the world around them; another language in which to express their thoughts, ideas, and feelings. Students will also experience ways to incorporate the purposes of art in societies, the contributions of various artists, and interpretation of art to meet content area objectives.

**ED 613 - Deepening Mathematical Content Knowledge (3 cr.)**

This course focuses on the concepts and skills key to the elementary mathematics curriculum. Students will engage in activities that will strengthen their own conceptual and factual mathematical knowledge. They will also practice designing lesson plans and assessment tools that effectively support and monitor development of students' mathematical understandings.

**ED 614 - Reading and Writing in the Content Areas (3 cr.)**

This course will engage students in reviewing content area learning objectives identified by local, state, and national organizations. Students will then learn about and apply literacy best practices (primarily reading and writing, but other language arts will also be addressed) that best support students' achievement in meeting content area objectives.

**ED 615 - Ethics in Educational Practice (3 cr.)**

The focus of this course is contemporary issues in education, especially those involving adolescents and young adults, teacher

employment, and curriculum decisions. Using a case study approach students will learn about school law, applied ethics, and educational policy.

### **ED 616 - Adolescent Literacy and Young Adult Literature (3 cr.)**

This course is designed to support students in examining the unique needs of the adolescent literacy learner. Students will develop a repertoire of criteria for selecting appropriate literature for adolescents using both a literary and issues approach. Students will practice integrating literacy strategies and objectives with themes and issues present in selected young adult literature.

### **ED 617 - Infusing Content Areas with Art-Secondary (3 cr.)**

In this course students will develop a repertoire of activities that they can integrate into the curriculum allowing their students to experience art as another way to see, represent, and interpret the world around them; another language in which to express their thoughts, ideas, and feelings. Students will also identify ways to incorporate the purposes of art in societies, the contributions of various artists, and interpretation of art in to meet content area objectives. Identification of characteristic features of art works from various historical periods, cultures, and genres that can be incorporated in their content area will be another focus of course content.

### **ED 633 - Independent Study in Education (3 cr.)**

Prerequisite: Graduate Standing.

## **EE - ELECTRICAL ENGINEERING**

### **EE 601 - Advanced Electrical Engineering Analysis (3 cr.)**

Prerequisite: Graduate standing

This course presents the underlying analysis techniques necessary for advanced study in electrical engineering. Topics include vector spaces, parametric equations, linear algebra, systems of differential equations, Fourier transforms, and the theory of functions of a complex variable including Taylor and Laurent series and residues and poles.

### **EE 614 - Advanced Electromagnetics (3 cr.)**

Prerequisite: EE 314 or equivalent.

This is a study of the microscopic and macroscopic properties of magnetic and insulating materials. Topics include gyromagnetism, permeability tensor, reflection and refraction, skin effect, antenna analysis, and relativistic electrodynamics.

### **EE 615 - Antenna Theory and Design (3 cr.)**

Prerequisite: EE 457 or equivalent.

The course introduces the fundamental principles of antenna theory and applies them to antennas used in wireless communications systems and other advanced antenna systems. Topics include: an introduction to EM wave equations and their solutions in unbounded space as plane and spherical waves; EM radiation; antenna concepts such as radiated power, gain, pattern, and radiation resistance; basic antenna elements including dipoles, loops, microstrip antennas, and traveling-wave antennas; antenna arrays; microwave aperture antennas; and receiving antenna theory.

### **EE 616 - Introduction to Numerical Electromagnetics (3 cr.)**

Prerequisite: EE 614.

Introduction to numerical methods in electromagnetics including finite difference, finite element, and integral equation; methods for static, harmonic, and time dependent fields; use of commercial software for analysis and design purposes; and applications to open and shielded transmission lines, antennas, cavity resonances, and scattering.

### **EE 621 - Coherent Optics (3 cr.)**

Prerequisite: EE 601 and EE 314 or equivalent.

Modern optical techniques rely heavily on the analysis of the coherent properties of light and the Fourier transform to explain the diffraction and interference associated with optical wave propagation and image formation. Beginning with a review of basic electromagnetic wave principles and Maxwell's equations, students develop an understanding of those modern optical techniques used to analyze coherence, polarization, interference, and diffraction. A study of light quanta and optical spectra leads to an understanding of laser operation, and throughout the course, theoretical analysis is supplemented with discussions of such applications as holography, optical data processing, optical sensing, fiber lasers, and other current topics. A design project is required. Upon completion of the course, students should be able to understand the theory and analysis techniques used in modern optical systems and develop some proficiency in the design and implementation of simple optical systems for applications. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, design projects, and a final exam.

### **EE 625 - Stochastic Processes - Kalman Filters (3 cr.)**

Prerequisite: Graduate standing

This course covers the basic principles of stochastic processes and control systems. Students learn and review summary state space representations for continued and discrete systems, random variables, and processes. In addition they learn random processes, moments of random processes, and statistical properties of outputs of stochastic systems as well as analysis and design of Kalman filters. Students also learn to use MATLAB computational software to understand new concepts and to perform and implement system analysis and design techniques. The methods of assessing student learning in this course are homework assignments, classroom discussions, design projects, and a final exam.

### **EE 650 - Advanced Digital Signal Processing (3 cr.)**

Prerequisite: ENGR 212 or IE 212; EE 485 or equivalent.

This is an advanced study of digital signal processing and its applications to speech, radar, and image processing. Topics include least squares filter design, adaptive filters, time, and frequency-domain analysis of two-dimensional (2D) signals and systems; 2D DFT and Z-transform; theory and design of 2D filters; homomorphic signal processing; and spectral estimation. Some computer programming and simulation required.

### **EE 651 - Power Electronics (3 cr.)**

Prerequisite: EE 303 or equivalent.

Cross-Listed as: EE 450

This is a course in the components and systems used in power electronics, After successfully completing this course students will be

familiar with the types and uses of electronic power components as well as understanding and using the various analytical methods (including state space and piecewise linear) that model components and systems that manage, control, and convert electrical energy. Topics include (but are not limited to) semiconductor power devices (such as diodes, SCRs, power FETs, etc.), energy conversion methods (such as ac-dc, dc-dc, dc-ac, etc.), converter electronics (such as buck, boost, etc.), conversion efficiency, and output regulation. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussion, a research project, and a final exam.

Formerly EE 550

### **EE 667 - Advanced Electrical Materials (3 cr.)**

Prerequisite: EE 312, EE 302, EE 314, or equivalent.

This is a study of electrical materials. Topics include crystal structure of solids, quantum theory and mechanics of solids, semiconductor physics, magnetic theory and materials, modern devices, integrated electronic materials and devices, and materials and devices for direct energy conversion. A design project is required.

### **EE 670 - Optimal Control Systems (3 cr.)**

Prerequisite: EE 425 or permission of instructor.

Students learn the basic principles of optimal control theory. They also learn minimum time, minimum control effort, terminal control, tracking, and regulator forms of performance measures as well as calculus of variations, and the variational approaches including linear regulators and the Pontryagin's minimum principle methods as applied to the optimal control theory. In addition students learn about regulators and tracking problems. They also learn to use MATLAB computational software to understand new concepts and to perform and implement optimal control analysis and design techniques. The methods of assessing student learning in this course are homework assignments, classroom discussions, design projects, and a final exam.

### **EE 675 - Advanced Motion Controls (3 cr.)**

Prerequisite: Graduate standing or permission.

This course studies advanced industrial motion control using various types of drives. Motor sizing, driver selection and electro mechanical systems design is the main emphases of this course: Topics covered include: design of motion control systems based on DC motors, brushless DC motors, Induction motors, three phase motors and stepper motors. The operating principles of these motors, their control and pros and cons for different applications are discussed. Variety of motor drive hardware and software including variable frequency drives are discussed and demonstrated.

Formerly EE 575.

### **EE 676 - Intelligent Motion Controls (3 cr.)**

Prerequisite: Graduate standing or permission.

Artificial intelligent based design methodologies are now common in many industrial applications. Many consumer and industrial products have fuzzy logic based controllers. This course focuses on the fundamentals of fuzzy logic theory and its industrial application. It deals with the analysis and design of Fuzzy Logic based control systems as applied to mechatronics systems. The applicability of available industrial hardware and software for mechatronics systems is also emphasized.

### **EE 677 - Advanced Continuous and Discrete Systems Analysis and Controls (3 cr.)**

Prerequisite: Graduate Engineering Standing.

In modern control theory, the dynamics of the processes are described by a series of first-order differential equations in matrix form as compared to the transfer functions in classical control theory (frequency domain approach to analysis and design). State-space concepts (modern control theory) have made an enormous impact on the analysis and design of controllers for complex multi-input/multi-output systems. In recent years, modern control theory has advanced rapidly and is now recognized as an indispensable and practical technique for the design and analysis of feedback control problems. In this course students learn continuous and discrete modern state space analysis and design techniques as applied to a variety of mechatronic systems. This course introduces students to: modeling; eigenvalues and eigenvectors; controllability and observability; design of controllers using state and output feedback; and observer design. This course will be offered as an on line / optional in class course. The course will count towards one of the required EE courses for the Mechatronics concentration.

### **EE 678 - Linear and NonLinear Systems Modeling and Simulation (3 cr.)**

Prerequisite: Graduate Standing.

In this course students learn the fundamentals of modeling mechanical, electrical and electromechanical systems. MATLAB and Simulink will be used to model linear and nonlinear systems. Simulink is a multi-domain environment for modeling complex systems and is used nationally and internationally by many companies. A variety of techniques including frequency domain and state space methods will be utilized to model mechanical and electromechanical systems. Many different feedback control techniques including gain scheduling will be studied to modify and improve systems performance and stability. This course will be offered as an on line/ optional in class course. The course will count towards one of the required EE courses for the Mechatronics concentration.

### **EE 685 - Electrical Engineering Project (3 cr.)**

Prerequisite: EMGT 605 or EMGT 648 and 12 credit hours minimum in the program.

Students must select a project faculty advisor and obtain topic approval prior to registration for this course. This is an independent engineering project under the supervision of a project faculty advisor. The design process is emphasized. Progress reports and a final written report are required. An oral presentation and defense of the project is made before a faculty committee.

### **EE 690 - Special Topics in Electrical Engineering (3 cr.)**

This is a study of an advanced topic in engineering of special interest to electrical engineering majors, but not carried in the catalogue on a regular basis.

### **EE 698-699 - Thesis Research (6 cr.)**

This is a research course open to electrical engineering graduate students who have completed requirements for admission to candidacy for the master's degree. Prior to registration, written permission to enroll must be obtained from the student's advisor.

**EMGT - ENGINEERING MANAGEMENT****EMGT 602 - Engineering Risk Management (3 cr.)**

Prerequisite: Graduate standing.

This course provides an overview of decision and risk analysis techniques including risk based planning and risk management. It covers modeling uncertainty, the principles of rational decision-making, representing and solving decision problems using influence diagrams and decision trees, deductive and inductive reasoning, and objective and subjective probabilities associated with new and existing engineering based products, processes and projects.

**EMGT 605 - Engineering Management (3 cr.)**

Prerequisite: Graduate standing.

This is a study of the major management functions of the firm with emphasis on engineering and research. Topics include organization, planning, coordination, and control of operations; corporate objectives; managerial decision-making; human relations; and product development.

**EMGT 607 - Quality Engineering (3 cr.)**

Prerequisite: Graduate standing.

This course covers the fundamental concepts of quality management including the management philosophy underlying BIS. Product quality and care of customers, management leadership, teamwork, constant improvement and innovation, and the influence of human performance in product quality and inspection are included.

**EMGT 609 - Engineering Cost Analysis (3 cr.)**

Prerequisite: Graduate standing.

This is a study of the economic aspects of engineering decisions. Topics include comparison of alternatives in engineering programs and economic factors in selecting and replacing machinery, equipment, and structure.

**EMGT 611 - Strategic Direction of Technology and Innovation (3 cr.)**

Prerequisite: Graduate standing.

This course investigates the management of complex engineering activities and technological approaches corresponding to product and process innovation. The student will achieve an understanding of strategic management of technology and innovation through a series of lectures combined with the relevant case studies to be summarized by an analysis of an organizations' strategic management process.

**EMGT 615 - Statistical Quality Control (3 cr.)**

Prerequisite: ENGR 212 or IE 212, or permission of instructor.

This is an overview of popular statistical methods as applied to quality assurance. Topics include a review of data analysis and hypothesis testing, coverage of statistical process control (variable and attribute control charts), process capability analysis, and acceptance sampling (lot-by-lot and continuous).

**EMGT 619 - Engineering Supply Chain (3 cr.)**

Prerequisite: Graduate standing.

Companies are continuously working towards aligning their operations with supply chain management solutions. This course will cover the theory, principles, and implications of supply chain management and is intended to provide students with an understanding of the strategic and tactical elements of supply chains. Topics covered include supply chain networks and design, planning supply and demand, inventory management, managing uncertainty, transportation issues, financial factors, and coordination. The focus of the class is both theoretical and practical and will include case studies.

**EMGT 620 - Multi-Criteria Decision Analysis (3 cr.)**

Prerequisite: Graduate standing, Probability & Statistics

This is a study of techniques of mathematical formulation, analysis, and solution of technical management problems and the interpretation of results. Computer applications are included.

**EMGT 622 - Lean Production Systems (3 cr.)**

Prerequisite: Graduate standing.

This is a study of the problems, analytical techniques, and recent developments that relate to the traditional production systems and lean production systems. Topics include forecasting, inventory control, production planning, scheduling, and the relationships between manufacturing and other functions of the firm. Emphasis is on pull/demand based production systems.

**EMGT 624 - Engineering Management Information Systems (3 cr.)**

Prerequisite: Graduate standing.

This is an overview of computerized systems for information handling and reporting including spreadsheets, database systems, and graphics. Emphasis is on development, installation, and control of information systems for production and operational managers. Hands-on experience is provided using popular personal computer software.

**EMGT 626 - Discrete Event Simulation (3 cr.)**

Prerequisite: FORTRAN or BASIC; ENGR 212 or IE 212 or equivalent.

This is a study of the computer simulation applied to queuing networks, inventory and production control, and material handling systems.

Formerly "Computer Simulation of Engineering/Business"

**EMGT 627 - Legal Aspects of Engineering (3 cr.)**

Prerequisite: Graduate standing.

This is a study of legal concepts useful to the engineering manager. Topics include a general background of the law, contract law, patent law, trade secrets, employment contracts, product liability law, and other legal issues of interest to engineers.

**EMGT 629 - Advanced Manufacturing Engineering Systems (3 cr.)**

Prerequisite: Graduate standing.

This is a study of manufacturing systems techniques with special emphasis on cost estimating, automation, group technology, expert systems, flexible assembly, cellular manufacturing, and other related special topics.

**EMGT 631 - Production and Inventory Modeling (3 cr.)**

Prerequisite: Graduate standing.

This course provides the theory and application of forecasting and modeling aggregate demand, fragmented demand and consumer behavior using statistical methods for analysis for services and products. Resulting models are correlated to engineering and management decisions made with respect to product, process and systems design. The theory and practice of production and inventory modeling will be covered

**EMGT 635 - Optimization Methods I (3 cr.)**

Prerequisite: EMGT 620 or equivalent.

This course provides the theory and application of deterministic optimization models. Topics include problem formulation, the simplex method, duality and primal dual relationships, complementary slackness, revised simplex and interior point algorithms. Solution approaches will be done traditionally and using contemporary software

**EMGT 637 - Ergonomics and Occupational Safety (3 cr.)**

Prerequisite: Graduate standing.

This is a study of research related to the interface of human beings and machines. Topics include human factors, product and equipment design, capabilities and limitations of the human sensory-motor system, design of displays, and interaction between individual groups and machine systems.

**EMGT 640 - Energy Management (3 cr.)**

Prerequisite: EMGT 609 or equivalent.

This is an examination of energy cost and its impact on technical and management approaches to conservation programs. Topics include energy reduction in electrical and thermal systems; heating, ventilation, and air conditioning systems; and methods of initiating and managing an effective conservation program.

**EMGT 642 - Engineering Materials (3 cr.)**

Prerequisite: Graduate standing.

This course will explore the impact of engineering materials on the design, development, and manufacture of consumer and producer goods. Fundamental information on the interrelationship of the processing, properties and structure of metals, polymers, ceramics, and composites will be presented. A systematic approach will be employed to select engineering materials based on the mechanical and physical properties necessary to meet the need and/or design requirements. Optimization of the material selection process will also consider factors such as shape, function, manufacturing processes, and sustainability. Case studies and team projects will focus on materials selection and knowledge of materials science. The students completing this course will have useful solutions to standard problems in industry and a working knowledge of the materials selection. The methods of assessing students include homework, quizzes, a midterm exam, design project report(s), and a final exam.

**EMGT 643 - Design of Experiments (3 cr.)**

Prerequisite: Graduate standing, Probability & Statistics

This is an overview of statistical methods for design of products and processes. Topics include experimental design and analysis, regression analysis, robust design, and Taguchi's methods. Currently popular methods are surveyed.

**EMGT 644 - Quality Systems and Process Improvement (3 cr.)**

Prerequisite: Graduate standing.

This is a quantitative course covering an analysis of quality system structures in industry today and the process improvement tools used in quality systems. Process and quality tools such as SPC, Gage R R, ISO 9000, 6 Sigma, benchmarking, and the Malcolm Baldrige National Quality Award are studied. The course is based on applications of these quality principles.

**EMGT 645 - Quantitative Models of Supply Chain Management (3 cr.)**

Prerequisite: EMGT 619.

This course will look at both fundamental and newer models in supply chain management. Topics covered include inventory theories under uncertainty, supply chain contracting and coordination, risk pooling, and stochastic decision-making.

**EMGT 647 - Facility Planning (3 cr.)**

Prerequisite: Graduate standing.

This is a study of techniques for facility location, design, and planning. Other related topics include materials handling, warehousing, computer-aided designs, and maintenance considerations.

**EMGT 648 - Project Management (3 cr.)**

Prerequisite: Graduate standing.

This course examines project techniques which place emphasis on organizational and behavioral issues. It provides hands-on project management experience developing project plans with the use of computer software.

**EMGT 650 - Systems Integration (3 cr.)**

Prerequisite: Graduate standing.

This course is an introduction to the relevant issues and required techniques for successful systems design development, integration, management, and implementation. The principles and methods for system lifecycle analysis, system planning and management, systems integration, and strategic decision-making will be covered in this course. The interfaces between the system, subsystems, the environment, and people will be part of the course materials. Students will learn the factors to control the total system development process designed to ensure a high quality and effective system.

**EMGT 680 - Engineering Project (3 cr.)**

Prerequisite: EMGT 605 or EMGT 648 and 12 credit hours minimum in the program.

Students must select a project faculty advisor and obtain topic approval prior to registration for this course. This is an independent engineering project under the supervision of a project faculty advisor. The design process is emphasized. Progress reports and a final written report are required. An oral presentation and defense of the project is made before a faculty committee.

**EMGT 690 - Special Topics in Engineering Management (3 cr.)**

This is a study of an advanced topic in engineering of special interest to engineering management majors, but not carried in the catalogue on a regular basis.

**EMGT 698 - Thesis Research (3 cr.)**

This is a research course open to engineering management graduate students who have completed requirements for admission to candidacy for the master's degree. Prior to registration, written permission to enroll must be obtained from the student's advisor.

**EMGT 699 - Thesis Research (3 cr.)**

This is a research course open to engineering management graduate students who have completed requirements for admission to candidacy for the master's degree. Prior to registration, written permission to enroll must be obtained from the student's advisor.

**EMGT 701 - Seminar / Research Methods for Engineering Management (3 cr.)**

Prerequisite: Enrollment as EMGT Ph.D. student.

This course provides tools and techniques employed to be used in engineering management research. Topics covered include: program/faculty overview, literature review methods and tools, hierarchy of research questions, research ethics, and visual display of quantitative information.

**EMGT 702 - Systems Engineering (3 cr.)**

Prerequisite: Graduate standing

This course provides an understanding of systems engineering and complex systems. It emphasizes the development of the fundamentals of systems engineering, engineering life cycle models and phases, systems design for operational feasibility, and an introduction to planning for systems engineering and management.

**EMGT 704 - Engineering Risk Analysis (3 cr.)**

Prerequisite: EMGT 602 or permission

This course provides an understanding of systems engineering and complex systems. It emphasizes the development of the fundamentals of systems engineering, engineering life cycle models and phases, systems design for operational feasibility, and an introduction to planning for systems engineering and management.

This course examines the application of engineering management technique methodology to recognize, evaluate, and make decisions regarding expenditures for the mitigation of potentially risks associated with large engineering projects. It examines methods and processes of planning for, identifying, assessing, monitoring, and responding to project risk. Quantitative risk analysis procedures, including decision free analysis, risk simulation, risk ranking, and risk responding techniques are covered.

**EMGT 706 - Enterprise and Complex Systems for Engineers (3 cr.)**

Prerequisite: EMGT 631.

This course provides the theory and application of enterprise systems concepts from functional, technical, and implementation perspectives, with emphasis on the process and product based organizations. The course also investigates the designing of enterprise resource planning systems to support manufacturing, engineering and service systems. Students develop a comprehensive set of techniques and methods to

design, maintain and evolve the systems engineering function in support of strategic enterprise objectives and operations.

**EMGT 709 - Advanced Engineering Cost Estimation (3 cr.)**

Prerequisite: EMGT 609 or equivalent.

This course provides theory and application of cost estimation techniques and methodologies applied to manufacturing and service organizations. This is accomplished through detailed analysis of the cost estimation development process and various cost estimation models. Topics include data collection and management, learning curves, activity based costing, detailed and parametric estimation models, mixed costing models, and handling risk and uncertainty.

**EMGT 726 - Advanced Modeling and Analysis of Systems (3 cr.)**

Prerequisite: Graduate standing, EMGT 626 or equivalent.

This course provides an overview and application of advanced topics in computer simulation including experimental design, simulation optimization, variance reduction, and statistical output analysis techniques applied to discrete event simulation. This is accomplished by investigating and modeling applications in manufacturing, business, and service systems.

**EMGT 735 - Optimization Methods II (3 cr.)**

Prerequisite: Graduate standing, EMGT 635 or equivalent.

This course provides the theory and application of probabilistic optimization models. Topics include probabilistic decision analysis, stochastic models, risk and uncertainty, probabilistic inventory problems, queuing theory, Markov processes, and dynamic programming.

**EMGT 740 - Scheduling and Sequencing (3 cr.)**

Prerequisite: Graduate standing, EMGT 620 or EMGT 635 or equivalent.

This course provides an introduction to various operations research approaches for solving sequencing and scheduling problems. The NP-completeness of most scheduling problems leads to a discussion of computational complexity, the use of heuristic solution methods, and the development of worst case bounds. Several algorithms and various operations research approaches for solving sequencing and scheduling problems in a variety of machine environments (single-machine, parallel machines, flow shops, and job shops) are investigated.

**EMGT 765 - Special Topics in Engineering Management (1-3 cr.)**

Prerequisite: Graduate standing and permission of instructor.

Topics in engineering management that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

**EMGT 770-799 - Dissertation Research (1-3 cr.)**

Prerequisite: EMGT 701.

This course will provide the structure for designing, conducting, writing, and presenting dissertation research. Students will meet individually with the dissertation. Discussion, presentation and

guidance of the dissertation research will take place during these research meetings.

## ENGL - ENGLISH

### **ENGL 500 - Pronunciation, Intonation and Speech (0 cr.)**

Prerequisite: Admissions into graduate intensive English program.

The content of the course will focus on American English sounds, stress, and intonation patterns. Students will listen to and study speeches given by native speakers of English for the purpose of becoming aware of phonological, rhetorical, and cultural patterns in American communities. Students will also practice academic presentation skills appropriate for graduate students in a North American academic environment.

### **ENGL 501 - Writing for a North American Academic Audience (0 cr.)**

Prerequisite: Admissions into graduate intensive English program.

The primary goal of the course is to prepare international graduate students to write academic papers for a North American audience. Specifically, the course will focus on contrastive rhetoric, structure, conventions, organization, and documentation that is necessary when writing academic papers in a North American context. Students will learn how to revise, edit, and proofread their own papers, which will include a grammar review that is contextualized.

### **ENGL 502 - Academic Literacies Across the Curriculum for International Graduate Students (0 cr.)**

Prerequisite: Admissions into graduate intensive English program.

The focus of the course is to introduce students to academic sources from a variety of disciplines. Students will learn to summarize, critique, and synthesize the content that they read with their own ideas through discussion and writing. Awareness of academic language structures in various disciplines will be introduced as well as the appropriate use of sources when writing academic papers.

### **ENGL 503 - Discourse, Fluency, and Conversation for Graduate Students (0 cr.)**

Prerequisite: Admissions into graduate intensive English program.

The focus of the course is to enhance fluency in conversation in both academic and informal settings. Students will become aware of various discourses embedded in the culture so that they can interact effectively with native speakers in a variety of academic and informal settings. Strategies to enhance intercultural communication skills will also be emphasized.

### **ENGL 550 - Fiction Workshop (3 cr.)**

Prerequisite: Formal acceptance into graduate program.

What is the purpose of analyzing a form? Comprehension of the form. Before you can create in a given form, you must struggle to know it, and re-reading is the first step toward such knowledge. To this end, we will read and study the work of masters in the short story. We will read the 19 century master of the short story, Anton Chekhov, then leap forward to 20th and 21st century stylists.

This course is a hands-on workshop in which you will learn how a story is made by doing it. We will begin with stories written in first person, which allows for direct representation of inner consciousness, and move on to third person and the use of free indirect style, one of

most important aspects of fiction writing. We will work on how to balance dialogue and scene with exposition. We will discuss and analyze plot-lines, trace curves and arcs, try out alternate beginnings, find new endings, looking for the best shape to each your stories. And all along, you will practice writing a variety of sentences, from the simple to the complex, the interrupted to the periodic and labyrinthine.

### **ENGL 555 - The Craft of Fiction (3 cr.)**

Prerequisite: Formal acceptance to program.

This course, which will begin during each of the two yearly residencies, will be taught by a different visiting instructor/author each term. It is a class for writers, taught by writers, about the craft of writing. Students will perform close reading of exemplary literary work and look at how they are made. The class will ask questions about where the story begins, how this influences the writing, the important of the first line. The class will trace how the story is put together, how time passes, how character is presented, what kinds of sentences the writer tends toward, the texture her prose evokes, her disposition toward scene and narrative, how exposition she offers, and how much resolution. This craft seminar will serve as a complement to ENGL 550, Fiction Workshop. The course will begin in person during each residency and then will be taught on-line by the instructor/mentor over the course of two consecutive 11-week graduate terms.

The curriculum will be individualized to best meet the literary aspirations of the student. A narrative evaluation of the student's work will be given after each term along with a Pass/Fail grade.

The course can and should be repeated with each new residency and with new instructors/mentors who bring a new approach to the craft of fiction to the students.

### **ENGL 590 - Special Topics in Creative Writing (3 cr.)**

Prerequisite: Formal acceptance to program.

The topics for this course will be chosen based on expressed student interests as aspiring authors. The course, like the two core classes (Fiction Workshop and The Craft of Fiction), will begin during one of the two yearly residencies and then continue with on-line instruction with the instructor/faculty member based on an individualized curriculum.

Courses could focus on Creative Nonfiction, narrative poetry, or subgenres of the novel or short story, including (but not limited to) Young Adult Fiction, Crime Fiction, Fantasy, Science Fiction.

## FIN - FINANCE

### **FIN 612 - Business Analysis and Valuation (3 cr.)**

Prerequisite: AC 201 or the equivalent, FIN 214 or FIN 630, and proficiency with Excel.

The objective of this course is to provide hands-on experience in the analysis of financial and non-financial information, including developing understanding of its creation and use within the firm's economic and strategic environments. By the end of the course, students are expected to be well-versed in reading firms' financial statements and understanding how financial statement analysis can be used in a variety of business contexts.

**FIN 617 - Investment Theory (3 cr.)**

Prerequisite: FIN 630.

This course is an introduction to the investment process for households and the contractual intermediaries that serve them. Key outputs include the ability to assess the risk and return trade-offs of the major investment alternatives, and the ability to develop, implement, and explain asset allocation strategies.

**FIN 618 - Security Analysis and Portfolio Management (3 cr.)**

Prerequisite: FIN 617.

This course is an intermediate study of the investment process that introduces some of the more useful quantitative methods for portfolio management. Key outputs include the ability to apply mean variance, semi variance, duration, and convexity as measures of risk, to measure performance attribution, and to undertake fundamental security analysis at the company and industry level.

**FIN 630 - Managerial Finance (3 cr.)**

Prerequisite: AC 201 and FIN 214 or equivalent. Must be MBA, MBASP, MSA, MSATX, or MSAFF student.

This course examines how corporations benefit society by raising funds in the financial markets and employing them in productive activity. Key outcomes include the ability to apply the basic tools of ratio analysis, proforma analysis, time value of money, elementary security analysis, capital budgeting, and working capital management techniques to maximize owner value. Financial structure and capital risk management are also considered.

**FIN 650 - Advanced Financial Management (3 cr.)**

Prerequisite: FIN 630 or its equivalent.

This course discusses advanced topics in the financial operation of the firm. Conceptual tools are developed and applied to actual case problems faced by financial officers. Key output is the ability to analyze real-world situations where problems and solutions are not obvious and to develop strategies based on the concepts of FIN 630.

**HIST - HISTORY**

**HIST 520 - Documents of World and American History (3 cr.)**

Prerequisite: Restricted to MEEE majors.

This course will explore in depth the topics in world and American history contained in the elementary curriculum in the Massachusetts History Curriculum Framework. The focus of the course will be the reading and analysis of primary sources (documents, images, and material objects) with the aim of aiding teachers in achieving a deeper understanding of the material and methods to integrate it into their teaching and curriculum.

**MAET - FUNDAMENTAL STUDIES**

**MAET 552 - Advanced Grammar (3 cr.)**

This course reviews the rules and conventions of Standard Written English, with emphasis on the assessment and development of student writing.

**MAET 553 - Teaching Writing in the English Curriculum (3 cr.)**

This course covers principles of rhetoric, including both composition theory and the application of rhetorical principles to the evaluation and development of student writing

**MAET 554 - Teaching English in the Multicultural Classroom (3 cr.)**

This course focuses on the need to develop pedagogical strategies for the multicultural English classroom. Goals for the course are to develop an understanding of contrastive rhetoric, sociolinguistics, and cross-cultural communication in educational settings.

**MAET 556 - The Reading Process in the English Curriculum (3 cr.)**

This course applies the hierarchy of skills in the reading process to the English curriculum. Emphasis is on a) assessing needs and approaching remedies and b) developing skill in critical analysis of literature.

**MAET 560 - Literary Studies- Shakespeare and The Elizabethan Age (3 cr.)**

This course examines representative Shakespearean plays and the culture in which they were produced. Relevant historical documents from Elizabethan and Jacobean England are studied alongside the plays, and pedagogical techniques for the teaching of Shakespeare and English Renaissance culture are both discussed and practiced.

**MAET 561 - Literary Studies- Poetry (3 cr.)**

This is a comprehensive course, studying poetry with an eye towards teaching methods of interpretation. The class considers ways to make reading poetry more rewarding and enjoyable, but it also discusses questions of form and genre, meter and scansion, the use of historical and biographical approaches in tandem with close readings, the combinations of art and music with poetry, and philosophies of the purpose of poetry. Pedagogical techniques, especially creating assignments to help students understand and write about poetry from their own experiences in writing poems, are explored.

**MAET 563 - Literary Studies- Genres (3 cr.)**

Using selected texts from around the world, this course offers in-depth study of a range of literary genres and the conventions that distinguish them. Goals of the course include exploring how literary form reflects an author's purpose, how it shapes meaning, and how combining forms can uniquely express complex themes and issues. Genres studied are likely to include short stories, novels, plays, and memoirs.

**MAET 564 - Literary Studies- Cultural-Literary Connections (3 cr.)**

This course examines representative works from a period of literature and studies the culture in which they were produced. Pedagogical techniques for relating literature to cultural context or historical backgrounds are discussed. This course may be repeated for credit if the topic differs.

**MAET 565 - Literary Studies- Great Works of American Literature (3 cr.)**

This course examines major works from the range of American literature, along with a few lesser known works that are important for context. It introduces various tools for fundamental literary analysis.

### **MAET 566 - Literary Studies- Modern American Literature (3 cr.)**

This course examines works of the second half of the 20th century, with an emphasis on literature from representative American cultural groups.

### **MAET 567 - Literary Studies- Twentieth Century American Poetry (3 cr.)**

This course introduces students to a representative selection of modern American poetry from the mid 18th century to the present. The course will concentrate on the poetry of Dickinson, Frost, Stevens, Cummings, Hughes, Eliot, Lowell, Plath, and Collins. Students will also have the opportunity to explore the works of other poets through oral presentations and written reports and to reinforce knowledge of poetic techniques as stipulated in the Massachusetts Curriculum Frameworks.

### **MAET 570 - Seminar: Issues in The Teaching of English (3 cr.)**

The capstone seminar is an opportunity to reflect on how their coursework has impacted their teaching. The primary component of the "seminar", is the production of an article-length piece of literary scholarship. Students work with the chosen advisor in developing topics, which may or may not involve pedagogical issues, and in researching and writing their projects. The course concludes with the presentation of projects to all MAET students and faculty.

### **MAET 590-596 - Special Topics in MAET (1-3 cr.)**

Topics offered depend upon student interests as well as particular interest of instructors. The course is offered as often as faculty time and student interest permit. May be repeated for credit if topic differs.

## **MAMT - MATHEMATICS**

### **MAMT 540 - Calculus Revisited: Theory and Applications (3 cr.)**

A review of differential and integral calculus from single-variable to multi-variable with an emphasis on theory and applications. Topics include functions, limits, continuity, differentiation, integration, infinite sequences, and infinite series. Technology will be used when appropriate.

### **MAMT 542 - History of Mathematics (3 cr.)**

Although mathematics can be studied with little or no knowledge of its history, it would be a mistake to believe that history has no place in a mathematics classroom. Understanding how the early Greeks thought about such matters can only enhance the study of geometry. Understanding Book I of Euclid's elements can explain what motivated 19th century mathematicians to consider non-Euclidean geometry. We often ask students to experiment with integers, but rarely tell them that some of the greatest mathematicians became famous because of their work in number theory. Recalling that the origins of probability theory came from a correspondence between Pascal and Fermat regarding a gambling game can enliven the study of probability. This course will examine several of these important contributions from their beginnings and place them in a historical

context. The goal of the course is to make mathematics more meaningful to students and teachers because they will have seen mathematics from the moment of discovery.

Formerly MAMT 560

### **MAMT 543 - Linear Algebra (3 cr.)**

This course is the study of the topics and techniques of linear algebra. There are many real world problems in engineering, economics, and the sciences that can be reduced to solving systems of linear equations. In the course, we shall consider the problem of solving linear systems; we shall then study matrices and determinants and the role they play in solving linear systems. Then the course turns to the study of Euclidean  $n$ -space and linear transformations, eigenvectors and eigenvalues. The course will introduce one to mathematical modeling and its role in problem solving, as well as to an axiomatic approach to studying mathematics. Many applications will be considered throughout the course, and a TI-83 or TI-84 graphing calculator will be used extensively.

Formerly MAMT 562 Linear and Matrix Algebra

### **MAMT 544 - Creative Problem Solving in Mathematics (3 cr.)**

This course will discuss creative problems from all areas of mathematics. Students will learn problem-solving techniques, will combine some of the seemingly disparate parts of the mathematics background, and will gain an appreciation of new areas of mathematics, by looking at some of the fundamental questions that illustrate the key ideas. There will be emphasis on student presentation and analysis of solutions, and students will learn how to present mathematical arguments while developing their mathematical creativity.

Formerly MAMT 549

### **MAMT 545 - Cryptology (3 cr.)**

This course presents the history of and the mathematics behind the major developments in cryptography and cryptanalysis over the centuries. Symmetric ciphers such as monoalphabetic, polyalphabetic, and polygraphic are covered, as well as the modern-day public-key cryptosystem known as RSA. Emphasis is placed on gaining a deeper understanding of the mathematics used in these cryptographic methods and of the statistical tools for cryptanalysis.

### **MAMT 546 - Chance (3 cr.)**

This course focuses on quantitative literacy, using current events and how these events are reported in the media to examine fundamental statistical and probabilistic concepts. The goal of this course is to make us more informed, critical readers of current news stories, and to promote a deeper understanding of the probability and statistics that we are exposed to in everyday life. Potential current event topics include interpreting polls (including margin of error), scoring streaks, lotteries and randomness, medical research, false positives, economic indicators, statistics in the courtroom, and cancer clusters. To understand these topics fully, students will be learning aspects of graphical descriptive statistics, confidence intervals, probability, measures of central tendency and dispersion, basic combinatorics, hypothesis testing, conditional probability, sampling, correlation, linear regression, and more.

Formerly MAMT 551

### **MAMT 547 - Statistics (3 cr.)**

This course introduces statistical thinking in applied settings, with the goal of enabling students to use such thinking in their everyday lives. Topics may include: interpretations of probability, axioms and rules of probability, independence, random variables, distributions, graphical and numerical techniques for presenting data, experimental design, and significance testing. Emphasis is on understanding and interpreting, not on computations. A TI-83 or TI-84 graphing calculator will be used.

Formerly MAMT 558

### **MAMT 548 - What is Mathematics? (3 cr.)**

This course considers some of the greatest ideas of humankind—ideas comparable to the works of Shakespeare, Plato, and Michelangelo. The great ideas that will be explored are within the realm of mathematics. What is mathematics? Mathematics is an artistic endeavor which requires both imagination and creativity. Students will experience what mathematics is all about by delving into some beautiful and intriguing issues in such areas as topology, number theory, analysis, logic, graph theory, and probability. Although students will be challenged, the overriding theme of the course is to gain an appreciation for mathematics, to discover the power of mathematical thinking, and to have each student realize his or her own individual answer to the question "What is mathematics?"

### **MAMT 550 - Discrete Mathematics (3 cr.)**

This is an introduction to mathematical thinking with emphasis on finding patterns, making conjectures, and learning methods to solve problems and prove theorems. The topics include sets, relations, functions, the language of mathematics, exploration and proof, mathematical induction, cardinality, algorithms, and recursion.

### **MAMT 552 - Geometry Revisited (3 cr.)**

Most of us have studied the geometry of Euclid in a single secondary school course, but many new ideas have sprouted since his time. New topics will include transformations, isometrics, and vectors. Selected classical topics of angle measurement, length, area, volume, polygons, circles, spheres, and deductive reasoning will also be included. Breadth and problem solving will be emphasized over depth and theory.

### **MAMT 554 - Number Theory (3 cr.)**

Prerequisite: MAMT 550 or permission of the department.

This course explores patterns and relationships between numbers, beginning with basic properties of the integers first encountered in elementary school: even and odd numbers, clock arithmetic, and divisibility tests. Generalizations of these topics, such as modular arithmetic and congruences, will be covered, along with such topics as the Euclidean algorithm, prime factorization, the greatest common divisor, linear Diophantine equations, the Chinese Remainder Theorem, and Euler's phi-function.

### **MAMT 556 - Graph Theory (3 cr.)**

Prerequisite: MAMT 550 or permission of the department.

This course is a survey of the theory of graphs and digraphs. Fundamental concepts include paths, cycles, trees, connectivity, matchings, networks, tournaments, planarity, Hamiltonian graphs, Eulerian graphs, and graph coloring. Additional topics and/or applications may be covered depending on interest.

### **MAMT 561 - Probability (3 cr.)**

Prerequisite: MAMT 550 or permission of the department. Probability theory originated in games of chance during the late fifteenth and the early sixteenth centuries when Pascal and Fermat exchanged letters on the problem of points. In modern times, probability is typically coupled with statistics which requires a basic understanding of the subject, but this course will focus almost entirely on the pure probability side with reference to statistics in passing. The course begins with methods of streamlined counting known as combinatorics and move to discrete probabilities and then on to continuous probability models. There are many interesting, classic problems in counting and probability, especially the counterintuitive ones. As a check on analytical (theoretical) solutions to some difficult probability problems, students will use simulations on the calculator or computer. When appropriate, we will see how to introduce some topics to middle or high school students.

### **MAMT 564 - Analysis (3 cr.)**

Prerequisite: MAMT 550 or permission of the department.

After the discovery of calculus by Newton and Leibniz in the late 17th century, many advances in the solution of difficult mathematical and physical problems became possible. In the late 19th century and early 20th century, mathematicians attempted to put calculus and the study of real numbers on firmer logical ground. The course will follow that approach, emphasizing the important theorems and proofs that lead to a deeper understanding of the calculus. Topics will include sequences, limits, continuity, differentiation, integration, and the Fundamental Theorem of Calculus.

### **MAMT 566 - Algebraic Structures (3 cr.)**

Prerequisite: MAMT 550 or MAMT 554 or permission of the department.

Elementary algebra consists of sets of real numbers and their operations with properties such as closure, commutativity, associativity, distributivity, inverses, and identity elements. At the more abstract level, algebraic structures called groups, rings, and fields have some, or all, of the same properties. In this course, we will study these algebraic structures from a general point of view, compare different structures, and try to find relationships between them. We will also examine the applications of these structures in mathematics and the applied sciences.

### **MAMT 568 - Mathematical Modeling (3 cr.)**

This course is an introduction to mathematical modeling. The emphasis will be on learning to analyze a real-world situation or problem, in order to distill from it important information, and to learn mathematical techniques to encode this information in equation form, and then solve the equations, interpreting the mathematical solution back in the real-world situation. Topics covered will be selected from difference equations, Markov chains, graph theory, regression analysis, and linear programming, as well as other areas depending upon the interests of the students.

### **MAMT 570 - The Mathematics of Symmetry (3 cr.)**

Prerequisite: MAMT 550 or MAMT 554 or permission of the department.

The goal of the course is to learn the rudiments of basic Group Theory through the symmetry of planar designs, both finite and infinite. Emphasis is placed on using pattern and symmetry to motivate properties of groups and on gaining mathematical sophistication by studying and doing proofs about various properties of groups.

**MAMT 590-593 - Special Topics in Mathematics (if designated as non-core) (1-3 cr.)**

Topics offered depend upon student interests as well as particular interest of instructors. The course is offered as often as faculty time and student interest permit. May be repeated for credit if topic differs.

**MAMT 590-593 - Special Topics in Mathematics (if designated as core) (1-3 cr.)**

Topics offered depend upon student interests as well as particular interest of instructors. The course is offered as often as faculty time and student interest permit. May be repeated for credit if topic differs.

**MAN - MANAGEMENT****MAN 600 - Foundations of Leadership Practice (3 cr.)**

Prerequisite: Graduate standing.

This course provides an introduction to the development of individual leadership practice. This is accomplished through consideration of various theories and models of leadership as well as related skills and competencies. Key learning outcomes include: leadership models relevant to life and work; effective leadership techniques for organizational success; personal code of ethics; importance of followership to leadership; relevance of diversity to leadership.

Formerly "Leadership"

**MAN 605 - Leadership, Problem Solving and Decision Making (3 cr.)**

Prerequisite: Graduate standing.

Organizations need leaders at all levels with the capacity to identify problems and make decisions in the development and support of strategic and operational goals. This course examines the role of leaders in conjunction with different problem solving and decision making processes for creatively addressing organizational challenges. Key learning outcomes include: explain leadership's role in individual or organizational performance; generate alternative solutions to organizational challenges or opportunities; assess the strengths and weaknesses of both rational and intuitive approaches to decision making, explain a creative problem solving process, and identify ethical considerations in problem solving and decision making.

**MAN 610 - Organizational Behavior and Theory (3 cr.)**

Prerequisite: Graduate standing.

This course examines structural and behavioral factors influencing performance in organizations. Key learning outcomes include: integration of international and cross-cultural variables relating to OB and organizational theory; analysis of the behavioral aspects of existing organizational problems; structural aspects of organizational challenges; the relevance of individual, group, and organizational dynamics; and ethical issues and challenges in organizations.

**MAN 620 - Project Management (3 cr.)**

Prerequisite: Graduate standing.

This course presents the project management discipline and focuses on the factors necessary for achieving project success. The different roles and responsibilities of both business and technical professionals within the project framework will be explored with emphasis on the skill set required for effectiveness. Both traditional project life cycles and newer agile methodologies will be reviewed. Current trends in

business and project management will be covered including the significant impact of globalization.

**MAN 630 - Leadership and the Human Experience (3 cr.)**

Prerequisite: Graduate standing.

This course explores leadership and the human experience as it is depicted in fiction, biography, drama and film in order to better understand the historical and social construction of leadership theory and practice. Key learning outcomes include: an appreciation for the historical nature of leadership theory and practice, increased awareness of the value of literature and film in framing effective leadership practices; differences among successful and unsuccessful leadership styles; areas of strength and deficiency in personal leadership styles; humanistic principles in analyzing ethical conflicts in leadership and management situations; leadership/management challenges such as initiative, planning, and assessment of calculated risk-taking; decision-making utilizing non-traditional learning sources in everyday leadership opportunities.

Formerly "A Humanistic Approach to Leadership and Management"

**MAN 631 - Human Resource Management (3 cr.)**

Prerequisite: Graduate standing.

This course considers the management of human resources in an enterprise. Key learning outcomes include: managerial decision-making that recognizes the strategic role of HRM; legal issues associated with HR activities such as selection and compensation; effective hiring practices in training; setting and administration of compensation levels; effectiveness of pay for performance systems; performance appraisal systems; theories of job design; and the motivational impact of jobs.

**MAN 633 - International Management (3 cr.)**

Prerequisite: Graduate standing.

This course focuses on dynamic changes in international business environments and increased foreign competition that challenge managers. Key learning outcomes include international trade theories; foreign direct investments and barriers to international trade; economic, social, political, and technological issues and their impact on global companies; increased foreign competition and economic integration pacts; cost and benefits of global corporations; strategies and structures of global corporations; cultural and ethical issues related to global corporations; and issues of market expansion.

**MAN 640 - Management and Conflict Resolution (3 cr.)**

Prerequisite: Graduate standing.

This course provides an overview of the broad range of conflict situations that occur in organizations, including employee-relations issues. Key learning outcomes focus on conflict resolution processes including grievance procedures, alternative dispute resolution (ADR), and other conflict resolution strategies. Managerial practices and current trends are explored.

**MAN 642 - Leading Change (3 cr.)**

Prerequisite: Graduate standing or admission to leadership certificate program.

This course examines the nature of organizational change and the role of leadership in that process. Key learning outcomes include: understanding the nature of different change models, creating a common vision of change in an organization, the roles of organizational culture and organizational development in change efforts

**MAN 645 - Methods of Organizational Research (3 cr.)**

Prerequisite: Graduate standing.

This course introduces students to various quantitative and qualitative research methods used to study organizational life. The intent of the course is to provide students with an understanding of the underlying philosophies and approaches pursued by organizational researchers and different methodological approaches for investigating organizational research questions. Key learning outcomes include: different approaches to organizational research and their underlying philosophical assumptions, methodologies suitable for investigating different types of research questions, the meaning of important statistical indicators featured in quantitative analyses, the main features of different qualitative methods, and the ability to evaluate organizational research in published studies.

**MAN 647 - Applied Research Project (3 cr.)**

Prerequisite: Graduate standing, MAN 645 & MAN 680.

This course builds on the foundations of MAN 645 Methods of Organizational Research and MAN 680 Current Industry Issues to provide students with the opportunity to do original research on an organizational leadership topic relevant to the student's industry focus. During the course, students will identify a current issue suitable for study, develop the research design, conduct data collection, analyze data collected, and report their findings.

**MAN 651 - Ethical Leadership Practice (3 cr.)**

Prerequisite: Graduate standing or admission to certificate program.

This course focuses on the inevitable moral dilemmas and ethical responsibilities that face business leaders and addresses the basis for personal action. Students will use ethical frameworks to analyze actions of organizational members with respect to their stakeholders. Learning outcomes include: the nature of values conflicts, the role of reframing in ethical conduct, various options for correcting a course of action.

**MAN 652 - Contemporary Issues in Leadership (3 cr.)**

Prerequisite: Graduate standing or admission to certificate program.

This course examines current issues in leadership practice. Topics may include leading for creativity, leading for sustainability, leading in the electronic age, leading a diverse workforce, and leadership as it relates to particular industries or domains such as health care, non-profits, education, etc. Course content and topics will vary.

**MAN 680 - Current Industry Issues (3 cr.)**

Prerequisite: Graduate standing.

This course examines current issues within an industry. Industries offered depend upon student interests as well as faculty expertise. The course is offered as often as faculty time and student interest permit. May be repeated for credit if industry focus differs.

**MAN 690 - Special Topics in Management (1-3 cr.)**

Topics offered depend upon student interests as well as particular interest of instructors. The course is offered as often as faculty time and student interest permit. May be repeated for credit if topic differs.

**ME - MECHANICAL ENGINEERING****ME 610 - Measurement Systems (3 cr.)**

Prerequisite: ME 320, ME 435, or equivalent.

This graduate course is offered to mechanical engineering majors and is designed to familiarize students with electronic instrumentation and mechanical measurement techniques. Students will be able to make accurate and meaningful measurements of mechanical and thermal quantities such as strain, force, displacement, torque, pressure, velocity, acceleration, flow, volume flow rate, and temperature. Signal conditioning and data collection and reduction techniques are presented and the use of PC based data acquisition and control systems for automated data collection are emphasized. Case studies of practical significance or related to innovative sensor design and implementation are discussed and demonstrated. Each student will conduct an independent design project related to an area of mechanical testing or measurement and submit a final written report. The method of assessing students includes examinations, the project report, and a final exam.

**ME 619 - Experimental and Analytical Stress Analysis (3 cr.)**

Prerequisite: ME 208, MATH 350, ME 435, or equivalent.

This advanced course builds on the material presented in Mechanics of Materials course and develops the students ability to apply the principles of advanced mechanics of materials to problem solving while applying common experimental techniques for solution verification. The analytic studies will allow students to determine shear centers of composite sections; determine stresses and deflections of curved beams and beams on elastic foundations; determine deflection and slope in beams using Castigliano's theorem; determine stresses in thick walled cylinders; and determine stresses in initially curved and eccentrically loaded columns. The experimental studies include the basic theory and installation techniques of electric resistance strain gauges, photoelastic coatings, and applications of load and deflection measuring techniques. Applications of these techniques in the verification of analytical solutions is emphasized throughout the course. A project involving the use of analytical and experimental verification methods is required. Methods of assessing students include homework assignments, laboratory reports, quizzes, a midterm, and a comprehensive final exam.

**ME 620 - Applied Mechanical Design (3 cr.)**

Prerequisite: ME 425 or equivalent or permission of instructor.

This graduate level course is offered to engineering graduate students who have taken an undergraduate course in machine design. The course is conducted entirely off campus using the Internet and conference calling as the primary modes of delivery. The course is designed to build on concepts introduced in a senior level undergraduate machine design course and utilizes a series of design projects which apply the design theory presented in class. Topics include theories of static and fatigue failure; statistical techniques used to predict component reliability; extension, compression, and torsion spring design for static and fatigue loading; roller contact bearings and lubrication; clutches and brakes; and flexible drive systems. Design of complex components and assemblies, and the development of engineering product specifications is introduced, and

the impacts of social, economic, and material constraints on the design process are also considered. The methods of assessing students include a midterm and a final examination, and a number of machine design projects. A substantial final design project will be required by all students. Students will use advanced design principles to design and build a scale model which will be tested for performance. Testing of the model will be captured using avi files which will be submitted via Kodiak.

### **ME 626 - Applications of Advanced Fluid Mechanics (3 cr.)**

Prerequisite: ME 303, ME 316, and graduate standing.

This course covers a practical, hands on approach to applying complex fluid dynamic principles to solving real life problems, and to the development of new and novel products. Classical theory from Kuchemann, Prandtl, Schlichting, and Shapiro are used to introduce fluid concepts, fluid flow, vorticity, boundary layers, vortex motion, lift forces, and acoustic waves. These concepts are combined using potential flow, control volume analyses, and conservation principles to solve real life engineering problems. Discussions and engineering problem solving sessions will be an integral part of the classroom learning experience. Applications discussed will include throwing a curve ball, using wing surfaces as a means to gain mechanical advantage, using ejectors as thrust augmentors, and using toroidal vortices as self propelling fluid carriers. Case studies will include a Sikorsky UAV, Stage III Technologies ALMEC exhaust noise suppressor, and FloDesign's RAP nozzle. The methods of assessing students include homework, quizzes, examinations, classroom discussions, a design project, and a final exam.

### **ME 632 - Fundamentals of Flight (3 cr.)**

Prerequisite: ME 426, ME 447, or permission of instructor.

This course is an introduction to the fundamentals of flight, with a more advanced focus on engineering aspects of flight. Topics include basic aerodynamics of sub-sonic, trans-sonic and super-sonic flight, airfoil and wing design, airplane performance at various flight attitudes and conditions, and aircraft stability and control. Aerodynamic concepts discussed in the classroom are confirmed by conducting several laboratory experiments in a sub-sonic wind tunnel. A flight simulator is also used to demonstrate basic fundamentals of flight. The methods of assessing students include homework, quizzes, examinations, classroom discussions, laboratory experiments, a team-based aerodynamic design project, and a final exam.

### **ME 635 - Design of Alternative Energy Systems (3 cr.)**

Prerequisite: ME 417 or both ME 303 and graduate standing.

This course is an introduction to the theory and design of solar, water, wind, and geothermal power generation systems. Students will become familiar with flat-plate collector performance, practical considerations for flat-plate collectors, estimation of residential heating and cooling loads, and thermal design methods. A project involving the design of an energy independent home is assigned. The methods of assessing students include homework, quizzes, a midterm exam, design project report, and a final exam.

### **ME 640 - Materials Selection for Engineering Design and Manufacturing (3 cr.)**

Prerequisite: ME 309 or equivalent or permission of instructor.

The course will develop a systemic approach for the development of a new idea or product and facilitate the continuous improvement

processes for products currently on the market. The approach is based on evaluating open-ended design problems with respect to the interrelationship between material, shape, function, and processes used to produce a variety of products. In the course, the general characteristics of a wide variety of materials including metals, ceramics, polymers, and composites, will be explored using the materials selection process. Case studies and team projects will focus on materials selection decisions with multiple constraints and based on the factors involved in materials processing and information from several databases. The methods of assessing students include homework, quizzes, and design project reports.

### **ME 651 - Applied Computational Fluid Dynamics (3 cr.)**

Prerequisite: ME 304, ME 316, and graduate standing.

This course provides an introduction to the use of commercial Computational Fluid Dynamics (CFD) codes to analyze flow and heat transfer in problems of practical engineering interest. The course includes an introduction to the conservation equations of fluid dynamics and simple finite difference and finite volume models of one and two dimensional flows. These simple equations are used to demonstrate important features of more complex flows and to give the student an appreciation for the parameters that limit the accuracy of CFD solutions. The bulk of the course aims at using FLUENT which is a commercial CFD code, to solve engineering problems. Students learn the steps involved in performing a CFD simulations, i.e., generating a model, creating a grid, applying appropriate boundary conditions, specifying solution parameters, getting a solution, and post-processing the results for visualization. A brief introduction to turbulence modeling is also included. Students will then practice using FLUENT through solving practical flow problems such as pipe flow, jet flow, and flow over wings. The method of assessing students includes homework, quizzes, a midterm exam, design project report, and a final exam.

### **ME 654 - Computer Control of Manufacturing (3 cr.)**

Prerequisite: Graduate standing.

This is an introduction to NC systems. Topics include point-to-point positioning control and continuous path contouring control, interpolation methods, actuating devices and sensors, digital computer interfaces (A to D, D to A, D to D), position and velocity feedback control loops, and programmable logic controllers. The methods of assessing students include homework, quizzes, a midterm exam, design project report, and a final exam.

### **ME 655 - Design of Mechatronic Systems (3 cr.)**

Prerequisite: Graduate standing.

This graduate/undergraduate is intended to provide students with skills needed to design, model, validate, and control complete PC or PLC-based mechatronic systems, constructed with modern intelligent sensors, signal conditioners, pneumatic and hydraulic actuators, servo or stepper motors, PLC or embedded microcontrollers, and intelligent PID channels. Visual Basic is used for control and analysis of PC-based mechatronic systems.

Formerly ME 555.

### **ME 656 - Advanced Mechatronics (3 cr.)**

Prerequisite: Graduate standing or permission.

This course studies Mechatronics at an advanced theoretical and practical level. Balance between theory/analysis and hardware implementation is emphasized; physical understanding is stressed through various case-studies. Topics covered include: mechatronics

system design, modeling and analysis of dynamic systems, system identification techniques, vision-based measurement and inspection systems, analog and digital sensors and their interface to actuators and controllers, and real-time programming for control. Advanced motion control topics such as master/slave drives, electronic gearing and electronic CAM, adaptive tuning of PID controllers are discussed and demonstrated.

**ME 660 - Practical Aspects of Vibrations, Noise, and Acoustics Engineering (3 cr.)**

Prerequisite: Baccalaureate degree in mechanical engineering or permission of instructor.

In today's competitive environment every product designed by an engineer is subject to dynamic loads in sometimes harsh conditions. The product is likely to be more successful when vibration and noise performance of the design is optimized. This course provides a hands-on introduction to vibrations and noise engineering. The fundamental concepts of vibrations, noise, and acoustics are introduced. The characteristics of typical sensors and actuators used in dynamic testing, such as accelerometers, force transducers, strain gauges, microphones, mechanical shakers, and impact hammers, are reviewed. Using these sensors in combination with modern data-acquisition systems (LabView), students will learn to build experimental testing setups to measure the vibration and noise performance of typical engineering devices. Examples of practical applications are measurement of jet noise, measurement of vibration levels of devices, e.g. a ski, experimental modal analysis of structures, e.g., a golf club, and performing a noise control study of a machine. Several case studies encompassing contemporary design problems from industry are used in the classroom to enhance the learning process. The method of assessing students includes classroom participation, homework and laboratory assignments, examinations, and a final exam.

**ME 685 - Mechanical Engineering Project (3 cr.)**

Prerequisite: EMGT 605 or EMGT 648 and 12 credit hours minimum in the program.

Students must select a project faculty advisor and obtain topic approval prior to registration for this course. This is an independent engineering project under the supervision of a project faculty advisor. The design process is emphasized. Progress reports and a final written report are required. An oral presentation and defense of the project is made before a faculty committee.

**ME 690 - Special Topics in Mechanical Engineering (3 cr.)**

Cross-Listed as: ME 691

This is a study of an advanced topic in engineering of special interest to mechanical engineering majors.

**ME 698 - Thesis Research (3 cr.)**

Cross-Listed as: ME 699

This is a research course open to mechanical engineering graduate students who have completed requirements for admission to candidacy for the master's degree. Prior to registration, written permission to enroll must be obtained from the student's advisor.

**ME 699 - Thesis Research (3 cr.)**

Cross-Listed as: ME 698

This is a research course open to mechanical engineering graduate students who have completed requirements for admission to candidacy for the master's degree. Prior to registration, written permission to enroll must be obtained from the student's advisor.

**MK - MARKETING**

**MK 627 - International Marketing (3 cr.)**

Prerequisite: MK 640.

This course explores the management of marketing in a global environment. Marketing problems arising from various degrees of foreign involvement are considered. Emphasis is on the management of the marketing functions in a multinational context, i.e., international economic factors, foreign cultures, nationalism, government influence of national labor organizations, and the diverse common markets.

**MK 630 - Marketing Research Methodologies (3 cr.)**

Prerequisite: MK 640 and BIS 620.

This course includes examination, application, and utilization of quantitative research techniques to marketing problems and processes.

**MK 632 - Development and Marketing of New Products (3 cr.)**

Prerequisite: MK 640.

This course is designed to help the student appreciate the diverse environmental, managerial, and promotional aspects of product problems with emphasis on innovation in the product management process.

**MK 634 - Channels of Distribution Management (3 cr.)**

Prerequisite: MK 640.

This course involves the study of the management of channels of distribution. The application of concepts in an interorganizational setting is explored in both industrial and consumer goods' channels. "Place" strategy analysis is presented as part of the mainstream of marketing problem solving and decision making.

**MK 636 - Business to Business Marketing (3 cr.)**

Prerequisite: MK 640.

This course studies the application of the marketing mix to the development of marketing strategy by firms selling to business markets, and by marketing intermediaries marketing products to industrial users. The role of differentiation, pricing policy, service, and promotion in implementing the industrial marketing mix is emphasized.

**MK 638 - Marketing Planning and Strategy (3 cr.)**

Prerequisite: MK 640.

This course is an in-depth study of decision-making in marketing from the position of the chief marketing executive of a company or of a division of a large corporation. Emphasis is given to strategic marketing planning, managerial analysis of the marketing environment, market opportunity evaluation, and the design of marketing plans and programs consistent with the objectives of the organization and integrated with other functional segments of the enterprise.

**MK 640 - Marketing Management (3 cr.)**

Prerequisite: Must be MBA, MBASP, MSA, MSATX, or MSAFF student.

This course explores marketing management issues that challenge managers in today's organizations. The course focuses on the analysis, planning, and decision-making processes required of marketing managers to develop successful marketing plans and strategies. Interactive case studies and/or computer simulations are used to provide a dynamic learning environment. Topics studied include customer and competitor analysis, technological and regulatory issues, marketing plan development, product development, pricing decisions, promotion strategy, and distribution management. The course also integrates current issues facing businesses today including e-commerce, international, and ethics topics.

**MK 642 - Electronic Marketing: Issues and Strategies (3 cr.)**

This course studies electronic and Internet marketing. Electronic marketing is more than just creating a web page and selling merchandise online. It consists of a variety of tools and strategies that are new to many businesses. The course begins with a discussion of business process analysis in the effort to reorient a company's business processes to be customer value focused. From there strategies will be discussed for businesses seeking to enter the electronic commerce market. Discussions of current events and hot topics relevant to the e-economy will be on going throughout the semester.

**PSY - PSYCHOLOGY****PSY 501 - Principles of Behavior Analysis (3 cr.)**

This course will orient students to the concepts, processes, and scientific principles of behavior on which the field of applied behavior analysis was founded. Topics of study will include the history and defining features of applied behavior analysis as well as the role of basic principles in producing socially meaningful behavior change (positive and negative reinforcement, punishment, discriminative control of behavior, and motivating operations).

**PSY 502 - Behavioral Assessment (3 cr.)**

This course will provide an introduction to key concepts, methods, and ethical considerations associated with behavioral assessment. Course objectives will include teaching students to distinguish between idiographic and norm-referenced assessment approaches, to conduct pertinent behavioral assessments (preference assessments, functional assessments, and skills assessments), and to incorporate assessment outcomes with treatment selection and design in accordance with contemporary best practices in the field of applied behavior analysis.

**PSY 503 - Behavioral Interventions (3 cr.)**

This course will prepare students to identify, implement, and maintain effective behavioral interventions in applied settings. Specific objectives will include teaching students to select and implement function-based interventions for the reduction of problem behaviors, skills-based prevention strategies, and a variety of behavioral teaching tactics. Tactics for promoting procedural integrity and facilitating the generalization and maintenance of treatment effects will also be reviewed.

**PSY 504 - Autism and Related Disabilities (3 cr.)**

Prerequisite: Acceptance into the Certificate program in Applied Behavior Analysis.

The purpose of this course is to provide students with a foundation in etiological, diagnostic, ethical, and treatment-related considerations affecting services for individuals with autism and other disabilities. Topics of study will include current data on causal variables, issues in early identification, and a survey of evidence-based models of treatment, outcome evaluation, and effective systems support for individuals with pervasive developmental disabilities.

**PSY 505 - Methods of Evaluation (3 cr.)**

This course will equip students with skills needed to confirm the clinical efficacy of interventions by subjecting them to experimental evaluation using single-subject designs. Students will learn to develop valid and reliable systems for measuring behavior, to display data using popular and accessible graphing software, and to assess for orderly changes in behavior through visual inspection and interpretation of graphic data.

**PSY 506 - Evidence-based Teaching (3cr.)**

This course will provide students with a comprehensive review of empirically-supported behavioral teaching procedures for individuals with autism and related disabilities. Topics will focus on teaching skills in a variety of content areas such as language, social, and self-help. Procedures for teaching these include, match-to-sample discrimination training, task analysis, as well as prompting procedures including prompt fading and video modeling.

**PSY 507 - Theoretical Foundations (3 cr.)**

This course will provide students with a comprehensive review of the theoretical foundations of radical behaviorism and the history of behaviorism in psychology. The primary focus will be to outline the fundamental underpinnings of science of the individual. Students will be exposed to Skinner's theoretical writings, which will be compared and contrasted with contemporary conceptualizations of complex human behavior.

**PSY 508 - Verbal Behavior (3 cr.)**

This course will expose students to the basis for a functional analysis of human language with an emphasis on application. Topics will include the elementary verbal operants, the ways in which verbal behavior is established, the relevance of the behavior of the listener, and the organization of verbal behavior. Focus will be placed on the use of an analysis of verbal behavior in addressing socially significant problems.

**PSY 509 - Ethics and Professional Issues (3 cr.)**

Prerequisite: Graduate standing.

This course will orient students to the ethical and professional guidelines for Board Certified Behavior Analysts. The course will review ethical guidelines for assessment, treatment, and research. Students will learn to describe and apply professional and ethical guidelines specifying the Behavior Analysts' responsibility to their clients, colleagues, and field and to society.

**PSY 510 - Thesis Research (3 cr.)**

This course will provide the structure for conducting, writing, and presenting thesis research. Students will meet individually with the thesis advisor and will attend a general research meeting at least

monthly. Formal presentation and discussion of the dissertation research will take place during these research meetings.

### **PSY 511 - ABA Practicum I (2 cr.)**

Prerequisite: Acceptance into the Certificate program in Applied Behavior Analysis.

This practicum will involve at least 10 hours per week of work in a supervised clinical practice, educational, or research setting in which procedures based on behavior-analytic principles are implemented. Students will be supervised by a Board Certified Behavior Analyst, and supervision will consist of bi-weekly observations and weekly 1:1 or group meetings consisting of review of clinical cases, discussion of practice-related topics, and performance feedback.

### **PSY 512 - ABA Practicum II (2 cr.)**

Prerequisite: Acceptance into the Certificate program in Applied Behavior Analysis.

This practicum will involve at least 10 hours per week of work in a supervised clinical practice, educational, or research setting in which procedures based on behavior-analytic principles are implemented. Students will be supervised by a Board Certified Behavior Analyst, and supervision will consist of bi-weekly observations and weekly 1:1 or group meetings consisting of review of clinical cases, discussion of practice-related topics, and performance feedback.

### **PSY 513 - ABA Practicum III (2 cr.)**

Prerequisite: Acceptance into the Certificate program in Applied Behavior Analysis.

This practicum will involve at least 10 hours per week of work in a supervised clinical practice, educational, or research setting in which procedures based on behavior-analytic principles are implemented. Students will be supervised by a Board Certified Behavior Analyst, and supervision will consist of bi-weekly observations and weekly 1:1 or group meetings consisting of review of clinical cases, discussion of practice-related topics, and performance feedback.

### **PSY 514 - ABA Practicum IV (2 cr.)**

Prerequisite: Acceptance into the Certificate program in Applied Behavior Analysis.

This practicum will involve at least 10 hours per week of work in a supervised clinical practice, educational, or research setting in which procedures based on behavior-analytic principles are implemented. Students will be supervised by a Board Certified Behavior Analyst, and supervision will consist of bi-weekly observations and weekly 1:1 or group meetings consisting of review of clinical cases, discussion of practice-related topics, and performance feedback.

### **PSY 520 - 520-PSY 528 Supervised Practicum in ABA (1 cr.)**

This practicum will involve at least 10 hours per week of work in a supervised clinical practice, educational, or research setting in which procedures based on behavior-analytic principles are implemented. Students will be supervised by a Board Certified Behavior Analyst and supervision will consist of bi-weekly observations and weekly 1:1 or group meetings consisting of review of clinical cases, discussion of practice-related topics, and performance feedback.

### **PSY 529 - Thesis Research Continuation (1 cr.)**

Prerequisite: Graduate standing.

This course will provide the structure for conducting, writing, and presenting thesis research. Students will meet individually with the thesis advisor and will attend a general research meeting at least monthly. Formal presentation and discussion of the dissertation research will take place during these research meetings. This course is for students who have not completed the thesis requirement prior to earning 36 credits in the program.

### **PSY 560 - BACB Exam Preparation (1 cr.)**

This course will review the BACB task list and knowledge areas and provide practice opportunities for the Behavior Analyst Certification Board (BACB) exam.

### **PSY 590 - Special Topics in Applied Behavior Analysis (3 cr.)**

This seminar will conduct an in-depth review of a current topic in Applied Behavior Analysis. Topics may include but are not limited to: social development, behavioral pharmacology, ethical and professional issues, stimulus control, behavioral therapy.

### **PSY 610 - Professional Issues, Ethics, and Research Design (3 cr.)**

Prerequisite: Acceptance into Ph.D. program.

This course will (a) introduce students to the expectations of students within the doctoral program at Western New England University, (b) bring students into contact with the values and rules of behavior analysis and psychology through primary and secondary source writings on ethics and professional issues (e.g., submitting or reviewing original research), (c) allow students to apply these value systems to their own clinical, educational, and research endeavors via class discussion, (d) review the institutional review board processes and human subjects research guidelines, and (e) review the logic and ethical application of single-subject and traditional group designs.

### **PSY 620 - Experimental Analysis of Behavior (3 cr.)**

The course will provide the student with a thorough review of the development of the experimental analysis of behavior beginning with Watson and Skinner and continuing into the present. The focus will be on understanding the development of the field in elucidating general principles of behavior (e.g., reinforcement, extinction, shaping, respondent-operant interactions, discrimination, generalization, punishment and aversive control, etc.), paying particular attention to experimental and applied interactions.

### **PSY 630 - Descriptive and Inferential Statistics (3 cr.)**

Prerequisite: Acceptance into Ph.D. program.

This course will focus on interpretation and application of descriptive and inferential statistical techniques required for an understanding of data presentations in psychological research. The primary focus will include measures of central tendency and variability, frequency distributions and graphical presentations, the normal curve, probability theory, hypothesis testing, the t-test, analysis of variance (ANOVA), multivariate analysis of variance (MANOVA), multiple regression, and correlation.

### **PSY 640 - Quantitative Analysis of Behavior (3 cr.)**

Prerequisite: PSY 630.

The course will provide an introduction to the use of quantitative analysis in behavior analytic research and clinical practice. Topics will include statistical inference in behavior analysis; visual vs.

statistical analysis; hypothesis testing; effect size, power, and non parametric tests; and quantitative models of common behavioral phenomena. (e.g., choice, matching law, molar vs. molecular analyses).

### **PSY 650 - The Philosophy of Behaviorism (3 cr.)**

Prerequisite: PSY 620.

Behaviorism is the philosophy of the scientific approach to the study of behavior, including verbal behavior and private events. The approach holds that all behavior is a function of the interactions of ontogenetic and phylogenetic variables rather than hypothetical structures. This course focuses on the philosophies of methodological, radical, and cognitive behaviorism. The primary focus is on B.F. Skinner, his conceptual works, and his major critics.

### **PSY 705 - Early Intensive Behavioral Intervention (3 cr.)**

Prerequisite: Acceptance into Ph.D. program.

This course will focus on current research and practice in early intensive behavioral intervention (EIBI) for autism and related disorders. Best practices and evidence-based approaches will be identified and reviewed. Attention will also be paid to effective preschool design, home-based intervention for common pediatric problems, and factors influencing successful inclusion of children with disabilities in typical classrooms.

### **PSY 720 - Assessment of Severe Behavior Disorders (3 cr.)**

Prerequisite: Acceptance into Ph.D. program.

A brief overview of each of the three functional assessment methods currently in use will be covered (indirect or anecdotal methods, descriptive analysis, and functional analysis). After reviewing the defining characteristics, major procedural variations, strengths and weaknesses of each approach, the course will examine current research involving modifications and extensions of current functional analysis methodology and function-based interventions.

### **PSY 735 - Organizational Behavior Management (3 cr.)**

Prerequisite: Acceptance into Ph.D. program.

This course examines individual human behavior in organizations. The objective of this course is to teach students how to analyze organizational behavior and performance improvement techniques from a behavioral perspective; as well as to learn about common Organizational Behavior Management (OBM) and Performance Management techniques to improve performance in organizations. Topics include: the history of OBM, performance appraisal, performance diagnosis (measurement and assessment), behavioral systems analysis/metacontingency analysis, feedback, goal setting, rewards and monetary incentives, and the relationship between job satisfaction and performance.

### **PSY 740 - Developmental Psychology (3 cr.)**

Prerequisite: Acceptance into Ph.D. program.

This course will survey the history, philosophies, and theories of typical and atypical development with particular emphasis on early-childhood through young adulthood. The role of organismic and environmental variables in the development of motor, perceptual, social, emotional, and cognitive behavior will be-examined. The relation between development and education will also be covered.

### **PSY 750 - Advanced Verbal Behavior (3 cr.)**

Prerequisite: PSY 620.

This course will review the conceptual and empirical foundations of a functional-analytic approach to human language and cognition. This approach represents the underpinnings of a scientific analysis of language. Research on the elementary verbal relations, generative language, symbolic behavior, grammar and syntax, as well as applied research on language training will be discussed.

### **PSY 770 - Teaching in the College Environment (3 cr.)**

Prerequisite: Acceptance into Ph.D. program.

This course will focus on practical issues and methods for teaching in the college environment. It will focus on selection and use of teaching materials; course structure and development of instructional sequences; the role of lecture, discussion, and active participation; student evaluation and grading practices; and student motivation.

### **PSY 790 - Special Topics in Behavior Analysis (3 cr.)**

Prerequisite: PSY 620.

This seminar will conduct an in-depth review of a current topic in applied or experimental analysis of behavior. Topics may include: social skills and play behavior, joint attention, behavioral pharmacology, stimulus control and stimulus equivalence, relational frame theory, behavioral counseling, or behavioral medicine.

### **PSY 801-809 - Behavior Analysis Practica (1 cr.)**

This supervised practicum experience will involve at least 20 hours per week of field work in a supervised clinical practice, educational, or research setting in which procedures based on behavior-analytic principles are being implemented.

### **PSY 851-856 - Dissertation Research (3 cr.)**

Prerequisite: PSY 610.

This course will provide the structure for designing, conducting, writing, and presenting dissertation research. Students will meet individually with the dissertation advisor and will attend a general research meeting at least monthly. Formal presentation and discussion of the dissertation research will take place during these research meetings.

### **PSY 857 - Dissertation Research Continuance (1 cr.)**

Prerequisite: PSY 856.

This course will provide the structure for designing, conducting, writing, and presenting dissertation research. Students will meet individually with the dissertation advisor and will attend a general research meeting at least monthly. Formal presentation and discussion of the dissertation research will take place during these research meetings. This course is for students who have not completed the dissertation requirement prior to earning 54 course credits in the program.

## STUDENT SERVICES

### Undergraduate Student Services and Information

#### Learning Beyond the Classroom

Learning Beyond the Classroom (LBC) is one of the unique features of a Western New England University education. The concept of Learning Beyond the Classroom recognizes that learning can occur anytime, anywhere and not just within the classroom setting. Through involvement as well as reflection, students are encouraged to participate in the learning process. Other schools have experiences that students participate in, but few make deliberate attempts to make sure that these experiences are educationally purposeful.

At Western New England University, we encourage students to reflect on their experiences beyond the classroom in order to integrate their cocurricular and scholarly lives. We want students to understand that their complete experience here is an educational one and that their growth will be much more than one dimensional. It is our belief and practice that experiential learning deepens students' understanding of their chosen discipline, the field in which they will work, and the society in which they live. We seek to instill in our students a lifelong love of learning and are committed to providing every student with a Learning Beyond the Classroom experiences.

The Center for Civic Engagement educates students to be socially conscious, skilled, and committed to a just, diverse, and democratic community. The Center offers a wide range of community exchange initiatives, including Alternative Fall and Spring Breaks, Civic Engagement 101 Workshops, K- 12 Tutoring and Mentoring programs, American Reads, and Martin Luther King Jr. Days of Action. Through these initiatives, students are able to connect with their community, heighten their awareness of various social issues, discover the importance of civic responsibility, and gain skills to enhance their college experience and future careers.

#### Residence/Campus Life

**Living Facilities.** Students may live in a variety of accommodations, ranging from traditional residence halls to room suites with semiprivate baths to apartments or townhouse units with full kitchens and baths. Residence facilities serve as an integral part of the educational program. Students proceed through various types of residential facilities as they progress through their undergraduate programs. First-year students are normally assigned to traditional residence halls. Sophomores normally reside in either traditional or suite-style living units and, as space permits, the University's apartment complex. Juniors and seniors may reside in apartments or townhouse units.

All residence facilities are furnished with twin, bunk, or loft style beds, storage space (such as closets, free standing wardrobe units, or bureaus), desks, and chairs. Apartment and townhouse units are also furnished with kitchen appliances, a dining table, and living area furnishings. Information regarding services, laundry facilities, etc. is provided online, either as a link on the University's home page, or at [www1.wne.edu/residencelife/](http://www1.wne.edu/residencelife/). Assignment is largely determined by the student's housing preferences, class level, and demonstrated academic performance. Requests for university housing are honored depending on availability of facilities and fulfillment of application, payment, and assignment deadlines.

Each area within the residency complexes is staffed with a residence director, or residence manager, and several resident advisors. The residence director is a full-time professional staff member in residence, who oversees components of University housing

throughout the campus. Residence managers are typically graduate students who reside on campus and are responsible for the management of their particular residence hall or area. Resident advisors are full-time undergraduate students working directly with a specific living group. Residence Life is supervised by the assistant dean of students, two associate directors, an assistant director with support from an administrative assistant and student office assistants.

**Dining Services.** Food services are provided in the St. Germain Campus Center. A full service board plan offers students a variety of dining options. Resident students normally take their meals in the main dining room. The Campus Center food court provides a varied menu for commuting students including a la carte dining or late night snacks. Food service is available seven days a week while classes are in session. Students residing in traditional or suite-style units are required to participate in a comprehensive meal plan. Students residing in Gateway Village apartments, Evergreen Village, Southwood Hall, and commuting students may choose to participate in a variety of alternative meal plans, and may register online for the meal plan of their choice. Whereas first year students are required to participate in the full meal plan (20 meals per week), sophomores, juniors, and/or seniors assigned to traditional or suite-style housing may switch to a reduced meal plan option (any 14 meals per week). This may be done online as well.

Students may also purchase 'declining balance points' (DB) which function like a debit card and may be used at all dining locations and the campus center convenience store. All students may purchase DB points and may do so at Student Administrative Services.

Food Service professionals are available to assist with dietary concerns such as food allergies. Detailed documentation from a physician outlining specific food restrictions and/or needs, should be provided to the Office of Student Disability Services for consideration of an accommodation or exemption status.

**Campus Center.** The St. Germain Campus Center serves as a focal point for social, cultural, and leisure activities at the University. In addition to various recreational and dining facilities, it contains offices for student clubs and organizations, the University Bookstore, and a convenience store. It also contains an art gallery featuring monthly exhibits, a television lounge, and a variety of conference and meeting rooms. A game room provides other leisure time activities.

Most of the Student Affairs administrative offices are located on the second floor, allowing students easy and convenient access. These include the offices of the Vice President of Student Affairs and Dean of Students, Student Activities and Leadership Development, Residence Life, Learning Beyond the Classroom, the Career Development Center, Counseling, Drug and Alcohol Education, Spiritual Life, and Diversity Programs and Services. The Office of First Year Students & Students in Transition is located on the first floor. The University Bookstore, also located in the Campus Center, provides a complete textbook service. The store stocks a wide variety of paperback books, magazines, educational supplies, and sundry items. Assorted gifts, t-shirts, hats, athletic wear, and other items with the University name or emblem are also available.

**Rivers Memorial Hall.** The center of the building contains a carpeted area used for large programs and banquets. The perimeter includes space for the music program; the drama program; an arts and crafts area; and the student media including the newspaper, literature magazine, and the yearbook. The cultural center; gay, lesbian, bisexual and transgender resource room; and the campus radio station, as well as additional conference and meeting rooms are also available here.

## Student Assistance

**Student Administrative Services.** The Office of Student Administrative Services (SAS) combines the functions of billing and collections, financial aid, and records and registration. Student Administrative Services is designed to conveniently serve all clients of the University in one location by a team of student services administrators and specialists. Located on the ground floor of the D'Amour Library, the entrance to Student Administrative Services is on the south side of the building. The telephone number is 413-796-2080, and the fax number is 413-796-2081.

**Student Disability Services.** The Student Disability Services (SDS) office is designed to provide support for any student with a documented disability who requests accommodation. To register with the office students requesting these services must identify themselves and offer documentation substantiating a disability. Disabilities protected under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act include, but are not limited to, students with learning disabilities, perceptual disabilities, deaf or hearing impairments, blind or visual impairments, speech disorders, orthopedic impairments, and other health impairments. This disclosure and registration at the office is voluntary. However, registration in the office in a timely fashion is necessary to secure specific accommodations. All information, reports, and discussions are held in confidence, unless sharing necessary and relevant information is deemed appropriate. The coordinator, assistant director, and assistant dean of the Student Disability Services office work with the students and faculty to ensure that necessary services and accommodations are provided in a timely and efficient manner.

Specific requests for accommodations are reviewed and recommendations are made on a case-by-case basis. If students wish, they may arrange for individual appointments weekly or twice each month to review their courses, assignments, and accommodations, and, if needed, to review study skills, time management, and general organizational problems or concerns. The Student Disability Services Office is available to address related issues on disabilities as well as act as a referral source to other personnel on campus. Students are encouraged to visit the office early in the semester to access needed services and acquaint professors of their academic needs in a timely manner to receive full benefits of the services. The provost/vice president for Academic Affairs serves as the Section 504 officer on campus and is responsible for ensuring that Section 504 regulations are fulfilled in a reasonable and timely manner.

- **Permanent and Temporary Mobility Issues.** It is critical that, in the case of either a permanent or temporary mobility impairment, the Office of Student Disability Services (SDS) is notified immediately, so that classes can be moved to more accessible locations, and/or elevator keys can be provided as needed.
- Students with temporary conditions (e.g. broken leg, sprained ankle, emergency surgery) may obtain permission to park in more accessible spaces if they request this from Student Disability Services and provide a letter of verification from a doctor.

For more information visit our website at [www.wne.edu/sds](http://www.wne.edu/sds)

**Counseling Services.** Caring, licensed professionals provide confidential help to students with personal, social, and educational concerns. Common areas of concerns include adjustment to college, anxiety, depression, relationships and sexual orientation, eating disorders, substance abuse, sexual/physical abuse, and test anxiety. Services include individual, couple, and family counseling, as well as crisis intervention. We can provide a list of off campus therapists when requested.

Check out our website where you can take a self-help screening for depression, anxiety, substance abuse, eating disorders, PTSD, or bipolar disorder. You will also find more information about our staff, commonly asked questions, the Sexual Misconduct Advocate Response Team (SMART), and our Alcohol and Drug Education Services.

To make an appointment you may come to the Counseling Center in person or call 782-1221 during office hours, Monday through Friday, 8:30 a.m. to 4:30 p.m. We are located in the St. Germain Campus Center, Room 249.

**The Career Development Center.** The Career Development Center, [www.wne.edu/career/](http://www.wne.edu/career/) located on the second floor of the St. Germain Campus Center, offers a variety of career related programs, workshops, and seminars including classroom presentations in collaboration with the faculty to educate students on career development and strategy. The career staff implements the University's strong commitment to the development of the student's career decision-making by providing individual career advising and assistance in identifying career options, major and occupational exploration, and job search strategies to include conducting mock interviews, graduate school decision-making and internship placement. The Career Development Center, under the direction of the Division of Student Affairs, also collaborates with the Office of First Year Students & Students in Transition, the Office of Alumni Relations, and with student organizations to facilitate these activities.

The Career Development Center is dedicated to providing effective career planning and advising and has an exceptional staff of professional counselors to assist students in their career decision-making processes. Individualized career counseling and advising is available to all students by a career counselor assigned to the College of Arts and Sciences, the College of Business, and the College of Engineering. Students who have not officially declared majors are encouraged to utilize the services of our counselors who, through a variety of assessment inventories and exploration tools, will assist students in declaring a major.

Four different career planning guidelines are offered by the Career Development Center to students at each level of their college education, with the emphasis shifting from academic to professional. All students are advised to begin career planning by knowing themselves, exploring options, and building and expanding their skill bases. Academically, students are urged to explore interests through a variety of courses, identify potential majors that relate to their interests and abilities, and focus on academic success, time management, and study skills.

The University's internship program is coordinated by the career staff. This program adds value to a student's education by providing the opportunity to bring life to the theories and concepts learned in the class-room and apply them in local businesses, industries, and organizations. The benefits of the internship experience include a confirmation of the student's choice of career path, related job experience, networking opportunities, and greater time and stress management skills. Students also gain experience working as a team member in an environment with needs and problems that have real constraints and consequences.

All students are strongly encouraged to register with the CareerCenter Online at [www1.wne.edu/career](http://www1.wne.edu/career) a robust interactive career service management system. Once registered students can create profiles, manage calendars, make appointments with their career counselors, register with the Career Center Partners, upload résumés and other job search documents and look for internships and jobs including Federal Work Study, Institutional, summer, part-time, and full-time. Access to the CareerCenter Online continues after graduation as alumni of the University.

Other resources including web-based career guidance programs such as DoWhatYouAre and FOCUS II, job boards, and Internet sites relating to a wide variety of options provide students with the knowledge to make informed career decisions. The University's network of alumni can connect students with alumni actively employed in their fields and eager to share occupational information.

The career staff brings students in contact with employers through dynamic on-campus recruiting, employer information sessions, and career fairs. In addition, students are assisted with resources for part-time and summer employment. Students are directed to employment opportunities, internships, recruiting schedules, and workshops via social media, campus resources, and personalized emails and connections. The Career Development Center's effective combination of educational career programs and job search services is a valuable complement to a student's academic experience.

### Student Employment

The office of Human Resources, located on the second floor of the St. Germain Campus Center, administers the Student Employment program. There are three types of Student Employment opportunities: Federal Work Study, institutional, and also regular part-time employment with local companies.

#### *Student Employment–Federal Work Study*

The Federal Work Study Program provides funds for jobs for undergraduate students with financial need, allowing them to earn money to help pay educational expenses. The program encourages community service work and work related to each student's course of study. Federal Work Study Program is need-based and requires a completed financial aid application on file with the University. The Federal Work Study wages are partially funded by the federal government, which is why many University offices prefer to hire students who have an award. While a department may prefer to hire a student with an award, it does not mean that students without Federal Work Study awards cannot work on campus, as there are institutional and other jobs available. Federal Work Study funded jobs can be on campus or off campus. If a student works on campus, they will usually work for the University. If the student works off campus, the employer will be a not-for-profit organization or a public agency, such as a school system, and the work performed must be in the public interest. Western New England University has agreements with not-for-profit employers for Federal Work Study jobs, which must be judged relevant to the student's course of study to the maximum extent possible. Off campus jobs are with federal programs such as America Reads, the Community Service program, and with various not-for-profit organizations. Some Federal Work Study jobs involving direct and unmonitored contact with children do require criminal offender record information (CORI) checks.

#### *Student Employment–Institutional*

For students not receiving a Federal Work Study award, some University offices have institutional jobs available. Wages for institutional jobs are fully paid for by the University. Students typically need to identify the various offices they are interested in and inquire about job availability. It is important for students to promote their special skills such as using computer applications or having a current life saving certificate.

### *Regular Part-time Employment*

Many employers, such as restaurants, private companies, and shopping malls, are located within an easy commute from the University. The two private companies on-campus are ARAMARK, our food service provider, and Follett Corporation, which operates the Blue and Gold Bookstore. The Career Development Center (CDC) publishes an online weekly newsletter at [www.wne.edu/careercenter/newsletter](http://www.wne.edu/careercenter/newsletter) which contains many up-to-date job postings.

### *Getting a Job*

Jobs are posted with the Career Development Center Online. To view and apply for jobs, students must register online with the Career Development Center at [www.myinterfase.com/wne/student/](http://www.myinterfase.com/wne/student/) using their six-digit student ID number. Once the student's information has been reviewed by CDC staff, students will receive an email notifying them that their online profile has been activated. Students can then log into the Career Development Center Online to update their profile, upload a résumé, view and apply for jobs by following the application instructions, and save their searches as well as view their activity. Students who merely view and apply for jobs online or attend the Student Employment Fair will not be guaranteed that they will receive a job. Students must actively follow up with their potential employers. For further assistance, please contact Wendy Tietz, Student Employment Coordinator at [wtietz@wne.edu](mailto:wtietz@wne.edu) or at 413-782-1679.

### *Student Employment Job Fair*

A Student Employment Fair is held annually during First Week. In attendance are representatives from almost all University offices and departments which will be recruiting student employees. For students who did not receive a Federal Work Study award, area employers who typically offer part-time jobs will also be represented. Students will have an opportunity to speak with potential supervisors about the nature of the job responsibilities.

### Health Services

Health Services is a comprehensive health care facility located in the Center for Sciences and Pharmacy, suite 235.

The department is directed by a full-time certified family nurse practitioner and staffed with nurse practitioners, physician assistants, physician, clinical nurse specialist for mental health as well as a medical assistant/office manager. Health care is available Monday through Friday from 8:30am to 4:00pm.

During the academic year when Health Services is not available, students may use the on-call service for after-hour's consultation with one of the providers. For life threatening emergency Campus Police should be called.

Prior to the start of classes all full-time students are required to have on file with Health Services a medical history and a recent physical examination. A completed immunization record is mandatory including evidence of immunizations against measles, mumps, rubella, tetanus and diphtheria, hepatitis B series and meningitis vaccine. Immunizations may be evidenced by documentation or titer values. Attendance for classes is contingent upon the above requirements and this requirement is required once in the enrollment of the student.

Treatment rendered by Health Services is usually without charge with a few exceptions such as crutches. Students are responsible for financial obligations incurred for medical services these include laboratory fees, radiology charges, prescription medications and visits to off campus health care providers.

The Commonwealth of Massachusetts requires that undergraduates taking 9 credits or greater, or graduate students taking 7 credits or greater must either purchase insurance through the University or complete a waiver form on-line with pertinent information about their private insurer. This process is repeated every year of enrollment.

### Cocurricular Activities

Cocurricular activities are an integral part of student life at Western New England University. Such activities complement the more formal academic program inside the classroom. Significant emphasis is also placed on development of leadership skills. A regular series of leadership training programs is sponsored by the Student Activities and Leadership Development Office. Student Activities and Leadership Development also informs students about the myriad programs and activities which are offered on weekends of the academic year.

### Multicultural Interests

In support of the educational value attained through representation of various cultural backgrounds, the University recognizes the particular concerns of under-represented and international students. The University values and supports diversity and inclusion and recognizes that students work and live in a pluralistic society. In order to expose students to an increasingly complex world and to encourage respect for other cultures and people, a variety of programs are offered. Examples of current or past programs include a series on women's history, the celebration of black history, Latino history, world festival, and visiting artists of rich and culturally diverse heritages.

### Spiritual Life

Spiritual Life values the spiritual growth of its students as a vital part of their development, welcoming them to an atmosphere of dialogue and discussion that allows each to embrace a personal truth and to respect the truths of others.

The pastoral team reflects the diversity found within the campus community. The Rabbi, Protestant Minister, Roman Catholic Priest and Lay Minister create an atmosphere of welcome, celebration and understanding for people of all faiths. Special events include a monthly Luncheon, Shabbat and Holy Day Dinners, Interfaith Celebrations and Holy Day Masses.

The Spiritual Life joins the Cultural Liaison Office on campus to work with the Springfield Council of Churches, the Rabbinic Fellowship of Greater Springfield, Roman Catholic Diocese of Springfield and serves as a link to area Mosques, Churches, Temples and Synagogues.

### First and Second Year Program

#### *Mission Statement*

The Office of First Year Students & Students in Transition pays particular attention to creating a network of support persons whose intention involves proactive interaction with students in transition. Whether entering college as a first year or transfer student or moving on to the second year of study at the University, the Office of First Year Students & Students in Transition seeks to support students in

laying the foundation for success as well as in further defining a sense of purpose and direction in order to maximize the university experience. As an agent of change, the Office of First Year Students & Students in Transition functions in a culture of collaboration with each of the undergraduate schools and academic departments, student affairs staff, faculty, student leadership, and alumni. It espouses a student centered approach to program delivery. Students are always to be treated as the reason for any initiative.

Through intentional construction of a personal support network and sponsorship of educationally purposeful initiatives, the Office of First Year Students and Students in Transition prompts students to embrace intellectual change, acquire a sense of place, engage social connections, and develop educational purpose. As students move into the second year, support exists to encourage students to define a sense of purpose and direction, challenging students to recognize valued learning in and out of the classroom, discarding any notion of mediocrity in performance, so that full academic and personal potential can be obtained.

The Office of First Year Students & Students in Transition values individuality and diversity. It acknowledges that students enter college at varying developmental stages and with unique needs. We are committed to fostering highly personal and innovative delivery system in order to prompt students to identify a vision of their future, acquire the confidence to pursue that vision, set realistic goals, maintain motivation, and build academic and personal resiliency. We seek to move students from dependent to interdependent relationships. We emphasize interaction with faculty early in the student experience and characterize peers as highly influential.

#### *Goal of the First and Second Year Program*

The formula for success in the first phase of college appears simple: make friends, embrace the academic demands of college work, participate in activities, and seek out people who can help in times of need. The difference between a successful beginning and one which is less successful than anticipated can be related to something as simple as knowing when to get help or finding someone who will listen at times of distress. The program clarifies the simple tasks and attempts to make simple the more difficult tasks of college adjustment. The program challenges students to work to personal potential and to discard any notion of mediocrity.

#### *Program Objectives*

The First and Second Year program offers help in the following ways:

- Making students aware of services and resources
- Identifying and reforming a network of educational and emotional support
- Encouraging specific goals for academic, physical, and personal accomplishments
- Prompting involvement and participation in campus life
- Assisting in development of an educational plan and scheduling of classes
- Monitoring and encouraging academic progress and engagement
- Fostering awareness of the value of a college education
- Increasing student awareness of the responsibility of citizenship
- Building student confidence
- Clarifying career alternatives

### *Programs and Services*

Programs are always changing to remain current with student needs. In its present form, the First and Second Year program is focused on several elements which are believed to have educational value and purpose and which foster student success. Equally crucial is student participation. One of the most important variables in success is a student's willingness to take advantage of the support system. Without participation, program or advisor interaction is of little value. The following programs are designed to promote a successful adjustment to college life:

#### 1. Summer Orientation and Registration (SOAR)

Students and parents take part in a two-day, overnight program on selected dates through the summer months. The SOAR program is guided by principles of academic anticipation. During SOAR, parents and students reside on campus. Separate but complementary programs are held for students and parents. Student and parent needs are addressed through the first class meeting of First Year Seminar, academic information sessions, adjustment workshops, conversations with faculty, completion of course registration for the fall semester, initiation of a preliminary educational plan, completion of residency assignment information, and introduction to college life. An alternative orientation program is available for transfer students. Typically 94 percent of first year students choose to participate.

#### 2. Bear Tracks Program

Bear Tracks is an innovative pre-orientation program for first year students. It is intended to assist students in constructing a network of support that promotes self confidence to assist students in building identity in the Western New England University community while promoting confidence in the academic adventure. Students can choose from an Outdoor Adventure Track or an Urban Plunge Track. Each "track" features a three day, two night experience. The Outdoor Adventure Track allows students to participate with their peers in a series of team building and self-exploration activities in the great outdoors while the Urban Plunge Track affords students the opportunity to engage in service projects that will impact residents of the Springfield community.

#### 3. Transitions Program

Moving from an environment that has been relatively predictable and consistent to one that is as of yet undefined requires both realistic expectations and development of a network of support. The Transitions Program has been developed with these goals in mind. The programs encompass both multiple social opportunities for students who make up the learning community to associate and traditional events such as Fall Convocation, an academic assembly focusing on the purpose of higher education. Most importantly, the Transitions Program also introduces students to the network of persons who stand to serve in a mentoring capacity.

#### 4. First Year Seminar

All first semester first year students and transfer students with 27 or less completed college credits (AP or high school to college credit is not counted in the credit limits) are required to successfully complete a graded, credit bearing course focusing on critical thinking, discovery and confirmation of academic interests, oral presentation strategies, promotion of educational values, information literacy, and personal development. Many sections of the seminar also feature content relevant to a particular academic discipline. The seminar is taught by regular teaching faculty who also serve as students' academic advisors for the first two years of enrollment or until such time as a major is confirmed. Students may opt to request reassignment of the faculty advisor should the need arise. First Year Seminar is uniquely structured by each designated College. Credit values vary. Upper-class student assistance further distinguishes the course in the context of modeling and fostering academic integration.

#### 5. Summer Reading Assignment

All freshman students are assigned a selected reading for summer study in an effort to heighten awareness of college academic work and challenge students in critical thinking. Students are expected to begin the academic year fully prepared to discuss the summer reading assignment and to have completed the companion writing assignment. Reading and writing assignments are often linked to regular classes in English and First Year Seminar.

#### 6. College Success Coaching

The College Success Coaching Experience (CSCE) is a semester-long series of interactive academic success skills presentations and one-on-one coaching sessions. During CSCE sessions, students will discover their strengths, learn how to apply those in the collegiate classroom, and build academic confidence through the learning and application of academic success skills. The CSCE class focuses on skills that are used in all content areas, including time management, organization, communication, study skills, and test-taking skills. Students learn how to and are given guidance in applying those skills to their first semester classes. Class sections have a 1:20 Academic Success Coach to student ratio. The Academic Success Coach will conduct the class and mentor students during individual coaching sessions.

#### 7. Academic Progress Monitoring

There are two key indicators that serve to foster or inhibit academic success: class attendance and completion of out-of-class assignments. Both indicators are monitored through the first year. Regardless of any class attendance policy, it is well documented that students who regularly attend all class meetings succeed; those who choose to skip class do not succeed. When excessive absence patterns are noted, students are typically advised of the potential impact on progress.

At completion of the sixth week of classes, and at the end of the eighth week grades are calculated based on assignments completed to date. In progress grades are distributed to first year students through the assigned advisor. Second year students access grades online. Instructors are also encouraged to both express congratulations to those who have met notable success and concern for those who may be struggling. Specific suggestions for improvement and/or reasons for congratulations are then shared with student advisors.

At the end of each semester, student academic performance is formally reviewed to ensure reasonable progress. If students are below minimum standards, a formally structured academic success contract is required. Through the Academic Support Center, academic progress monitoring is put in place through a series of meetings during which continuous assessment of progress is made.

#### 8. Tutoring and Supplemental Instruction (SI)

It is quite normal for students to encounter subject matter which proves challenging. To support instruction, peer tutors are employed to assist students over the rough spots in mastering content and developing study strategies which match the type of course. Tutoring is typically offered on a short-term basis in many 100 and 200 level courses. Additionally, academic support is offered in certain high-risk courses through a program known as supplemental instruction. SI features organized study sessions coached through upper-class students who have previously taken the course.

#### 9. Life Skills Study Mentoring

The Life Skills Study Mentoring program is a unique collaboration between the Athletic Department and the Academic Support Center. It is based on the NCAA/CHAMPS Life Skills Program and strives to support student development and enhance the quality of the student-athlete experience. Life Skills Study Mentors monitor team sponsored study halls and conduct life skills workshops on goal setting, time management, effective study skills, and other topics that will assist

student-athletes in balancing their role on a collegiate varsity athletic team and in achieving academic success.

#### 10. Freshman Focus Program

The freshman focus program serves as an umbrella under which students can access particular opportunities for personal growth. Programs include the Student Activities Expo designed to acquaint students with clubs and organizations, thereby seeking to connect students to the life of the campus. Freshman focus programs also include workshops geared to students who aspire to leadership as “emerging leaders.” Students may also elect to take part in Freshman Council, an assembly of freshman students committed to building cohesiveness and respect for every first year student. Yet another dimension of the freshman focus program includes the development of student centered community expectations, a set of guiding principles governing student living and interaction. Finally, the freshman focus program provides the structure for formation of a personal development lecture series revolving around themes of life management and social consciousness.

#### 11. Celebrating Student Success

Student achievement is valued at Western New England University. Students can expect to hear from the dean of First Year Students and Students in Transition or Academic Support Center not only when there is concern, but also when academic and personal goals have been met. Recognition is likewise noted through the freshman honor society, Alpha Lambda Delta. Eligibility is determined by grade point average at the end of the first semester of full time enrollment or cumulatively at the end of the first year. Second year students are also eligible for election to the sophomore honor society.

#### 12. Alumni Mentoring Initiative

During the first year, students often find that there is lingering lack of clarity over academic and career direction. Formed as an extended part of the First Year program, volunteer alumni from the College of Engineering have been recruited and coached to offer mentoring partnerships which extend the range of the web of support characteristic of the First Year program. Students are assigned an alumni mentor through the first year engineering seminar. Mentors and protégés are brought together in a collaborative program with the Office of Alumni Relations and the College of Engineering. Students are encouraged to take advantage of the mentoring relationship through a series of relationship “prompts,” activities designed around a career development theme through which alumni can provide perspective and advice.

#### 13 Sophomore Career Connections Program

The Office of Alumni Relations, the Career Development Center, the Office of First Year Students and Students in Transitions and the College of Business have developed an exploratory program for our University sophomores. This program links an alumnus(na) or professional who is located in the Greater Springfield area that works in a field of interest to the student. The student can earn *Learning Beyond the Classroom* (LBC) credit for participating in this program.

#### Support in the First Year Transition

An alumnus of Western New England University described the First Year program as a web of support. The alumnus was describing the many options students have to identify a personal resource and mentor. A critical piece to solving the adjustment puzzle is to identify at least one person in an advising capacity who is accessible and interested in student success. In the First Year program, such identification is made easier by searching among a carefully constructed support network: While the second year requires more overt and intentional outreach, mentoring is no less important.

#### 1. Academic Advisor

Each student is assigned to a member of the faculty or professional staff to assist in the development of educational and career plans. Normally, the first year advisor is linked to the first year seminar instructor. Sophomores are typically linked to advisors based on academic discipline. Academic advisors are the principle resource regarding information on academic requirements and should be consulted prior to completion of course registration, and to review in-progress grades.

#### 2. Peer Advisor/Transfer Student Mentor

Each first year student is assigned to an upper-class student who is trained to serve as a source of information, point of first contact, and conduit to program and services. Most notably, peer advisors coach each student in the formation of the personal success plan and act as an advocate for student success. Transfer students are brought together through the efforts of yet another cadre of upper-class students who work to integrate and support those unique transitional needs.

#### 3. Faculty

Among the notable changes students encounter in college is the shift to assuming personal responsibility for learning. Faculty teaching in the first year and beyond are committed to student success and particularly respond to students who demonstrate a desire to learn. Students are encouraged to take advantage of faculty interest. Faculty further demonstrate their commitment to the quality of instruction in the first year through the existence of a faculty committee dedicated to the first year academic program and promotion of structured learning environments with high feedback.

#### 4. First Year Seminar Assistant

Assigned to each section of the First Year Seminar, upper-class students work with seminar instructors to mentor students in the development of academic skills and attitudes.

#### 5. Resident Advisor

Students of sophomore, junior, or senior standing are employed by the Residence Life Office to assist in the day-to-day management of the residence areas, and the development of group living-learning environments conducive to academic achievement and personal growth.

#### 6. Supplemental Instruction Leader

Within the context of academic programs, there are historically high-risk courses. In a number of such courses, upper class students serve to model and foster effective strategies for becoming a student of the discipline.

For further information about the First Year program, visit [www1.wne.edu/firstyear/](http://www1.wne.edu/firstyear/), or to solicit advice and counsel regarding educational or personal goals, students and parents are encouraged to contact the dean of First Year Students & Students in Transition.

#### Student Government

##### *Student Senate*

The Student Senate is the official voice of full-time students and is comprised of representatives from each class, representatives from each of the Colleges of Arts and Sciences, Business, and Engineering, commuter and resident representatives. Elections for most offices are held in the spring of each year. Fall elections are held for freshman representatives. The Student Senate serves as a liaison between students, faculty, and the administration of the University. In

addition, the Senate appoints representatives to sit on joint committees of the University Senate in order to encourage cooperation and to foster joint decision making. The Senate has as one of its major responsibilities the budgeting and administering of student activity fees in ways that will most benefit the University community, mostly through funding the 60+ clubs and organizations, class councils and major events such as Midnight Madness and Spring Event.

#### *Campus Activities Board (CAB)*

The Campus Activities Board is a standing committee of the Student Senate responsible for comedy programs, films, concerts, performing arts, recreation, and special traditional events. It is through this student organization that the majority of student programming originates. Particular emphasis is given to providing a full spectrum of programs encompassing both weekday and weekend schedules. Membership is open to any full-time student.

#### *Residence Hall Association (RHA)*

The Residence Hall Association provides a forum for self-governance and program development in the residence areas. Organized by elected student representatives from each of the residence areas, RHA provides coordination of hall councils that provide social, recreational, and educational programs. It also provides feedback to the University for improvement in the design and operation of the various residence areas. RHA is also a member of the North East Affiliate of College and University Residence Halls.

#### Student Organizations

##### *Clubs*

A variety of student organizations representing special interests, and often fostered by specific academic departments, offer students the opportunity to expand the range of participation in cocurricular endeavors and to enhance the academic experience. Examples of recognized student groups affiliated with academic departments include the Accounting Association, Forensic Sciences Club, Global Sustainability Club, Engineering World Health, Management Association, Sport Management Association, Criminal Justice Club. Particular student interests can also be pursued through such groups as the Cheerleading Club, Outing Club, Dance Team, Improv Comedy Troupe and Class Councils.

United and Mutually Equal (U&ME), International Club and the Gay/Straight Alliance are organizations serving the needs of an increasingly diverse student body. The goal of these organizations is to promote understanding, appreciation, and enthusiasm for diversity throughout the campus while providing a familiar and supportive community for international students and students of color.

##### *The Arts*

The University also offers students a range of activities in which to creatively express themselves. The Arts program has expanded its scope in the classroom to include additional practicum courses in vocal performance and theater history. The performance groups include Campus Chorus, Golden Bear Bands, and Stageless Players Drama Club. Local artists are asked to host Gallery talks as well as to display their medium in the Campus Center Art Gallery on a monthly basis. Students are also able to attend local and regional theater and music attractions. Students may visit the Springfield Quadrangle Art and Science Museums free of charge throughout the year.

The student musical groups perform at a variety of University and community events. The Golden Bear Band performs at home football and basketball games along with the Dance Team. The Chorus and Band host a showcase each semester. A Student Art show is often

featured in the spring in the Campus Center Art Gallery. A Fine Arts minor is now offered through the College of Arts and Sciences, [www.wne.edu/arts](http://www.wne.edu/arts)

#### *Publications and Communications*

*The Cupola* is the University yearbook. It is designed and edited by students. The editor and staff of *The Cupola* invite interested students to participate in its development and publication. *The Review of Art and Literature* is the University's student literary magazine. The purpose of *The Review of Art and Literature* is to celebrate creative student work in photography, literature, and prose.

The student radio station, WNEK, the voice is a fully web streaming station. Programming consists of news, music, public affairs, and sports. The station, located in Rivers Memorial Hall, is staffed and operated by students. The undergraduate student newspaper, *The Westerner*, is published twice each month. Interested students are encouraged to contribute articles and serve as staff members. All print media has placed either first or second in the American Scholastic Press Association competitions for two consecutive years. The *Student Handbook* contains information, procedures, and regulations governing student conduct, disciplinary procedures, programs, activities, and services. The *Student Handbook* is distributed each fall to all students. All students are held responsible for knowing its content and observing its behavioral guidelines and expectations.

*Golden Bear TV* is a student organization funded by Student Senate. GB-TV hosts talk shows; covers University events and athletics; and provides students with hands-on experience in broadcasting, filming, editing and on-air experience.

#### Professional Societies

**American Marketing Association (AMA).** Western New England University is home to one of the 400 collegiate chapters of the American Marketing Association. The mission of the Collegiate Chapters Division of the AMA is to be the world's leading professional student organization by furthering the professional development of students through leadership, training, and involvement in the field of marketing.

**American Society of Mechanical Engineers (ASME).** The Western New England University student section of The American Society of Mechanical Engineers was established for the purpose of advancement and dissemination of knowledge of the theory and practice of mechanical engineering, the presentation of a proper perspective of engineering work, and the opportunity to become acquainted with the personnel and activities of the Society, as well as the promotion of professional awareness and fellowship.

**Association for Computing Machinery (ACM).** Organized as a student chapter, the Association for Computing Machinery seeks to promote a working knowledge of computer science. Design, construction, and language of modern computing machinery are within the interests of the club. Additional goals of the chapter are to promote professionalism and ethical use of computing and information resources. Affiliate membership is offered to any student and full membership is likewise available, provided the student is also a member of the national organization.

**Biomedical Engineering Society (BMES).** The Biomedical Engineering Society is a national organization of biomedical engineers. The mission of the student branch of the BMES at Western New England University is to provide students the opportunity to learn about the field of biomedical engineering. Through participation in the chapter, students are exposed to the many diverse aspects of the field as well as opportunities for education and employment after graduation. The chapter accomplishes this mission through invited

guest speakers, plant and clinic tours, a trip to the Annual Meeting of the BMES, and a trip to the Annual Northeast Bioengineering Conference. Additionally, students are encouraged to submit papers into regional and national competitions sponsored by the BMES. Beyond these experiences, the chapter offers students opportunities for community involvement and social activity.

**Institute of Electrical and Electronic Engineers (IEEE).** The Institute of Electrical and Electronic Engineers is the world's largest professional engineering society. The Western New England University student branch provides the electrical engineering student with a means of establishing a sense of professional awareness and identity. It has proven itself to be valuable in helping students make important career decisions. It also provides students with a medium for entering student paper competitions at local, regional, and national levels. A strong tie exists between the local professional chapter and the student branch at the University.

**Institute of Industrial Engineers (IIE).** The objective of the Western New England University student chapter of the Institute of Industrial Engineers is to promote the profession of industrial engineering through affiliation with the national organization. Activities include discussion of professional opportunities; field trips to employment sites; research; and becoming acquainted with the ideals, purposes, and lifestyle typical of those in the profession. The student chapter brings the classroom experience to life.

**Society of Women Engineers (SWE).** The student chapter of the Society of Women Engineers was established to serve as a support group and provide career guidance to women engineering students. The student chapter of SWE sponsors panel discussions and lectures given by women engineers focusing on the special needs and problems of women engineers in industry. The students also attend seminars, mini-conferences, and meetings of the National Society of Women Engineers Hartford Section and Boston Section. The SWE chapter has also established a mentorship program with women engineers in local industry.

**Student Chapter of the Northeastern Section of the Mathematical Association of America.** The student chapter of the Northeastern Section of the Mathematical Association of America provides a forum for students to discuss and plan careers in mathematics and the mathematical sciences; to present student papers at the local, regional, and national levels; and to participate in a national problem-solving contest. Moreover, students are encouraged to attend mathematics conferences, subscribe to journals through the MAA, and to participate in many of the activities during Math Awareness Week each year. The chapter is established to expose students to many areas in mathematics and to all the career options open to mathematicians. Membership is available to any student who is a member of the national organization.

#### Honor Societies

**Alpha Kappa Delta.** Alpha Kappa Delta is the national honor society in sociology and a member of the Association of College Honor Societies. The Theta Chapter of Massachusetts was chartered at Western New England University in 1975. Students are nominated for membership through their faculty advisor on the basis of academic excellence and serious commitment to, and interest in, the study of society for the purpose of service to mankind. To be nominated, a student must have a 2.7 cumulative average and a 3.0 average in at least 12 credit hours of sociology and social science course.

**Alpha Lambda Delta.** Alpha Lambda Delta is a national honor society that recognizes academic excellence during a student's first year in college. The purpose of this honor society is to encourage superior academic achievement among freshmen and to promote

leadership early in the students' collegiate experience. Membership is open to all freshmen who earn a cumulative average of at least 3.5 either in their first semester of enrollment or in their first year of enrollment prior to initiation. No incompletes or failures can be on the record. To be eligible, students must be enrolled full-time in a degree program.

**Alpha Mu Alpha.** Alpha Mu Alpha is the national marketing honorary society for qualified undergraduate, graduate and doctoral marketing students, and marketing faculty. Under the auspices of the AMA, a selected advisory committee of marketing educators designed the recognition program to acknowledge outstanding scholastic achievement on a highly competitive basis. Honor recipients must be senior undergraduate students with a minimum overall GPA of 3.25, members of the Western New England University Marketing Association, and members of our Collegiate Chapter of the American Marketing Association.

**Alpha Phi Sigma.** Alpha Phi Sigma is the only Criminal Justice Honor Society for Criminal Justice Majors. Alpha Phi Sigma recognizes academic excellence; Students must maintain a minimum of 3.2 overall GPA and 3.2 GPA in criminal justice courses. The student must also rank in the top 35% of their classes and have completed a minimum of four courses within the criminal justice curriculum. The Honor Society is open to those with a declared criminal justice major or minor.

**Beta Alpha Psi.** Beta Alpha Psi is an honorary organization for Financial Information students and professionals. The primary objective of Beta Alpha Psi is to encourage and give recognition to scholastic and professional excellence in the business information field. This includes promoting the study and practice of accounting, finance, and information systems; providing opportunities for self-development, service, and association among members and practicing professionals; and encouraging a sense of ethical, social, and public responsibility. Our Mu Epsilon Chapter of Beta Alpha Psi was installed in January 2009.

**Beta Gamma Sigma.** Beta Gamma Sigma is a national honor society for business majors at schools accredited by AACSB International, the Association to Advance Collegiate Schools of Business. Students are selected from the top 7% of juniors, top 10% of seniors and top 20% of graduate students. Candidates must have completed at least one half of the work required for their degree, and have completed two terms' work at Western New England University.

**Lambda Pi Eta.** Lambda Pi Eta is the official communication studies honor society of the National Communication Association (NCA). As an accredited member of the Association of College Honor Societies (ACHS), Lambda Pi Eta has nearly 400 active chapters at colleges and universities worldwide. The goals of Lambda Pi Eta are to recognize, foster, and reward outstanding scholastic achievement; stimulate interest in the field of communication; promote and encourage professional development among communication majors; provide an opportunity to discuss and exchange ideas about the field; establish and maintain close relationships and understanding between faculty and students; and explore options for further graduate studies.

**Mortar Board.** The Mortar Board is the senior honor society at Western New England University. The society is open to those students who have demonstrated both academic excellence and leadership both on campus and in the community. Students in the top 35% of the Junior Class will be considered eligible for the Society with the membership being selected by the existing members of the previous year. The Mortar Board Society hopes to recognize student achievement, while also serving as a focal point of planning and collaboration for senior leaders.

**Omicron Delta Kappa.** Omicron Delta Kappa, the National Leadership Honor Society, was founded in 1914 at Washington & Lee University in Lexington, VA. The founders formulated the idea that leadership of exceptional quality and versatility in college should be recognized; that representatives in all phases of college life should cooperate in worthwhile endeavors; and that outstanding students, faculty, and administrators should meet on a basis of mutual interest, understanding, and helpfulness. ODKAE was the first college honor society of a national scope to extend recognition beyond the formal classroom and give recognition and honor for meritorious leadership and service in extracurricular activities and to encourage development of general campus citizenship. Chapters, which are called Circles, are located on over 300 campuses throughout the nation. The Circle of ODKAE at Western New England University recognizes achievement in the following five areas:

- Scholarship
- Athletics
- Campus/Community Service, Social/ Religious Activities, and Campus Government
- Journalism, Speech, and the Mass Media
- Creative and Performing Arts

Nominations are taken each fall and spring from all segments of the campus community.

**Phi Alpha Theta.** Phi Alpha Theta is the national honor society in history. Its mission is to promote the study of history through the exchange of ideas and the encouragement of research, teaching, and publication. To be considered for membership, a student must have completed at least 12 hours in history (four courses), have a GPA of at least 3.1 in history, have a GPA of at least 3.0 overall, and be in the top 35 percent of the entire class. Membership is not limited to history majors.

**Pi Sigma Alpha.** Pi Sigma Alpha is the national political science honor society. Students majoring in political science, public administration, and international relations who attain high standards of scholarship and academic distinction in political science and in their overall academic programs are invited to membership. Membership is conferred on the basis of academic merit alone.

**Psi Chi.** Psi Chi is the national honor society in psychology, an affiliate of the American Psychological Association, and a member of the Association of College Honor Societies. Organized in five regional divisions with more than 300 active chapters, Psi Chi recognizes the academic achievement of students who meet or exceed exacting eligibility standards. The purpose of Psi Chi is to advance the science of psychology, and to encourage, stimulate, and maintain scholarship. To be nominated a student must be a declared major or be enrolled in the minor program in psychology, have completed three semesters of college study, and maintained a 3.0 cumulative grade point average and a 3.0 grade point average in at least nine credit hours of psychology courses.

**Sigma Tau Delta.** Sigma Tau Delta's central purpose is to confer distinction upon students of the English language and literature in undergraduate, graduate, and professional studies. Sigma Tau Delta strives to confer distinction for high achievement in English language and literature in undergraduate, graduate, and professional studies; provide, through its local chapters, cultural stimulation on college campuses and promote interest in literature and the English language in surrounding communities; foster all aspects of the discipline of English, including literature, language, and writing; promote exemplary character and good fellowship among its members; exhibit high standards of academic excellence; and serve society by fostering literacy.

**Sigma Beta Tau.** Sigma Beta Tau, also known as the Society of the Blue Triangle, is The College of Engineering alumni honor society. Western New England University graduating engineering seniors whose academic work has consistently been of honor quality and have a GPA of 3.3 or greater is eligible for membership. Members of Tau Beta Pi may be invited to join Sigma Beta Tau.

**Tau Beta Pi.** Tau Beta Pi is the national honor society for engineering. Outstanding juniors and seniors inducted into Tau Beta Pi receive national recognition for their academic and professional achievements. Student members of Tau Beta Pi are also invited to join the local engineering honorary, Sigma Beta Tau, which has an active alumni group.

#### Athletics

##### *The Alumni Healthful Living Center*

The Alumni Healthful Living Center is an athletic and recreational facility designed to address the University's concern for students' well being. The Center offers programs in health services and education, recreational activities, and physical education. The University's intercollegiate and intramural programs are conducted there. Facilities for these activities include a basketball court; an eight-lane swimming pool; indoor track; wrestling room; courts for racquetball, handball, squash, and tennis; a studio for aerobics and dance; a Wellness Center; two weight rooms; and a multipurpose field house.

##### *Intercollegiate Competition*

Western New England University offers a varsity intercollegiate program for both men and women in a wide variety of sports. Currently, varsity teams are fielded in baseball, basketball, cross country, football, golf, ice hockey, lacrosse, soccer, tennis, and wrestling for men; basketball, cross country, field hockey, lacrosse, soccer, softball, swimming, tennis, and volleyball for women. As active members of NCAA Division III and The ECAC, Western New England University belongs to The Commonwealth Coast Conference for most sports. The Golden Bears strive for athletic excellence.

##### *Other Opportunities*

The University's variety of sports offered is based on student interest. The objective of the intramural program is to promote healthy and vigorous physical activity for participating students. Equipment and supervision is provided by the University.

#### ROTC

The University offers both Army and Air Force Reserve Officer Training Corps (ROTC) programs. The Army ROTC (p. 21) program is located on campus with a full-time staff. Air Force ROTC (p. 21) is through the University of Massachusetts at Amherst. Freshman and sophomore ROTC classes are open, with no obligation, to students interested in the development of leadership, study skills, and outdoor skills. Further ROTC training can lead to a commission as an officer in the Army or Air Force with service in the National Guard, Reserves, or on Active Duty.

Scholarships, which are merit-based and provide funds for two or three years, are available. For further information, see the Financial Aid section of this catalogue. Any Army ROTC student who desires a commission in the National Guard or Army Reserves can obtain a guaranteed reserve forces duty scholarship.

The University encourages students who are interested in the ROTC programs to confer with ROTC staff to determine eligibility requirements.

### Standards of Behavior and Student Accountability

In order to assist students in determining a framework in which to measure the acceptability of daily living activities, a code of student conduct has been formulated. This document was endorsed by the Student Affairs Committee of the Faculty Senate, the Student Senate, and the Graduate Council and approved by the Board of Trustees. The Student Conduct Code is to be referenced in the adjudication of the student disciplinary process. The Standards of Behavior and Student Accountability contain specific information on such things as the use of alcoholic beverages; hazing; student organization membership requirements; right of peaceful assembly; possession, use, or distribution of drugs and narcotics; use of campus facilities; respect for a multicultural population; and sexual harassment. Students are urged to familiarize themselves with the responsibilities outlined therein.

The Student Conduct Code for both undergraduate and graduate students is in the student handbook, which is available in the Office of the Vice President for Student Affairs and the Dean of Students' website, <http://www1.wne.edu/studentaffairs/?dropmenu=parents>.

## EXPENSES AND FINANCIAL AID

### Tuition

#### Undergraduate

*Full-time Students Matriculating After 5/1/03*

(12 hours or more per semester)

#### Basic Annual Fees (2015-2016)

	Arts and Sciences/Business	Engineering
Tuition (12-17 credit hours per term)	\$31,730.00*	\$33,160.00*
Student Activities Fee	\$300.00	\$300.00
Comprehensive Services Fee	\$2,000.00	\$2,000.00
Tuition and Fees	\$34,030.00	\$35,460.00

#### Residential Fee

Room (two occupants) and Board	\$12,894.00	\$12,894.00
<b>Total</b>	<b>\$46,924.00</b>	<b>\$48,354.00</b>
Health Insurance Fee (subject to waiver)	\$ 2,365.00**	\$ 2,365.00**

\*Students who select programs of more than 17 credit hours are charged at a rate of \$1,058.00 per credit hour for each credit hour over 17.

\*\*Fiscal Year 2014-2015 rate.

*Tuition and fees for the first semester are due and payable by August 1. Second semester tuition and fees are due and payable by January 2. In order to avoid unnecessary delay at the time of registration, all students are advised to remit payments by mail prior to the due dates.*

#### Part-time Students – Undergraduate

(Less than 12 hours per semester)

Tuition per credit hour (2015-2016)	\$598.00
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#### Graduate Students

#### Graduate students are charged per credit hour as follows:

Tuition per credit hour (2015-2016)	\$784.00
MAET	\$1,023.00 per course
MAMT	\$1,023.00 per course
MEEE	\$1,023.00 per course
Engineering Tuition	\$1,048.00 per credit
Ph.D.	\$1,249.00 per credit

#### Pharmacy Students

#### Basic Annual Fees (2015-2016)

Tuition	\$39,060.00
Pharmacy Supplemental Fee	\$684.00
Comprehensive Service Fee	\$1,362.00

Student Activities Fee	\$200.00
Health Insurance Fee (subject to waiver)	\$2,365.00**

\*\*Fiscal Year 2014-2015 rate.

### Fee Structure

#### All Students

**Application Fee.** The University application fee of \$40 must accompany the initial application for admission. This fee is not refundable.

**Laboratory Fees.** Laboratory fees are required for some courses and are indicated in the course descriptions. The charge covers the use of laboratory equipment, machinery, chemicals, supplies, computers, and business machines. The laboratory fees are payable at the time of registration and are not refundable.

**Transcript Fee.** As of 7/1/2014, there will be a transcript fee of \$7.00 per transcript.

#### Full-Time Students

**Comprehensive Services Fee.** The Comprehensive Services Fee covers some of the costs associated with the Alumni Healthful Living Center, Campus Center, health services, counseling, placement services, technology fees, and other support activities at the University. The fee is \$1,000.00 per semester for full-time undergraduate students.

**Health Insurance Fee.** The University makes available a general health insurance program provided by an outside carrier. This program is optional. Coverage begins at the start of the school year and continues for 12 months. The fee for this program appears on the statement of charges, and, if a student elects not to participate, the waiver card included with the statement must be returned to the Health Services Office. See the section entitled “Immunization Requirements” in the “Legal Matters” chapter of this volume for insurance requirements necessary for registration.

**Student Activities Fee.** Each student, by vote of the Student Association and endorsement of the Student Senate, is assessed \$150 per semester as a Student Activities Fee. Payable at the beginning of each semester, the fee is not refundable. Funds derived are allocated through the Student Senate and provide the principal source of funding for social and cultural programming, traditional events such as Winter Weekend; student clubs and organizations; student publications such as the newspaper and yearbook; and the radio station. The Student Activities Fee also supports publication of the *Student Handbook* and allows for cooperative funding of such programs as new student orientation, minority and international student groups, and Family and Friends Weekend.

#### Residential Fees

University housing is available for full-time students, both men and women, in a variety of living styles. Annual room and board fees for the 2015-2016 academic year for each student are as follows:

Double Occupancy/ 20 meal plan	\$12,894.00
Gateway Apartments	*\$7,254.00
Evergreen Village	*\$10,034.00
Southwood	*\$10,274.00

\*Room fee only.

**General Housing Policy:** To be considered for residence in University housing, the student must be actively enrolled at the University as a full-time, undergraduate degree candidate. Student housing is assigned for the full academic year, unless the student is graduating or withdrawing from attendance at the University, or provides notification, as required, of his/her intent to live off campus. Since campus residency is optional at the University, residency related charges are applied to a student's account only after (s)he has initiated a request for accommodations through the provision of a nonrefundable, nontransferable housing verification payment and fully completed the housing selection process.

**Payments and Billing for Campus Residency:** The procedure differs for incoming and currently matriculating students, as follows.

For incoming students, the housing verification payment (to the amount of \$300.00) is due immediately upon notification of acceptance from the Admissions Office or as otherwise defined by the University. Following receipt of this payment, the student will be billed the residency fee (room and board) as an anticipated resident student. Receipt of this payment also authorizes student-initiated participation in the online housing selection process, known as Housing Management Application (HMA). To confirm campus residency, the Student is responsible for completing all components of the online process. Otherwise, the University presumes the student has made other arrangements for accommodations as a commuter.

Currently matriculating students are expected to provide the housing verification payment (to the amount of \$500.00) by the application deadline. This is a non-refundable, non-transferable payment. Receipt of this payment authorizes student-initiated participation in the online housing selection process, known as Housing Management Application (HMA). To confirm campus residency, the student is responsible for completing all components of the online process. Otherwise, the University rightfully presumes the student has made other arrangements for accommodations as a commuter. Any student who submits this payment late will be placed on a waiting list and will choose his/her housing on a space available basis after students who submitted their housing verification payment on time. Proper submission of the housing verification payment and completion of the HMA process will result in the appropriate residency fee (room and board charge, if applicable) billed to the student's account with the University.

**Withdrawal from campus residency resulting in commuter**

**status:** The University presumes the student is in residence unless (s)he notifies the Residence Life Office, in writing, to the contrary. Written notification must precede other components of the check-out process, such as relinquishment of the key issued at the time of occupancy and/or completion of the room condition record.

1. 2015 Fall Semester: If the student notifies the office of his/her decision to commute by the deadline stated in the Resident Student Housing Agreement (written correspondence received as of this date) then all room and board charges for the fall semester except the housing verification payment will be credited to the student's account. However, if the Student notifies the office, in writing, of his/her decision to commute after this deadline, all room and board charges for the fall semester will be required to be paid in full by the student.
2. 2016 Spring Semester: If the student notifies the office of his/her decision to commute by the deadline stated in the Resident Student Housing Agreement (written correspondence received as of this date) then all room and board charges for the spring semester except the housing verification payment will be credited to the student's account. However, if the student notifies the office, of his/her decision to commute after this deadline, all

room and board charges for the spring semester will be required to be paid in full by the student.

**Complete withdrawal from the University:** All room and board charges except the housing verification payment will be credited to the student's account if (s)he has officially withdrawn from the University prior to the first day of classes for the 2015 fall semester or 2016 spring semester.

All rates are for occupancy on a semester basis and are not refundable or transferable fees. Status as a full-time student must be maintained through mid-semester to qualify for university housing. Failure to meet the established payment deadlines releases the University from any obligation to maintain the housing reservation.

Normally, University residence units must be vacated during regularly scheduled vacation periods. At the close of the academic year for which residency has been authorized, all of the student's personal property is to be removed from the premises and the appropriate checkout procedure is to have been completed. Items left behind shall be considered abandoned and disposed of by the University.

University insurance does not cover any personal property. Students will want to provide coverage through their own or parent insurance program in the event of fire, personal loss, etc.

**Residence Hall/Area Damage Deposit.** Students are required to leave their living space in good order when departing from the University. A damage deposit of \$100 per student is required of all resident students. Damages are charged against occupants when necessary. This deposit is refundable at the end of the senior year or on withdrawal from the University. The refund will be based upon the condition of the living space at the time of departure.

**Board**

Students residing in traditional or suite-style units are required to participate in a comprehensive meal plan. Students residing in Gateway Village apartments, Evergreen Village, Southwood Hall, and commuting students may choose to participate in a variety of alternative meal plans. Individual meals are also available on a cash basis. Meal points may be purchased in a variety of denominations and can be used for any food service on campus.

No meals are served during regularly scheduled vacation periods.

On a 20-meal plan, the board fee for the 2015-2016 academic year is \$6,090.00.

Board fees are billed on a semester basis and are due and payable by August 1 for the fall semester, and January 2 for the spring semester. Board fees are not refundable either in whole or in part. Food Service professionals are available to assist with dietary concerns, such as food allergies. Detailed documentation from a physician, outlining specific food restrictions and/or needs, should be provided to the Office of Residence Life. An opportunity will then be coordinated to review specific dietary concerns with personnel in Food Service.

Students who fail to follow this process, regardless of its outcome, are not relieved of financial obligations.

**General Financial Information**

Checks or money orders should be made payable to Western New England University. If sent by mail, they should be addressed to Student Administrative Services.

The Trustees of the University reserve the right to change tuition rates or fees whenever it is deemed necessary.

Students are not permitted to attend any University exercise or class session until they have complied with all regulations concerning registration and have satisfied all financial obligations or made satisfactory arrangements for payment with Student Administrative Services.

All financial obligations to the University must be met before a student may qualify for re-enrollment, a certificate of honorable dismissal, a transcript, or a diploma. The University retains the right under Title IV regulations to withhold student's transcripts because of delinquent loans.

Tuition and fees are due and payable by August 1 for first semester, by January 2 for second semester, or at the time of registration unless arrangements have been made for payments as described in the sections on Prepayment Plan, Tuition Paid by Employers, or Employer Extension Plan.

**Auditing** . There are no special rates for auditing a class. Students granted permission to audit a course must pay the regular tuition and fees which apply to the course.

#### Acceptance Deposit

Candidates for full-time admission or readmission, upon receiving final notice of acceptance from the director of admissions, are obliged to forward a nonrefundable acceptance deposit of \$100. Payment of this fee must be made by the date indicated in the candidate's notification of acceptance and will not, under any circumstances, be refunded. The deposit will be applied toward the tuition charges in the first semester of attendance in the academic year for which acceptance has been granted.

#### Expenses for Books and Materials

The cost of necessary books, equipment, and materials varies depending on the courses taken. The cost usually ranges from \$1,000 to \$1,400 per year.

#### Withdrawal and Refund Policy

The University operates on an academic term basis for which commitments are made to teaching staff and to others whose services are essential to the operation of the University. As such, fees (other than tuition) and room and board charges are non-refundable. Tuition is refunded only as stated in the Refund Schedule below. Additionally, tuition and fees are not transferable to future semesters. Refunds will only be granted to students who voluntarily withdraw and comply with the Procedures for Withdrawing as delineated below. Where a student has been separated, dismissed or suspended from the University for academic, disciplinary, or other reasons, refunds will be granted in accordance with the Refund Schedule below.

#### Refund Schedule

Refunds are made to students who voluntarily withdraw based on the following 15-week class schedule:

- 100% of the tuition charge, less the tuition deposit, will be refunded if the official withdrawal date is prior to the first day of classes;
- 75% of the tuition charge, less the tuition deposit, will be refunded if the official withdrawal date is during the first week of classes;
- 66 2/3% of the tuition charge, less the tuition deposit, will be refunded if the official withdrawal date is during the second week of classes;

- 33 1/3% of the tuition charge, less the tuition deposit, will be refunded if the official withdrawal date is during the third week of classes; and
- 25% of the tuition charge, less the tuition deposit, will be refunded if the official withdrawal date is during the fourth week of classes.

No tuition refunds will be granted after the fourth week of classes.

#### Procedure for Withdrawing

If it becomes necessary for full-time degree students to withdraw or request a leave of absence from the University, an official form must be completed and filed with the Academic Support Center. This form will be made part of the permanent record maintained in Student Administrative Services (SAS). Prior to completing the withdrawal form, full-time degree students are expected to consult with the dean of First Year Students and Students in Transition in order to complete a formal exit interview. When such conditions as severe illness or absence from the area prevent a student from filing the withdrawal form in person, an application for withdrawal by mail is acceptable. A letter should state the reasons necessitating the withdrawal and should be mailed to the dean of First Year Students and Students in Transition. In the case of part-time or graduate students, withdrawal forms are filed with the Academic Dean's Office of the College in which the student's major is administered. The date recorded by the reviewing administrator is considered to be the date of withdrawal.

Any approved refunds will be computed on the basis of this date. Absence from class without completing a withdrawal form does not constitute withdrawal and submission of course drop forms may not substitute for a withdrawal. No refunds are made on any fees other than tuition (with the exception of the dorm damage deposit). Students who withdraw with an unpaid balance will be financially liable for any amount remaining unpaid after a refund credit, if any, has been applied to the balance. No student may withdraw from the University in good standing unless all financial obligations have been met.

Any refund resulting from a reduction in the number of hours registered will be made on the basis of the above schedule. Students taking between 12 and 17 hours per term will not have any adjustment in tuition if, after the course reduction, they are still enrolled in 12 to 17 credit hours. The Higher Education Amendments of 1998 require students receiving Federal Title IV financial assistance who withdraw on or before 60 percent of the way through the semester to have their assistance reduced based on calendar days enrolled versus the length of the semester. Programs affected are Pell Grants, Supplemental Education Opportunity Grants, Federal Perkins Loans, Federal Direct Ford Subsidized Loans, Federal Direct Ford Unsubsidized Loans, and Federal Direct Ford Plus Loans but not Federal Work-Study. The calculation of the amount to be returned to these funds may result in the student owing a balance to the University and/or the Federal Government. Institutional scholarships and grants will be adjusted according to the same percentage as the tuition charges. State Aid will be adjusted according to the same percentage as the federal aid.

#### Late Payment Charge

A finance charge will be computed by a period rate of one percent per month, which is an annual percentage rate of 12 percent applied to the prior balance after deducting current payments and/or credits appearing on the statement. In no case will a student be able to continue enrollment if the previous semester's charges are not paid.

### Payment Plan

Students who wish to pay their University charges over a 10 or 12 month period may elect this plan. An application form is required to be completed specifying the amount to be budgeted under this plan. There are no interest or finance charges to use this plan. There is a \$50 application and processing fee.

The plan period starts May 1 or July 1 for the academic year beginning in the fall. There is a down payment required if enrollment begins after the start date. A payment schedule is issued and payments are due promptly each month. If the student does not attend, all payments made will be refunded, less nonrefundable charges.

### Sibling Discount

This is a \$1,000/year discount offered to each sibling when a family has more than one full-time undergraduate child attending Western New England University in a given year. Each student receives a \$1,000 credit applied to the tuition billing. The discount only applies to sibling relationships and is only available to full-time undergraduate students.

### Employer Extension Plan

This tuition is appropriate for students who receive reimbursement that is paid directly to them, not to the University. Under this plan students have their employer verify eligibility to participate in the plan. Students may defer two-thirds of their tuition payment until 30 days after the semester is completed.

### Tuition Paid Directly by Employers

Students whose tuition is underwritten by their employers must furnish at the time of registration, or immediately thereafter, an authorization from the employer indicating that the company is directly paying the cost of tuition. Students with direct pay by their employers remain responsible for their bills.

### Financial Aid

The University offers a program of financial assistance through scholarships, grants, loans, and part-time employment. Resources are, however, limited. Students and their families are expected to defray as much of their educational expenses as possible. Financial aid should be considered only as supplemental assistance. Financial aid programs, policies, and procedures for applying are subject to change. Visit the website at [www1.wne.edu/sas](http://www1.wne.edu/sas) or consult Student Administrative Services for current details.

Work opportunities are available both on campus and in the community, and many students earn a portion of their college expenses through part-time employment. Because of the academic demands upon a student's time, no student should work more than 20 hours per week.

Prospective students must be officially accepted for admission into a degree program at the University before their applications for financial assistance will be considered. Part-time students must have final approval into a degree program and be enrolled in at least six credits per term to be eligible for financial aid. Graduate students must have final approval into a degree program and be enrolled in at least 3 credits per term to be eligible for financial aid.

Students applying for any federal or state aid must submit the Free Application for Federal Student Aid (FAFSA) for processing as soon as possible after January 1. These forms may be accessed at [www.fafsa.gov](http://www.fafsa.gov). Applications for prospective students are processed on a rolling basis beginning on March 1. All FAFSA's for returning students must be received by Western New England University before April 15 in order to receive priority consideration. Verification of income will be verified by the completion of the IRS Data

Retrieval on the FAFSA. This should be done by May 1st for priority consideration. Therefore, students are encouraged to submit the FAFSA and file federal taxes as early as possible. Late applicants may be considered for financial aid if sufficient funds are available. Aid is generally disbursed on an August to May basis. All students must reapply for financial aid each year, and aid in any year does not guarantee aid in subsequent years.

Students must make satisfactory progress toward their degree requirements to qualify for financial aid and scholarships. Satisfactory progress includes maintaining a prescribed grade-point average and successfully completing a minimum number of credit hours each year. The requirements vary depending on the academic level and enrollment on a full-time or part-time basis. Copies of the complete "Standards of Satisfactory Progress" policy are available from Student Administrative Services at [www1.wne.edu/sas](http://www1.wne.edu/sas).

### Scholarships and Grants

Scholarships/grants are need based unless stated otherwise. You are automatically considered during the financial aid application process. Information on scholarships and grants can be found at [www.wne.edu/giving](http://www.wne.edu/giving). You must maintain satisfactory academic progress and register for selective service (if required) to be eligible for any scholarships or grants listed below.

#### *Adult Learner Scholarship - For Graduate and Undergraduate Study*

Adult Learner Scholarships are awarded to degree-seeking graduate and part-time (less than 12 credits per term/semester) undergraduate students. Students must have a financial need, and must be taking classes on the Springfield campus or online.

#### *George I Alden Scholarship*

Scholarships are awarded annually from a fund established by the trustees of The George I. Alden Trust in Worcester, MA, and by alumni and friends of the University. Funds are awarded to full-time undergraduate students and to graduate or professional students who have a demonstrated financial need.

#### *Alumni Association Golf Tournament Endowed Scholarship*

This scholarship is awarded to a junior who is a returning student and who has a cumulative Western New England University GPA of at least 3.0. The student must have demonstrated financial need and have been involved in University student organizations or community service programs. Preference is given to students who graduated from a high school in Massachusetts or Connecticut. The scholarship is renewable for the student's senior year provided they continue to maintain a GPA of at least 3.0 and meet the other scholarship criteria. This endowed scholarship was established by the Western New England University Alumni Association through funds raised from its annual golf tournament. The tournament is one of the longest standing traditions in the Alumni Association's history, and scholarship recipients are encouraged to attend the event each year that they receive the scholarship.

#### *Alumni Endowed Scholarship*

Scholarship awards are made annually by the Alumni Association to a full-time student from each of the Colleges of Arts and Sciences, Business, and Engineering. Two awards are also made to part-time students. The University selects the recipients on the basis of academic merit and demonstrated financial need.

*American Society of Mechanical Engineers Scholarship*

Scholarships of varying amounts are awarded annually to students majoring in Mechanical Engineering who excel in scholarship and have made a significant contribution to the Mechanical Engineering program at the University. Additionally, their grades should warrant continuing in Mechanical Engineering. The students shall either be juniors or seniors at the start of the next semester. The scholarship is funded by contributions from the Western Massachusetts Section of the American Society of Mechanical Engineers.

*Edward L. and Robert L. Anastasi Endowed Scholarship*

A scholarship is awarded to an undergraduate student in the College of Business, majoring in Management. The recipient must have a cumulative high school GPA of 3.0 or higher and have demonstrated financial need. The scholarship is awarded starting in the freshman year and can be renewed for the student's subsequent undergraduate years at the University provided he or she maintains a GPA of at least 3.0 and continues to have financial need. Edward L. "Ted" Anastasi received his Bachelor of Science in Business Administration majoring in Management from Western New England College in 1989. Ted is currently a Vice President with Fidelity Investments. Robert L. Anastasi received his Bachelor of Science in Business Administration majoring in Management from Western New England College in 1985. Rob is currently a Vice President with Anastasi Masonry Construction, Inc. This endowed scholarship was created through the generosity of Ted Anastasi '89 BSBA.

*Dr. Emma Wilder Anderson Endowed Scholarship*

This scholarship of not less than \$1,000 was established through gifts to an endowment fund by friends, family, and admirers in honor of Dr. Emma Wilder Anderson (1903-1998), distinguished civic leader, internationalist, and devoted friend of Western New England. In recognition of her accomplishments, of her contributions to society and to the local Springfield community, and of the spirit of hope she embodied, Dr. Anderson was awarded the honorary degree of Doctor of Humane Letters by Western New England College on May 16, 1998.

This merit scholarship is awarded to a returning full-time student, U.S. citizen, or international, with a GPA of at least 3.0 in the first semester of the first year, with a record of community service and volunteerism while at the University or prior to studying at the University, and with a commitment to engage in service on or off campus while a student at the University. The scholarship is renewable upon demonstration of meeting the established criteria for the scholarship.

*Asadorian Family Scholarship*

A \$1,000 scholarship is available to a College of Business student from Rhode Island based upon financial need. This scholarship is renewable for the student's subsequent years at the University provided he/she continues to meet the scholarship criteria. This scholarship was generously established by Guy Asadorian. Guy is a 1986 graduate of Western New England, receiving his Bachelor of Science in Business Administration in Finance. A former member of the Golden Bears football and baseball teams, Guy Asadorian is a Principal and Co-Founder of Tameracq Partners, Inc., a Providence, RI-based mergers and acquisitions firm that specializes in advising buyers and sellers of middle market companies. Guy and his wife Ann live in East Greenwich, RI.

*Banknorth Endowed Scholarship*

This scholarship is available to a full-time undergraduate student who is a resident of Massachusetts, Connecticut, Maine, New Hampshire, Vermont, or New York. The recipient must have demonstrated

financial need. This endowed scholarship fund was created through the generosity of the Banknorth Charitable Foundation.

*Barnhard Family Endowed Scholarship*

This scholarship is awarded to a senior who is due to graduate during the same academic year "for which" the award is made. The student must be enrolled in the College of Arts and Sciences, with preference given to students majoring in History and who are from out of state. The student must live on campus and have a University cumulative GPA of 3.0 or better. This endowed scholarship is generously funded by the Barnhard family and Ronald H. Barnhard '70 BA.

*Henry J. Bazan Endowed Scholarship*

A scholarship fund has been established by the Management Association and alumni in honor of Professor Henry J. Bazan, a faculty member from 1963 to 2000. A scholarship is awarded to a student in the College of Business. Preference is given to students who are involved in a leadership position in a student organization or are enrolled in ROTC.

*Mark Berthiaume and Betsey Thompson Scholarship*

A scholarship of \$1,000 is awarded to a full-time freshman with demonstrated financial need. If the student continues to meet the criteria, the scholarship is renewable and will provide financial aid support for the student's four years at the University. The scholarship was established through the generosity of Mark L. Berthiaume '78 BSBA and his wife, Betsey Thompson.

*Frank Stanley Beveridge Endowed Scholarship*

This scholarship is awarded to students from the Massachusetts counties of Hampden or Hampshire who have demonstrated financial need. The endowed scholarship is made possible by a contribution from The Frank Stanley Beveridge Foundation, Inc., a private family foundation directed by the family and descendants of the late Frank Stanley Beveridge, founder of Stanley Home Products, Inc. Through the years, the Foundation has been a generous supporter of Western New England University. Joseph Beveridge Palmer, a director of the Foundation, is a 1967 graduate of Western New England University.

*Henry D. Blake Endowed Memorial Scholarship*

This scholarship is awarded to a student pursuing a degree in Business who has demonstrated financial need. This fund was established by Henry D. Blake's wife, Rose Breslin Blake, in honor of his outstanding accomplishments in the educational field.

*Susan Squire Bousquet Endowed Memorial Scholarship*

A scholarship is awarded annually to a student in Continuing Education with demonstrated financial need. Susan was a student at the Western New England when she passed away in 1988. Her family and friends established this scholarship in her memory.

*Julie K. Boyce Endowed Memorial Scholarship*

Scholarships of varying amounts up to one-half tuition cost are awarded annually to undergraduate students who have demonstrated financial need and academic promise. Preference is given to students majoring in English. This fund was established by Mr. and Mrs. Terry S. Boyce in memory of their daughter, Julie K. Boyce, a member of the Class of 1990. Miss Boyce passed away during the final semester of her senior year. While a student at Western New England, Julie was active with many groups and served as Editor-in-Chief of The Cupola as well as on the staffs of The Westerner and the Review of Arts and Literature.

### *Hayden S. and Catherine L. Bradley Endowed Memorial Scholarship*

Two scholarships of not less than \$1,250 each are awarded per year to full- or part-time students who have attained sophomore standing prior to the beginning of the fall semester. Recipients must have demonstrated financial need, have a Western New England University cumulative GPA of 2.7 or better, and be from western Massachusetts, with preference for graduates of East Longmeadow High School. Transfer students are not eligible to receive the scholarship. The scholarship will be renewed for the student's junior and senior years provided they continue to meet the award criteria. The scholarship is given to two students, one majoring in Finance, and one majoring in either Social Work or Biomedical Engineering. Should recipients subsequently change their academic majors, they will still be eligible to receive the scholarship. This endowed scholarship was created through the generosity of Hayden L. Bradley in memory of his parents. Mr. Bradley earned a Bachelor of Science in Mechanical Engineering, graduating with the Class of 1964, and had a distinguished career at General Electric in Pittsfield, MA. He has been an active volunteer for the Western New England University Alumni Association, including serving on the Alumni Association Executive Committee from 1999-2004.

### *Brennan Family Endowed Scholarship*

This scholarship is awarded to a full- or part-time freshman in the College of Engineering whose high school GPA is a 3.0 or higher and has demonstrated financial need. The scholarship can be renewed for the student's subsequent undergraduate years at the University provided he or she maintains a GPA of at least 3.0 from the previous academic year and continues to have financial need. This endowed scholarship was created through the generosity of John J. Brennan, who earned his Bachelor of Science in Electrical Engineering in 1971.

### *Frederick N. and Maria E. Bromage Endowed Memorial Scholarship*

Scholarships of varying amounts are awarded to full-time undergraduate students based on financial need from a fund established by Frederick '34 BBA/'61 MBA and Maria Bromage.

### *Irl and Peg Brown Scholarship*

A scholarship is available to a student with demonstrated financial need and academic merit who is enrolled in the College of Business. This scholarship was generously created by Irl O. '57BBA and Peg Brown.

### *John J. Brown Endowed Memorial Scholarship*

This scholarship is awarded to students majoring in Mechanical Engineering beginning in their junior year. Recipients must have a Western New England University cumulative GPA of 3.3 or higher, be members of the American Society of Mechanical Engineers, and have demonstrated financial need. The scholarship is renewable for students' senior year provided they continue to meet the award criteria. This endowed scholarship was created through a bequest by Mae E. Brown to honor the memory of her son, John J. Brown. Mr. Brown was a graduate of the Class of 1964 who earned the degree of Bachelor of Science in Mechanical Engineering. He passed away November 1, 1996. Mrs. Brown passed away April 13, 2004.

### *BTP Systems Endowed Scholarship*

A merit scholarship is available to an engineering student in his or her junior or senior year. The student must have a minimum major and overall GPA which if continued would qualify the student to graduate with Magna Cum Laude honors and must maintain this

academic threshold in order to maintain this award in subsequent semesters. There is a strong preference for an Electrical Engineering major focusing their studies in the area of RF/Microwave Engineering and who is currently pursuing a program of study consistent with the College of Engineering's recommended RF/Microwave Engineering Sequence of courses. In any year, where there is more than one qualified candidate for this scholarship, there is a tiebreaker preference for a student who lives within a fifty mile radius of Ludlow, MA. Philip C. and Jill Beaudry have generously created this scholarship in order to help increase awareness in the career field of RF/Microwave Engineering. In establishing this award, Philip and Jill Beaudry hope to encourage bright young engineers to pursue studies within this growing area of expertise and to in turn expand the number of local engineering professionals with an expertise within the RF specialty. BTP Systems, LLC was founded in Ludlow, MA in October 2003, by President Philip C. Beaudry. Since its inception, BTP Systems has been committed to providing its customers with a team of professionals with the right attitude, experience, and strong desire to excel. Its team is fully focused on the success of its customers, always striving to exceed expectations.

### *Janet Johnson Bullard Scholarship*

A scholarship of \$1,000 is awarded to a full-time freshman with demonstrated financial need. If the student continues to meet the criteria, the scholarship is renewable and will provide financial aid support for the student's four years at the University. This scholarship was established through the generosity of Janet Johnson Bullard '69 BBA.

### *Coach Richard Burns Memorial Bowling Scholarship*

A \$500 scholarship is awarded annually to a returning sophomore or junior with a minimum grade point average of 3.0. There is a preference for a member of the Western New England University bowling team to receive this award. Should a member of the Bowling Team fail to qualify for this scholarship, then preference should go towards a student who is majoring in education. Richard "Dick" Burns was associated with the Western New England bowling program for 40 years, including 33 years as head coach of the varsity team. He was cofounder of the Tri-State Bowling Conference. Dick was a 1950 graduate of Nebraska Wesleyan University, served on a numerous national collegiate bowling committees and was the sectional coordinator for seven seasons. He also was a member of the National Collegiate Bowling Coaches Association All-America selection committee. Dick was a professor of science and education and faculty member at Western New England from 1958 until his retirement in 1995. He passed away on Feb. 9, 1999. This scholarship was generously created by Coach Burns' friends and former bowlers in memory of his dedication to Western New England, its bowling team, and his players.

### *Evelyn Burton Endowed Scholarship Fund*

Scholarships of varying amounts are awarded based on demonstrated financial need to students who are single parents. This scholarship is provided from a fund established by University Trustee Thomas R. Burton '70 BSBA in memory of his mother, Evelyn.

### *Kathleen and Thomas Burton Endowed Scholarship*

Scholarship awards in varying amounts are available to students from Massachusetts and Connecticut. Recipients may be enrolled in any program within the University and must have a demonstrated financial need. This scholarship is provided from a fund established by University Trustee, Thomas R. Burton '70BSBA and his wife Kathleen.

*William F. Campanella Endowed Memorial Scholarship*

This scholarship is awarded to a full-time undergraduate student beginning in his or her sophomore year who has demonstrated the following: involvement in the community, either through work in Western New England University organizations and/or through volunteer work in the greater Springfield, MA, community; and/or involvement in one or more of the fine arts, through study of the arts or through the practice of the arts. The student must have financial need and maintain a minimum of a 3.0 GPA. Preference will be given to minority students and to students who graduated from a high school in Springfield, MA. This scholarship was established by family, friends, and colleagues of Bill Campanella, who passed away unexpectedly on April 26, 2003. Bill's passion for and devotion to community service was demonstrated by his involvement with the Western New England College campus as well as through his volunteer work with a wide array of community organizations in the greater Springfield area. Bill touched many lives through his excellent abilities as a listener, the guidance he offered, and through the quiet leadership he exhibited in pursuit of a goal. He served Western New England College as admissions counselor, then alumni program director, and finally as associate director of alumni relations.

*Dr. Anthony S. Caprio Endowed Minority Merit Scholarship*

Merit scholarships of varying amounts will be awarded to a minority student or students who have demonstrated superior academic achievement through performance in high school or college. When financial need is a factor, this scholarship shall be in addition to any amount the student might otherwise receive. This award is renewed each year provided the student attains a Dean's List standing at Western New England University. This scholarship has been established through a gift by President Anthony S. Caprio.

*Esther and Salvatore Caprio Endowed Scholarship*

This merit scholarship was funded by a gift to the endowment fund of the University by Esther and Salvatore Caprio, friends of the University and parents of the University's fifth president. A scholarship of not less than \$500 will be awarded to a student who at the time of application is a resident of Rhode Island, is beginning full-time study at Western New England University either as a first year or transfer student, and who has demonstrated superior academic achievement in high school or college. It is renewable when the student continues full-time study at the University and maintains a cumulative GPA of 3.0 or above. The scholarship will be in addition to whatever gift award has been made by the University, based on either merit or need. When the Rhode Island student has initially been awarded a strictly merit based scholarship by the University, this scholarship will be added to the award at that time, thereby augmenting the award. When a scholarship has been awarded based on demonstrated need, this merit scholarship will replace a portion of the loan component in the financial aid award.

*Carman Family Charitable Foundation Endowed Scholarship*

This scholarship is awarded to students with demonstrated financial need. The scholarship was established through the generosity of Leon J. Carman, a graduate of the Western New England University School of Law, Class of 1941, and recipient of the honorary degree Doctor of Humane Letters in 1998 from Western New England College; Mr. Carman's son Barry I. Carman is also a graduate of the School of Law, Class of 1993; and his son Tracy E. Carman is an alumnus of the College of Business, having earned the MBA in 1990. The members of the Carman family have been longtime generous supporters of Western New England, donating and helping raise funds annually for the institution and its School of Law.

*Sandra and Robert Carnevale Endowed Scholarship*

A scholarship is awarded to a student in the College of Business based on demonstrated financial need and demonstrated academic ability. Preference is given to students who have an entrepreneurial drive, exhibited leadership skills, and have overcome adversity. The scholarship is provided by a fund established by University trustee Robert Carnevale '68 BSBA and his wife, Sandra.

*Richard M. and Catherine Cassata Scholarship*

A scholarship is available to student enrolled in the College of Business based on financial need. This scholarship was generously created by Richard and Catherine Cassata. Richard received his Bachelor of Science in Business Administration in Finance from Western New England in 1980 and was a member of the Golden Bear Baseball team. Richard is currently a Managing Director at Assured Guaranty Corporation in New York. Richard and his wife, Catherine reside in New Jersey.

*Norman J. and Doris S. Cartmill Endowed Scholarship*

This is a merit scholarship for a returning part-time student majoring in business who has completed 30 credits. It was funded by a gift from Western New England University Trustee Emeritus Norman J. Cartmill '50BBA/'61MBA/'01Bacc(hon) and his wife, Doris.

*Chester J. Chambers Memorial Scholarship*

Scholarships are awarded annually to students from Longmeadow or Springfield who have demonstrated financial need. The scholarship is funded through a trust established in memory of Chester J. Chambers '23 LL.B., who served as a trustee of Western New England College from 1959-1969, and by his wife, Margaret E. Chambers.

*Leon D. Chapin Endowed Scholarship*

A scholarship is awarded to a full-time undergraduate student majoring in accounting and beginning the senior year. The student must have a GPA that, if continued, would qualify to graduate summa or magna cum laude. This scholarship is from a fund established in honor of Leon D. Chapin, who served as chief fiscal officer at Western New England College from 1945 to 1979 and was executive vice president of the institution at the time of his retirement in August 1979.

*The Chessey Family Endowed Scholarship*

This scholarship is awarded to a full-time undergraduate student majoring in Accounting and/or Finance. This endowed scholarship was created through the generosity of Sandra and Joseph J. Chessey, Jr. Sandy graduated with her bachelor's degree from Western New England College in 1985, and earned her master's degree in Business Administration from Western New England in 1990. She served the institution as controller from 1998 until 2003, and as Assistant Vice President for Finance and Administration from 2003 until 2011.

*Professor Ralph Chimelis and Mrs. Florence B. Chimelis Endowed Scholarship*

Scholarships are awarded to students of Western New England University who have demonstrated financial need. This endowed scholarship was established through a generous bequest by Florence B. Chimelis in honor of her husband, Professor Ralph Chimelis. Professor Chimelis was the first Spanish teacher at Western New England College, serving from 1970 until his retirement in 1983.

*Arthur and Barbara Clarke Endowed Scholarship*

Funds are available to undergraduate students with demonstrated financial need. The late Arthur Clarke was a longtime friend, benefactor, and trustee of Western New England College.

*Robert W. and Holly S. Clarke Endowed Scholarship*

A scholarship is awarded to a full- or part-time undergraduate student who has demonstrated financial need, maintains a GPA of 3.0 or better, and is enrolled in the College of Arts and Sciences. This scholarship was established through the generosity of University Trustee Robert W. Clarke and his wife, Holly S. Clarke.

*Class Council Leadership Scholarship*

A scholarship of a minimum of \$1000 is awarded annually to a returning senior who has a cumulative Western New England University GPA of at least 2.75. The student must have demonstrated outstanding leadership and have been involved in University student organizations for at least two years. The scholarship may be awarded to a student in a paid or unpaid leadership position who has consistently devoted time to co-curricular programs. This scholarship was established by the Class of 2012 Council and continues to be funded through funds raised from annual senior fundraising events such as Jail Bail.

*Class of 1986 Endowed Scholarship*

This scholarship is awarded to full- or part-time freshmen in the College of Engineering who have demonstrated financial need and a cumulative high school GPA of 3.0 or better. Preference is given to students from greater Springfield. The scholarship is renewable provided the students continue to meet the criteria and maintain a cumulative university GPA of 3.0, but the scholarship can be awarded to a student for a maximum of five years. This endowed scholarship was initiated through the generosity of alumnus Albert L. Plante, who earned his B.S. in Electrical Engineering in 1986 and his M.S. in Electrical Engineering in 1990.

*Steven E. Cocchi Endowed Memorial Scholarship*

Scholarships are awarded annually to undergraduate students, with preference given to junior and senior undergraduate College of Business students from the greater Springfield area. The fund was created by the parents of Steven Cocchi in his memory after he passed away while a student at Western New England College.

*Mark A. Coffey Endowed Memorial Scholarship*

This scholarship is awarded to an Accounting major with preference given to transfer students. The recipient must have demonstrated financial need and a 3.0 cumulative GPA. For an entering freshman, the GPA requirement is based on the four years of the student's high school education; for an entering transfer student, it is based on the cumulative GPA at their prior institution; for a returning Western New England University student, it is based on the cumulative GPA for their entire college education. The scholarship was established by family, friends, colleagues, and students of Mark A. Coffey, professor of accounting, who taught at Western New England College for 28 years. Professor Coffey served as chair of the Department of Accounting and Finance for two years and collaborated in the development of the Master of Science in Accounting degree program. He was the faculty advisor for the Student Accounting Association. Through the founding of the Student Accounting Association's annual golf tournament, he helped initiate a means of networking among accounting professionals, accounting firms, and accounting students. Professor Coffey was very active in Western New England College's Faculty Senate, the

Stageless Players, and the intramural sports program. He passed away June 6, 2002.

*College of Arts and Sciences Annual Financial Grant*

Annually an award is made to a student enrolled in the College of Arts and Sciences with demonstrated financial need.

*College of Arts and Sciences Endowed Scholarship*

Funded by the Endowment for Student Financial Aid for the College of Arts and Sciences, this annual scholarship is awarded to undergraduate, upper-class, full-time students in the College of Arts and Sciences with demonstrated financial need and minimum cumulative GPAs of at least 3.0. Contributions from alumni, staff, and friends of the University fund this endowed scholarship.

*College of Business Annual Financial Aid Grant*

Annually an award is made to a student enrolled in the College of Business with demonstrated financial aid.

*College of Business Endowed Scholarship*

Funded by the Endowment for Student Financial Aid for the College of Business, this annual scholarship is awarded to undergraduate, upper-class, full-time students in the College of Business with demonstrated financial need and minimum cumulative GPAs of at least 3.0. Contributions from alumni, staff, and friends of the University fund this endowed scholarship.

*College of Business Board of Advisors Scholarship*

A \$2,500 scholarship is awarded annually to a full-time undergraduate student enrolled in the College of Business. In order to qualify for this scholarship, a recipient must have a minimum grade point average of 3.0. The scholarship will be initially awarded to a freshman and may be renewed for subsequent years provided the student continues to meet the criteria of the fund. This scholarship was generously created by the Board of Advisors to Western New England University's College of Business.

*College of Engineering Annual Financial Aid Grant*

Annually an award is made to a student enrolled in the College of Engineering with demonstrated financial aid.

*College of Engineering Endowed Scholarship*

Funded by the Endowment for Student Financial Aid for the College of Engineering, this annual scholarship is awarded to undergraduate, upper-class, full-time students in the College of Engineering with demonstrated financial need and minimum cumulative GPAs of at least 3.0. Contributions from alumni, staff, and friends of the University fund this endowed scholarship. Additional generous support was provided by the Engineering Society of Western Massachusetts.

*Bruce D. Corl Memorial Scholarship*

A \$1,000 scholarship is awarded to a student pursuing a degree in the College of Business who has demonstrated financial need. This scholarship was created by Alex M. Corl '84 BSBA in honor of his brother Bruce D. Corl, who passed away at the age of 45 after a courageous battle with lung cancer.

*Louis T. Cormier Endowed Memorial Scholarship*

A scholarship is awarded annually to a sophomore who is a candidate for a degree in Accounting, stands in the upper third of the class, and demonstrates qualities of good citizenship and leadership. This fund was established by Mary T. Cormier in memory of her husband,

Thomas Cormier '47 BSBA, formerly of the faculty of the School of Business.

#### *Denise G. Crawford Endowed Scholarship*

This scholarship is awarded to a part-time student in the College of Business. The scholarship was established by Mrs. Crawford's husband, Walter J. Crawford '61BBA, family, and friends in recognition of Mrs. Crawford's 35 years of outstanding service to her alma mater. At the time of her retirement, Denise Crawford '61BBA was the staff assistant to the academic vice president.

#### *Kevin S. Delbridge Endowed Scholarship*

A scholarship is awarded to a full-time student from Massachusetts who resides within a 15 mile radius of Springfield, MA, and is enrolled in the College of Business. The award is based on financial need and demonstrated academic ability. This scholarship is provided from a fund established by University Trustee Kevin S. Delbridge '77 BSBA.

#### *The Delbridge Family Endowed Scholarship*

A scholarship is awarded to full-time undergraduates from Massachusetts who reside within a 15 mile radius of Springfield, MA, and who major in a program within the Departments of Physical and Biological Sciences or Psychology. The award is based on financial need and demonstrated academic ability. This scholarship is provided from a fund established by chairman of the Board of Trustees, Kevin S. Delbridge '77 BSBA and his wife, Sandra E. Delbridge.

#### *The Richard and Judith DiRuzza Annual Scholarship*

An annual scholarship is awarded to a student entering the junior year who has exhibited leadership abilities through participation in co-curricular activities at Western New England University and who has financial need. This scholarship was created by friends and colleagues to honor Dr. Richard M. DiRuzza on the occasion of his retirement from the University after 18 years of service at Western New England College, first as dean of students (1991-2001) and then eight years as vice president for student affairs and dean of students (2001-2009).

#### *Diversity Scholarship of Greater Springfield*

Merit scholarships of varying amounts are granted to minority students from the greater Springfield area.

#### *Doherty Family Endowed Scholarship*

Scholarships are awarded to students from the counties of Hampden, Hampshire, or Franklin, Massachusetts, who have demonstrated financial need. This endowed scholarship was established by Paul S. Doherty, Esq. and Dianne F. Doherty. Mr. Doherty has been a longstanding friend of Western New England and served as a member of the Board of Trustees from 1973 to 1986. Mrs. Doherty received her Master of Business Administration from Western New England College in 1981.

#### *Henry T. and Margaret S. Downey Endowed Memorial Scholarship*

Scholarships of varying amounts are granted to undergraduate accounting students and to law students. The scholarship was established by family, friends, colleagues, and the Western New England College Board of Trustees in memory of Henry T. Downey (1920-1973) and Margaret S. Downey (1916-2006). Mr. Downey earned his Bachelor of Business Administration from Northeastern University-Springfield Division in 1950 and his law degree from the Western New England College School of Law in 1956. His

dedication to Western New England is demonstrated by his service on the Corporate Board from 1960 to 1964 and on the Board of Trustees from 1964 to 1973. He served as vice-chairman of the Board of Trustees from 1971 to 1973. Mr. Downey played a key role in establishing the full-time law program at the School of Law. Mrs. Downey earned her Bachelor of Business Administration from Northeastern University-Springfield Division in 1949 and received an Honorary Baccalaureate degree from Western New England College in 2001.

#### *Faculty and Staff Endowed Scholarship*

This scholarship is awarded to students demonstrating financial need. The funds for the scholarship have been contributed through the years in honor or memory of various faculty and staff of Western New England University.

#### *Rocco J. Falcone Endowed Scholarship*

A scholarship is available to a College of Business student based on financial need. There is a preference for a student that is either a current employee or immediate family member of an employee of Rocky's Hardware, Inc. Should there not be a student that meets the above criteria in any given year, the scholarship should be awarded to a student residing in Hampden County, MA but shall not be renewed in subsequent years, if an eligible candidate that meets the first preference becomes known. This scholarship was generously created by Rocky's Hardware, Inc. Founded in 1926, by Rocco (Rocky) J. Falcone in Springfield, MA, Rocky's is a family-owned business that has been supporting local communities for over 85 years.

#### *Financial Aid Endowed Fund*

Scholarships of varying amounts are awarded annually to deserving students who have demonstrated financial need.

#### *Frank P. Fitzgerald, P.C., Endowed Scholarship*

A scholarship of not less than \$1,000 is awarded to students who are enrolled full-time as undergraduates or in the School of Law and who have demonstrated financial need. The scholarship is renewable when the student continues full-time study at the University and makes satisfactory progress toward degree completion. This scholarship was funded by a gift to the endowment fund by University Trustee Frank P. Fitzgerald '68 BSBA/'73 JD.

#### *Kevin G. Foley Endowed Memorial Scholarship*

A scholarship is available to an undergraduate student majoring in mechanical engineering based on a combination of financial need and merit. There is a preference for a student that resides within the greater Springfield, MA area. The scholarship is renewable for subsequent years provided the recipient continues to meet the scholarship criteria. This scholarship was generously created by the family and friends of Kevin G. Foley in his memory. Kevin G. Foley received his Bachelor of Science in Mechanical Engineering in 1967 and his Master of Business Administration in 1972, both from Western New England College. Kevin had been employed by Smith and Wesson for 25 years, ending his career as the Vice President for Engineering.

#### *Fontaine Bros., Inc. Endowed Scholarship*

This scholarship is awarded to a student who has transferred to Western New England University from Springfield Technical Community College. The student can be pursuing a degree in any program of the University. This endowed scholarship was made possible through the generosity of Fontaine Bros., Inc. Fontaine Bros., Inc. is a privately held construction company based in Springfield. Founded in 1933 by Eudore J. Fontaine and his brother

George, the company has since grown to become one of the most trusted and respected builders in New England. The firm is currently headed by third generation builders David and Chris Fontaine.

#### *Fund for Western New England Annual Scholarship*

Annually awards are made to students enrolled in any program within the University who have demonstrated financial aid.

#### *Constance Gleason Furcolo Endowed Scholarship*

This scholarship is awarded to students who are pursuing degrees in business and/or law and who have demonstrated financial need. The scholarship was established by the wife of former Massachusetts Governor Foster Furcolo in honor of his outstanding efforts to facilitate the education of worthy students.

#### *George Sumner Gaunt Endowed Memorial Scholarship*

One or more scholarships are awarded annually from a fund established in memory of Lt. George S. Gaunt '68 by his classmates and fraternity brothers. Recipients must be in the junior or senior year, enrolled in the College of Business or Engineering, and have at least a 2.5 cumulative GPA. Preference is given to students working with youth development.

#### *Jimmy Geyer Memorial Scholarship*

A scholarship of \$1,000 is awarded to a full-time freshman in the College of Business with a demonstrated financial need. If the student continues to meet the criteria, the scholarship is renewable and will provide financial aid support for the student's four years at the University. The scholarship is funded by the James G. Geyer Memorial Trust, established in 2002, through the generosity of his former classmates, teammates, and friends. Jimmy Geyer was a former wide receiver for Western New England College's first NCAA Division III football team in 1981. Jimmy was a standout football player for four years at Western New England College, and subsequently a wonderful husband and father. For those fortunate enough to know Jimmy, he was truly a loving, honest, and honorable friend. Jimmy passed away in 2001, and though his voice is quiet, his spirit echoes still.

#### *Gilbert Matching Grant Program*

The Commonwealth of Massachusetts annually provides the University with funds to assist full-time Massachusetts undergraduate students with demonstrated financial need. Awards may range from \$200 to \$2,500 per academic year.

#### *Harley B. Goodrich and Francis A. Johnson Endowed Memorial Scholarship*

Awards are made to students who have outstanding records either as undergraduates or in the School of Law. This scholarship was established in memory of Harley B. Goodrich '27 BBA/'42 LL.B., secretary of the Board of Trustees of Western New England College from 1942-1974, by members of Pi Tau Kappa fraternity and Western New England College trustees, and Francis A. Johnson. Mr. Johnson earned the Bachelor of Business Administration in Accounting from Western New England College in 1959 and the Master of Business Administration in 1961.

#### *Jeffrey and Teresa Gurski Scholarship*

A scholarship of a minimum of \$1,000 is awarded to a full-time freshman with demonstrated financial need who is enrolled in the College of Arts and Sciences. Preference is given to students majoring in Mathematics. The recipient must have a cumulative high school GPA of 3.0 or higher and have demonstrated financial need. The scholarship is awarded starting in the freshman year and can be

renewed for the student's subsequent undergraduate years at the University provided he or she maintains a GPA of at least 3.0 and continues to have financial need. If the student continues to meet the criteria, the scholarship is renewable and will provide financial aid support for the student's time at the University. The scholarship was established through the generosity of Jeffrey M. Gurski and Teresa M. Gurski. Jeffrey received his Bachelor of Arts in Mathematics in 1981 and his wife, Teresa, received her Bachelor of Science in Business Administration in Accounting in 1984.

#### *Hambro Family Endowed Scholarship*

This scholarship is awarded to any student of Western New England University who has demonstrated financial need. The scholarship was established through the generosity of University Trustee Bruce F. Hambro '74 BSBA and his wife, Marjorie.

#### *Hampden Bank Endowed Scholarship*

Scholarships are awarded to underrepresented undergraduate students from Springfield, MA, who have demonstrated financial need. The endowed fund was established with contributions from Hampden Bank at the generous suggestion of University Trustee Thomas R. Burton '70 BSBA, president of Hampden Bank. The scholarship assists Western New England University in attracting a diverse student body of deserving students.

#### *Alison Mary Harris Endowed Memorial Scholarship*

Awards are made to juniors and seniors in the College of Business. This scholarship was established in memory of Alison Mary Harris '89 BSBA by her classmates, friends, and family.

#### *Elinor C. Hartshorn Endowed Scholarship*

This scholarship is awarded to a student with demonstrated financial need who has been selected through a Western New England University exchange program either to study abroad or to study at American University in Washington, DC. This endowed fund was established through the generosity of Elinor Hartshorn, Ph.D., friends, and colleagues. Dr. Hartshorn retired from the full-time faculty of Western New England College in 1992 after a distinguished career teaching government and political science. This endowed scholarship fund reflects her belief that an opportunity to study in the unique environment of Washington, or to go abroad for a semester, enriches students' lives and broadens their understanding of the world in which they live. A Western New England University education provides a valuable preparation for this experience.

#### *Carl R. Hellstrom Endowed Scholarship*

Scholarships of varying amounts are available to either full-time or part-time students. The scholarship was established by Carl R. Hellstrom in 1961. Applicants must be students of good standing in the University or incoming freshmen. Selection of candidates is made on the basis of academic aptitude and achievement plus qualities of good character, personality, and potential leadership.

Financial need is not the controlling factor in the selection of the recipients, but such need will determine the amount of the scholarship to be granted. Awards are for one year only, but recipients may apply for renewal and be considered on the same basis as new applicants. The number and amount of grants in any year is dependent upon the income available from the fund. Preference is given to students whose parents are associated with Smith Wesson, Inc.

#### *John Henri Memorial Scholarship*

Scholarship support is available to an undergraduate student enrolled in any program of the University who has a demonstrated financial need. If the student continues to meet the criteria, this scholarship is

renewable for the student's subsequent years at the University. This scholarship was established through the generosity of John A. '77BSBA and Diane Dame.

#### *Beaumont A. and Winifred S. Herman Endowed Scholarship*

Scholarships of \$500 or more may be awarded to students beginning their senior year. They must have a GPA that, if continued, would qualify them to graduate magna or summa cum laude. This scholarship was established in honor of Beaumont A. and Winifred S. Herman. Dr. Herman was president of Western New England College from 1955 to 1976.

#### *Peter W. Hess Annual Memorial Scholarship*

A scholarship is to be awarded to a senior in the College of Business who has a minimum GPA of 3.0; who is from the greater Springfield area; and has financial need. This scholarship was generously created by Peter Hess's family, colleagues, and former students in memory of his over thirty years of commitment and dedication to Western New England.

#### *Dr. Nancy Hoar Endowed Memorial Scholarship*

This scholarship is available based on financial need to an undergraduate student in the College of Arts & Sciences and is renewable provided the student continues to meet the criteria of the scholarship. Nancy Hoar was a faculty member at Western New England for 28 years, teaching in the Department of English and Communication; her infectious love of language and logic, as well as her generous and caring spirit, made her one of the most beloved teachers on the Western New England campus until her sudden passing during the 2009-2010 academic year. Nancy received her Master of Business Administration from Western New England in 1984. Her husband Marion Hoar, as well as her colleagues and former students, established this scholarship in her memory.

#### *Dr. Robert H. Holdsworth Biology Endowed Merit Scholarship*

A scholarship is available beginning in the first semester to a full-time freshman majoring in either Biology, Forensic Biology, or Pre-Pharmacy. The recipient must have a combined SAT score of at least 1100 (math/verbal) and have shown by his/her high school record a strong aptitude in biology, chemistry and mathematics. This scholarship is renewable for the recipient's subsequent years at Western New England provided the recipient continues to satisfy the criteria of the scholarship and maintains a cumulative grade point average of 3.0 or better. This scholarship was generously created by Dr. Holdsworth's wife, Elaine, and his colleagues, former students, and family members to honor his dedicated service to Western New England College and the study of Biology. In the early 1970's "Dr. Bob" Holdsworth was originally hired by Western New England to create the Biology program and for thirty-seven years he provided insight and knowledge to eager young scientific minds. After his many years of hard work and devotion, Dr. Holdsworth retired in the spring of 2010 and was honored with the title of Professor Emeritus.

#### *International Student Scholarship*

A limited number of \$9,000 International Student Scholarships are offered each year to undergraduate freshmen and transfer students. The scholarships are renewable if the recipient maintains at least a 2.7 Western New England University GPA, satisfactory academic progress, and full-time status. The Admissions Office selects recipients who have an outstanding academic record and who have at least a 213 TOEFL score (550 on the paper-based TOEFL test).

#### *Jacqueline Stratton Isenburg Endowed Memorial Scholarship*

Scholarships are awarded to full-time freshmen who have physical or learning disabilities and demonstrated financial need. Preference is given to students from New Hampshire and Vermont. The scholarship is renewable for the students' undergraduate careers at Western New England University. This endowed scholarship was created by family and friends in loving memory of Jacqueline Stratton Isenburg, who passed away March 24, 2006. Mrs. Isenburg graduated from Western New England College in 1986, having earned the degree of Bachelor of Science in Business Administration.

#### *Thomas Jefferson Endowed Scholarship*

This scholarship is awarded to returning full-time students majoring in International Studies. Should there be no eligible International Studies majors in a given academic year, Political Science majors with an interest in international affairs may be considered. A committee drawn from the faculty of the Department of History and Political Science annually determines the recipient(s) of the scholarship. Academic excellence (minimum 3.5 GPA in the major and overall at the time of selection), financial need, and personal qualities reflecting Jeffersonian principles, including integrity and commitment of service to others, represent the criteria of selection. This award is renewable upon demonstration of meeting the established criteria for the scholarship. This scholarship is in addition to whatever other need-based aid the student has received.

The scholarship was established by Dr. Vladimir Wozniuk, Western New England University professor of Political Science and director of the International Studies program, in tribute to U.S. President Thomas Jefferson, who had served as minister to France and as the first U.S. secretary of state before his presidency. Recipients are encouraged to replenish the endowed fund to help it grow once they acquire the financial means.

#### *Carl E. and Esther S. Johnson Endowed Scholarship*

Scholarships of varying amounts are awarded to undergraduate students from a fund established by Mr. and Mrs. Carl E. Johnson. Preference is given to children of employees of the Acme Chain Corporation of Holyoke, MA, and to students from the Holyoke-Springfield area.

#### *Father Christopher Johnson, O.P., Endowed Scholarship*

Scholarships of varying amounts are awarded to Hispanic students with demonstrated financial need who maintain a Dean's List average in their chosen field of study. This scholarship was established by Western New England College Trustee C.W. Gilluly and his wife, Marny, in honor of Father Christopher Johnson, who served Western New England College as a trustee from 1980 to 1997.

#### *William and Patricia Jolicoeur Endowed Commuter Student Scholarship*

Scholarships in the amount of one-half tuition will be awarded to two full-time commuter students. Recipients must demonstrate financial need and be residents of Holyoke, Chicopee, or West Springfield, MA. The fund, established by William Jolicoeur '75 MBA and his wife, Patricia, requires that the recipients have some exposure to free-market ideas during the course of their education at Western New England University.

#### *William and Patricia Jolicoeur Greenfield Community College Transfer Student Endowed Scholarship*

This scholarship is awarded to a student or students transferring to Western New England University for full-time undergraduate study from Greenfield Community College (GCC). The students must have

completed the equivalent of at least one full semester (12 credits) at GCC. Preference is given to students who declare a major in Economics or who declare an intent to minor in economics. For students declaring a major in Economics, they could be also be majoring in another field. For students who have declared an intention to minor in economics, they must actually declare the minor no later than the end of their first semester at Western New England University and must have completed some coursework toward the minor no later than the end of their second semester at the University, or the scholarship cannot be renewed for the students' second year at the University. If in a given year no transfer students from GCC enroll with a declared Economics major or a declared intent to minor in economics, secondary consideration will be given to GCC transfer students majoring, in order of preference, in business, or in any other discipline at Western New England University. Preference will be given to a student with a GCC cumulative GPA of at least 3.0. The scholarship is renewable if the student maintains a minimum cumulative GPA of at least 3.0 throughout their college education. Demonstrated financial need is not a mandatory factor in awarding the scholarship. Scholarship recipients must be exposed to free market ideas during the course of their study at Western New England University. As appropriate, the scholarship could be awarded in conjunction with other scholarships such as the Phi Theta Kappa Scholarship or the Transfer Scholarship. This endowed scholarship was established through the generosity of William and Patricia Jolicoeur. Mr. Jolicoeur earned his MBA at Western New England College in 1975 and had demonstrated a passion for the discussion and dissemination of economic concepts for undergraduate students.

#### *Thomas K. Kamp Memorial Scholarship*

A scholarship of one-half tuition is awarded annually to a senior in the College of Business. Preference is given to a veteran or the son or daughter of a veteran. The scholarship was established in memory of Thomas Keith Kamp '68 BSBA, who was killed in action in Vietnam on November 17, 1969.

#### *Terry L. Kendall Endowed Memorial Scholarship*

This scholarship is awarded to an entering full-time freshman enrolled in the College of Business. The recipient must be a resident of Springfield, MA, have demonstrated financial need, and have a cumulative high school GPA of at least 3.0. The scholarship is renewable for an additional three years provided that the student maintains a Western New England University GPA of at least 3.0, continues to have demonstrated financial need, and remains enrolled in the College of Business. When there is more than one candidate for the scholarship, financial need will be the deciding factor in its award. This scholarship was established by Jennifer and Bryan Kendall in loving memory of their father, a 1968 graduate of Western New England College and a member of the University's Board of Trustees. Terry Kendall was a kind, generous, thoughtful person whose qualities touched many people. During his time on the Board of Trustees, he was very interested in giving back to the institution that had helped him succeed. As a result of his education at Western New England, Mr. Kendall went on to earn an MBA and establish a distinguished career in the financial services industry. Prior to his death, he was president of CIGNA Corporation, based in Philadelphia. Mr. Kendall would be very proud of those individuals who go on to achieve greatness as a result of this scholarship. Terry Kendall passed away June 20, 2005, at age 58. He will be forever in the hearts of his family.

#### *Steven and Elaine Kitrosser Industrial Engineering Endowed Scholarship*

A scholarship is available to an undergraduate student majoring in Industrial Engineering beginning in the student's freshman year. The student must have financial need and a minimum GPA of 3.0 in order to qualify for this award. This scholarship is renewable for the student's subsequent years provided the student is still an industrial engineering major, maintains a 3.0 or better GPA and continues to have financial need. This scholarship was generously established by Steven P. and Elaine Kitrosser. Steven received his Bachelor of Science in Industrial Engineering in 1966 and his Master of Business Administration in 1970, both from Western New England. He is the former Chairman of InPhase Technologies, Inc. and, has over 35 years of experience in the data storage industry. Steven, who is currently the Chair of the College of Engineering's Industrial Engineering Advisory Board, was inducted into the Engineering Hall of Fame in 2002 for his outstanding contributions to the advancement of the computer storage industry and is currently a member of the Western New England University Board of Trustees. Steven is also one of the founders of Quinta Corporation and an early executive of Maxtor Corporation. Steven and his wife, Elaine, live in San Jose, CA.

#### *Phyllis M. Knecht Endowed Scholarship*

This scholarship was originally funded by the sons of longtime Western New England employee Phyllis M. Knecht and their families, and by the President of Western New England. Mrs. Knecht's many colleagues and friends then contributed generously to the fund so that it could become endowed and serve as a permanent tribute to this remarkable woman.

This scholarship is awarded to a full-time freshman or transfer student from western Massachusetts, and preferably from Ludlow, MA, who has demonstrated financial need and has achieved solid academic achievement in high school or in college. It is renewable when the student continues full-time study at the University and maintains a cumulative GPA of at least 3.0.

Phyllis M. Knecht was in her 33rd year of service upon her retirement from Western New England College on May 3, 2002. From 1970-75, she was the secretary to the director of Food Services; from 1975-76, secretary to the director of Development; 1976-1978, secretary to the academic vice president; 1978-98, secretary to the president of the University; 1998-2002, assistant to the president.

Mrs. Knecht has been long respected, recognized, and admired by the entire University campus as a devoted employee who has worked assiduously throughout her tenure.

#### *Carol Kowalski Endowed Scholarship*

This scholarship is awarded to a full-time undergraduate student in the Colleges of Arts and Sciences, Business, or Engineering starting in his or her sophomore year. The student must have demonstrated financial need and a cumulative GPA of 2.5 or higher. This endowed scholarship was established in honor of Carol Kowalski by her husband, Dr. Stanley E. Kowalski, dean of the College of Business. Carol initiated the art courses at Western New England and established the University's art gallery. She has taught art classes and curated the art gallery at the University for more than 20 years.

#### *Dr. Stanley Kowalski, Jr. Endowed Scholarship*

This scholarship is awarded to full-time undergraduate students in the College of Business who have demonstrated financial need. The students must have cumulative high school GPAs of 2.7 or better and must maintain this academic performance at Western New England University for the scholarship to be renewed. Dr. Kowalski served

Western New England College for 33 years, beginning his career at the institution teaching courses in quantitative methods and computer information systems from 1973-1976. He was appointed assistant to the president from 1976-1979 and served as dean of the School of Business and professor of quantitative methods from 1979-2006. Among his many accomplishments while at Western New England, Dr. Kowalski led the School of Business' successful efforts to achieve accreditation by AACSB International, the premier accrediting agency for business programs throughout the world. This endowed scholarship was established in his honor by family, colleagues, alumni, and friends, and is a reflection not only of the high regard in which he is held, but also of the tremendous dedication he showed to the students of Western New England.

#### *David P. Kruger Endowed Scholarship*

A scholarship is awarded with preference for students in the College of Business who have demonstrated financial need. This endowed fund was established through the generosity of David Kruger, colleagues, and friends. Mr. Kruger received his bachelor's degree from Western New England College, graduating with the class of 1968. He earned his master's in Business Administration from Western New England College in 1972. Mr. Kruger has served the campus since 1973, first as director of financial aid, then as controller, and most recently as vice president of finance and administration.

#### *Alfred and Marian LaRiviere Endowed Scholarship*

This scholarship is awarded annually to students based on demonstrated financial need. It was established by Western New England College Trustee Alfred A. LaRiviere '51 BBA/'95 LLD (Hon)/'01 Bacc(Hon) and his wife, Marian.

#### *Alfred and Marian LaRiviere Endowed Diversity Scholarship*

Scholarships are awarded to students who have demonstrated financial need. To further the University's strategic commitment to foster a campus community that values diversity, preference is given to historically underrepresented or socioeconomically disadvantaged students. This scholarship was established by Western New England College Trustee Alfred A. LaRiviere '51 BBA/'95 LLD (Hon)/'01 Bacc (Hon) and his wife, Marian.

#### *Alfred and Marian LaRiviere Alpha Lambda Delta Endowed Merit Scholarship*

This merit scholarship is awarded to sophomore Alpha Lambda Delta members who have excelled the most academically during their second year, who will complete the sophomore year at the end of the current academic year, and who will return for the junior year at Western New England University. This scholarship was established by Western New England College Trustee Alfred A. LaRiviere '51 BBA/'95 LLD (Hon)/'01 Bacc (Hon) and his wife, Marian.

#### *Alfred and Marian LaRiviere Endowed Music Scholarship*

This scholarship of \$500 is awarded to an incoming student who commits to participating in one or more University instrumental and/or vocal ensembles throughout his or her first year. This scholarship will be awarded in addition to any other scholarship support, need-based or merit-based, that the student receives from Western New England University. Students must apply for the scholarship through the process defined by the University. The scholarship recipient must remain in good standing with the University throughout his or her first year or forfeit the scholarship. The scholarship is renewable for the subsequent years at the University provided he or she continues to participate in one or more music ensembles and remains in good standing. This scholarship was created through the generosity of Western New England Trustee

Alfred A. LaRiviere and his wife, Marian. Al LaRiviere, a devoted supporter of Western New England, graduated with the class of 1951 and received two honorary degrees from Western New England: an Honorary Doctor of Law in 1995, and an Honorary Bachelor of Science in 2001 that was offered to alumni who had received their original undergraduate degrees when the University existed as the Springfield Division of Northeastern University. Through the music scholarship, the LaRivieres seek to help foster the artistic life of the Western New England University community.

#### *Leadership Grant*

Leadership Grants are awarded to matriculating, full-time freshmen and transfer students who have financial need and who have demonstrated their leadership abilities through prior high school, college, and community experiences. The grants are for varying amounts up to \$3,000 per year and will be renewed if the recipient participates in leadership activities at Western New England University and demonstrates financial need. In order to be considered for the grant, students must submit the necessary forms to be considered for need-based financial aid and complete a Leadership Grant application.

#### *The Agnes M. Lindsay Trust Scholarship*

Scholarship grants are awarded to students with demonstrated financial need from rural New England communities in Maine, Vermont, New Hampshire, or Massachusetts. This scholarship opportunity is made possible through contributions from The Agnes M. Lindsay Trust.

#### *Richard T. Lovett and Gertrude R. Lovett Endowed Scholarship*

Scholarships of varying amounts are awarded to undergraduate students based on demonstrated financial need from a fund established by Richard T. Lovett '34 BBA and Gertrude R. Lovett.

#### *Martin and Roberta Lower/Ludlow Textiles Endowed Scholarship*

Scholarships of varying amounts are awarded based on demonstrated financial need and demonstrated academic ability. Preference is given to descendants of former employees of Ludlow Textiles Company, Inc., and to students who are Ludlow, MA, residents. This scholarship is provided from a fund established by Western New England College Trustee Martin A. Lower, a Trustee Emeritus, and his wife Roberta.

#### *Anthony Lucki Scholarship*

The scholarship is awarded to an undergraduate or graduate student enrolled in any of the Colleges of Arts and Sciences, Business, Engineering or the School of Law at the University, full-time or part-time, who has demonstrated financial need and cumulative GPA of 3.0 or better. It is renewable provided the recipient continues to meet the criteria.

#### *Kathryn L. Luongo Endowed Memorial Scholarship*

A merit scholarship is available to a New England resident who has a minimum of a 3.0 GPA. Preference is given to a student who participated in a varsity sport and was able to maintain a minimum GPA of a 3.0 while in high school. The student does not have to participate in athletics while in University. The scholarship is awarded starting for their freshman year and can be renewed for the student's subsequent undergraduate years at the University, provided he or she maintains a GPA of at least 3.0. This scholarship was generously created by Peter C. Steingraber, Trustee and Law Alum of the University, in memory of Kathryn L. Luongo. Mr. Steingraber

received his Juris Doctor degree from Western New England College in 1984.

#### *Kenneth A. MacLeod Memorial Scholarship*

A scholarship of varying amounts, established by the Sigma Beta Tau Honor Society in memory of Dr. Kenneth A. MacLeod, is awarded annually to the student who received the highest GPA in a regular freshman engineering program. The student must be enrolled as a sophomore in an engineering curriculum at the time of the award.

#### *Harry and Mollie Marcus Scholarship*

A scholarship of \$1,000 is awarded to a full-time freshman with demonstrated financial need who is enrolled in the College of Business. If the student continues to meet the criteria, the scholarship is renewable and will provide financial aid support for the student's four years at the University. The scholarship was established through the generosity of Mollie Marcus in memory of her husband, Harry. The couple were the founders of East Coast Tile Imports, Inc., based in Ludlow, MA.

#### *Massachusetts Part-Time Grant*

The Part-Time Grant program is a grant assistance program that provides need based financial assistance to part-time (6-11 credits) undergraduate students who reside in Massachusetts.

#### *MASSPOWER Endowed Scholarship*

This scholarship is awarded to a freshman from Springfield, MA, majoring in engineering. The award is based on demonstrated financial need and demonstrated academic ability. Preference is given to students who have exhibited leadership skills and reside in Indian Orchard, MA.

#### *Joseph A. Mastrangelo Endowed Scholarship*

A scholarship is awarded annually to a person taking more than the normal academic schedule (three courses) as a nontraditional student. This scholarship was established by Joseph Mastrangelo '77 BBA.

#### *Horace and Gertrude McCrea Endowed Scholarship*

Scholarships are awarded annually to undergraduate students from a fund established by Horace O. McCrea '23 BCS. Preference is given to students in the College of Business.

#### *James H. McGraw Endowed Scholarship*

Scholarships are awarded annually to an Electrical Engineering student who demonstrates financial need.

#### *Raymond and Shirley S. Meyers Endowed Scholarship*

This scholarship is available to students who have demonstrated financial need and who are graduates of high schools in the greater Holyoke-Springfield, MA, area. This fund was established by the children of Raymond '51BBA/'64MBA/'01Bacc(Hon) and Shirley Meyers, in honor of their parents.

#### *Jeanne Marie Milkay Endowed Memorial Scholarship*

A scholarship is awarded to an undergraduate student majoring in English who has demonstrated financial need. Judith A. and Ronald J. '63 BSME Milkay established this scholarship in memory of their daughter, Jeanne Marie, an English major who graduated from Western New England College in 1984. Jeanne Marie Milkay passed away April 15, 1986.

#### *Wah Sing and Christine Ng Annual Scholarship*

A \$1,000 annual scholarship is available beginning in the freshman year to a student enrolled in the College of Engineering with demonstrated financial need. The recipient must be majoring in Electrical Engineering. This scholarship is renewable for the duration of the recipient's time at the University provided the student continues to meet the criteria. This scholarship was generously created by Western New England University Trustee, Wah Sing Ng and his wife Christine. Wah Sing Ng received a Bachelor of Science in Electrical Engineering in 1968 and a Master of Business Administration in 1975, both from Western New England University. He is currently the president of NG Planning, LLC. Wah Sing and his wife Christine live in New Jersey.

#### *Northampton Junior College Alumni Association Opportunity Endowed Scholarship*

This scholarship is awarded to a student enrolling at Western New England University who has earned an associate's degree from a two-year college. The student can be pursuing a degree in any program of the University and must have demonstrated financial need. This endowed scholarship was made possible through the generosity of Kenneth D. '63 BBA/G'66 MBA, Joan Cardwell, and the Northampton Junior College Alumni Association.

#### *Lawrence F. and Myra T. O'Brien Endowed Memorial Scholarship*

A scholarship is available to an undergraduate student or students from a fund established by former National Basketball Association Commissioner Lawrence F. O'Brien L '42 LLB in memory of his parents.

#### *Francis S. and Ruth M. Oleskiewicz Endowed Scholarship*

One half of available funds will be available to graduates from Marian High School located in Framingham, MA. The recipient will be the applicant with the highest grade point average, at least exceeding 3.0 over the last three years of high school. The remaining one half will be awarded to a graduate of Chicopee High School who also graduated from St. Stanislaus School in Chicopee, MA, and who has maintained at least a grade point average of 3.0, with the award going to the applicant with the highest average. The scholarship recipients can be enrolled in any of the undergraduate divisions of the University or enrolled in a master's program in the College of Engineering or enrolled in the School of Law. Francis Oleskiewicz is a trustee emeritus of the University and a 1961 graduate of the School of Law.

#### *Earl H. Paine Endowed Memorial Scholarship*

Awards are made annually from a fund established in memory of Earl H. Paine '27 BCS/'65 DCS(Hon), who served as treasurer of Western New England College from 1937-1965 and on the Board of Trustees from 1951-1970.

#### *Parents Endowed Financial Aid Fund*

Scholarships are awarded from a fund established by the Parents Association for students with demonstrated financial need.

#### *The Pellegrini Family Endowed Scholarship*

Scholarships are awarded to full- or part-time students with demonstrated financial need. Students can be enrolled in any of the Colleges of the University or the School of Law. At least 25 percent (25%) of the scholarship amount each year is to be awarded to an evening student(s) and at least 25 percent (25%) of the scholarship amount each year is to be awarded to a law student(s). The remaining awards may go to any student with financial need that meets the

remaining criteria. This scholarship was established through the generosity of Gerard L. Pellegrini L'57 JD.

#### *The PeoplesBank Endowed Scholarship*

A scholarship is available to employees or children of employees of PeoplesBank based on financial need. Should there not be a student that meets the above criteria, this scholarship shall be awarded to a resident of either Hampden or Hampshire counties in Massachusetts. This scholarship is renewable provided the recipient continues to meet the criteria of the scholarship. This scholarship was generously created through the support of PeoplesBank. PeoplesBank was established in 1885, and is one of western Massachusetts oldest and most respected community Banks. PeoplesBank has been deeply rooted in the community since its start and has consistently looked for ways to help support the Pioneer Valley and its residents find ways to make this area a great place to live, work, and learn.

#### *People's United Bank Endowed Scholarship*

Scholarships are awarded to either full- or part-time undergraduate students for their sophomore year, with preference given to students who are residents of the four western Massachusetts counties of Hampden, Hampshire, Franklin, or Berkshire. Preference is given to employees of People's United Bank, or children or dependents of People's United Bank employees. Students can be in any of the Colleges of Arts and Sciences, Business, or Engineering. Each scholarship recipient must have demonstrated financial need; a cumulative Western New England University GPA of 2.7 or better; and have demonstrated leadership, either through involvement in Western New England University organizations or through community service for organizations in western Massachusetts. The scholarship can be renewed for students' junior and senior years provided they continue to meet the scholarship criteria. The endowed fund was established with contributions from People's United Bank at the generous suggestion of University Trustee Timothy P. Crimmins Jr., Massachusetts president of People's United Bank, who received his undergraduate degree from Western New England College in 1970; and University Trustee Frank P. Fitzgerald, former chairman of the board of The Bank of Western Massachusetts, now People's United Bank, Massachusetts, who received his undergraduate degree from Western New England College in 1968 and his law degree from the School of Law in 1973.

#### *Linda and James Peters and Family Endowed Scholarship*

A scholarship is awarded to an undergraduate student of the University, with preference for a student who graduated from Monson High School in Monson, MA. The recipient must have a cumulative high school GPA of 3.0 or higher and demonstrated financial need. The scholarship is awarded starting for the freshman year and can be renewed for the student's subsequent undergraduate years at the University, provided he or she maintains a GPA of at least 3.0 and continues to have financial need. This endowed scholarship was created through the generosity of Linda and James Peters. Dr. Linda L. Peters earned her Master of Business Administration from Western New England College in 1996.

#### *Phi Theta Kappa Scholarship*

An unlimited number of \$7,000 scholarships are awarded each year to full-time transfer students who are members of Phi Theta Kappa, the two-year college honor society. To be eligible, students must matriculate immediately following completion of their two-year college degree. The minimum college GPA is 3.5 and an A.A., A.S., A.A.S., or Canadian equivalent is required. Students must also be U.S. citizens, and they cannot have previously received a bachelor's degree. Scholarship is renewable for a second year of full-time study

if a 2.7 Western New England University GPA and satisfactory academic progress are maintained.

#### *Thomas and Cynthia Picknally Scholarship*

A scholarship of a minimum of \$1,500 is awarded to a full-time freshman with demonstrated financial need who is enrolled in the College of Business. Preference is given to participants in the University's combined BSBA/MBA program. If the student continues to meet the criteria, the scholarship is renewable and will provide financial aid support for the student's time at the University. The scholarship was established through the generosity of Thomas J. Picknally '79 BSBA.

#### *Herman E. and Maud K. Pihl Endowed Scholarship*

This scholarship is granted to undergraduate students from a fund established by Mr. and Mrs. Herman E. Pihl. Preference is given to children of employees of the Acme Chain Corporation of Holyoke, MA, and to students from the Holyoke-Springfield, MA, area.

#### *Pioneer Valley Mechanical Trades Endowed Scholarship*

A scholarship is available to a student consistent with the financial need policies of the Western New England. There is a preference for a student who resides in one of the four western Massachusetts counties – Berkshire, Franklin, Hampden, or Hampshire, is majoring in Engineering and who is currently enrolled with financial need, in this order. This scholarship was generously established through the generosity of the Pioneer Valley Mechanical Trades.

#### *Charles and Ann Pollock Endowed Scholarship*

This merit scholarship is awarded with preference for a currently enrolled full-time undergraduate student who has not yet received a Western New England University scholarship. The merit criterion is defined as a Western New England University cumulative GPA of 3.0 or better. This scholarship was established by Charles and Ann Pollock. Charles has served the University since 1977, most recently as vice president for Enrollment Management.

#### *Presidential Scholars Award*

Merit scholarships based on outstanding high school academic achievement are awarded to full-time students. Awards are renewable based on achieving and maintaining a 2.7 cumulative GPA, satisfactory academic progress, selective service status, if required, and full-time status.

#### *R. Joseph Racine Endowed Scholarship*

Scholarships are awarded annually to students based on financial need from a fund established by retired Professor R. Joseph Racine.

#### *Kenneth M. Rickson Endowed Scholarship*

Scholarships are awarded to undergraduate students in the College of Business who have demonstrated financial need. This scholarship was established by Kenneth M. Rickson, who earned his Bachelor of Business in Accounting from Western New England College in 1975. Mr. Rickson has been a strong supporter of the University and has served as a trustee from 1996 to the present.

#### *Rizzi Family Scholarship*

A scholarship of \$1,000 is awarded to a full-time freshman with demonstrated financial need who is enrolled in the College of Business. If the student continues to meet the criteria, the scholarship is renewable and will provide financial aid support for the student's four years at the University. This scholarship was established through the generosity of Matthew A. Rizzi '95 BSBA.

*Marc A. Rosenberg Endowed Scholarship*

This scholarship is awarded to a full- or part-time undergraduate student in the College of Business who has a cumulative high school GPA of 3.0 or higher and demonstrated financial need. The scholarship is awarded starting for their freshman year and can be renewed for the student's subsequent undergraduate years at the University, provided he or she maintains a GPA of at least 3.0 and continues to have financial need. This endowed scholarship was created through the generosity of Marc A. Rosenberg, who earned his Bachelor of Science in Finance degree in 1980 and his Master of Business Administration degree in 1982.

*Sattler-Goodrich Endowed Scholarship*

A scholarship fund in memory of Allan R. Sattler '59 BBA/'61 MBA has been established by members of the Pi Tau Kappa fraternity and the Epsilon Phi Sigma/Tau Epsilon Phi fraternity. Awards are made to undergraduate students who have outstanding academic records.

*Serafino Family Endowed Scholarship*

A scholarship is awarded to a full-time undergraduate student in the College of Arts and Sciences who has demonstrated financial need. Preference is to be given to students who participate in extracurricular activities devoted to the arts. This scholarship is meant to supplement a student's expenses and it is the donor's intent that the award recipient and/or the recipient's family be expected to provide some contribution to the recipient's education expenses. The scholarship is awarded starting for their freshman year and can be renewed for the student's subsequent undergraduate years at the University, provided he or she continues to have financial need. This scholarship was created through the generosity of Michael A. and Patricia J. Serafino. Both, Michael and Patricia graduated from Western New England College in 1977. Michael received a Bachelor of Science in Business Administration and Patricia received a Bachelor of Arts in Sociology.

*John F. Shaw Endowed Scholarship*

Scholarships of various amounts are available to students from a fund established in 1973 by John F. Shaw. Preference is given to students in the greater Springfield area.

*J. Resler Shultz and Dorothy P. Larson Endowed Scholarship*

Scholarships of varying amounts are awarded with preference given to residents of eastern Pennsylvania or western Massachusetts. Mr. Shultz was the first director of development at Western New England College and served from 1958 until 1973. Mrs. Dorothy P. Larson was his assistant. They worked diligently to raise funds for the first six buildings on the new campus of Western New England College.

*Sibling Discount*

This is a \$1,000/year discount offered to each sibling when a family has more than one full-time undergraduate child attending Western New England University in a given year. Each student receives a \$1,000 credit applied to the tuition billing. The discount only applies to sibling relationships and is only available to full-time undergraduate students. Please notify Student Administrative Services each year if qualified.

*Sigma Beta Tau Scholarship*

A scholarship of varying amounts is awarded annually by the Sigma Beta Tau Honor Society to the student who has received the highest GPA in a regular sophomore engineering program. The student must be enrolled as a junior in an engineering curriculum at the time of the award.

*Evan R. Simpson Scholarship*

A \$1,000 scholarship is awarded annually to an incoming freshman based on financial need. Evan R. Simpson received his Bachelor of Science in Mechanical Engineering from Western New England College in 1961. Evan was a past president of the Epsilon Phi Sigma fraternity and a past president of the Alumni Association. He was a recipient of the Alumni Association's Special Award for Service and the Silver Letter Award. Evan worked for James River Graphics for 35 years retiring in 1988 as manager of environmental affairs. Evan was married for 61 years to Gladys M. Simpson. Together they had three sons, William, Scott, and David. This scholarship was generously created by Evan's family and friends in memory of his longtime love and commitment to Western New England.

*William and Iona Sleith Endowed Scholarship*

This scholarship of varying amounts is for minority students with demonstrated financial need. These scholarships will be in addition to whatever gift award has been made by the University based on need. William Sleith, alumnus of the Class of 1944, served Western New England College as corporator and trustee from 1958 until his death in 1996. Mr. Sleith's generous gifts to the Western New England over the years attest to his commitment to the University and to his belief that minority students are a vital constituency of the University community.

*Stanley O. Smith Endowed Memorial Scholarship*

Scholarships of varying amounts are awarded annually to accounting majors with demonstrated financial need and who are on the President's or Dean's List. The fund is in memory of Stanley O. Smith, president of the first graduating class (1922) and acting president of Western New England College (1954-1955).

*James W. Stacy, Class of 2003, Endowed Memorial Scholarship*

A scholarship is awarded to an undergraduate student majoring in Psychology who has demonstrated financial need. This endowed scholarship fund was established in loving memory of James W. Stacy by his family, members of the Class of 2003, friends, and teachers. James Stacy, who died January 25, 2003, was a bright and dedicated student who had a wonderful way of making people laugh. He took his studies seriously and in his sophomore year earned membership in Psi Chi, the national psychology honor society. He also worked hard to help finance his education, helping in the Department of Psychology as a work-study student and working other jobs at night and on weekends. James exemplified the spirit and dedication that most of us aspire to in our lives. He is deeply missed.

*Earl S. and Shirley M. Stahl Endowed Memorial Scholarship*

This scholarship was established by the family of Earl and Shirley Stahl. Mr. Stahl '53 BBA was the founder of Dielectrics Industries, Inc. in Chicopee, MA. As long as the company remains a family-held enterprise, preference in awarding the scholarship will be given to dependents of Dielectrics Industries employees. Should the company be sold, the scholarship will be open to a broader pool of candidates. One scholarship will be awarded each year. Recipients must be from the Pioneer Valley in the greater Springfield-Hartford area. Priority will be given to undergraduates enrolled in the College of Engineering with secondary consideration given to undergraduates majoring in Management in the College of Business. The award can be based on financial need or merit, with financial need being the deciding factor when there is more than one candidate.

*Steerage Rock Endowed Scholarship*

Scholarships are awarded to full-time students in the College of Business who demonstrate strong academic achievement and

financial need. Recipients must reside in Brimfield, MA, or one of the neighboring towns of Holland, Monson, Wales, or Warren. The annual award is normally a minimum of \$10,000, but is based on the recipients' demonstrated financial need. Available to incoming freshman, the initial award is renewable for an additional three years provided that the student remains academically strong, continues to demonstrate financial need, and is enrolled as an undergraduate in the College of Business. This endowed scholarship was established by a Class of 1973 alumnus of the School of Business.

#### *Jean C. Sterling Endowed Memorial Scholarship*

This scholarship is available to undergraduate students with demonstrated financial need. The scholarship fund was established in memory of Jean Cameron Sterling '46 BBA by her husband, Esmond E. Sterling. Mrs. Sterling was vice president of finance and secretary to the board of the Dexter Corporation, based in Windsor Locks, CT.

#### *Kenneth M. Stratton Memorial Endowed Scholarship.*

The scholarship is awarded to either undergraduate or graduate students who are working, have financial need, and are not receiving substantial tuition reimbursement from their employer. Students must be pursuing a degree in one of the following business majors, listed in order of preference: 1) Management; 2) Marketing; 3) any other business major. Preference is given first to students from western Massachusetts, second to students from any other area of Massachusetts, third to students from New England. This scholarship was established in memory of Kenneth M. Stratton, '75 BBA, by his family and friends. Ken earned his Bachelor of Science in Management through the Evening Division while working full time and raising a family. He was a warm, caring, and charismatic father and business person who started his business and marketing career with S.C. Johnson Wax Co., later becoming vice president of marketing and sales for Richco Products, Inc., of Springfield, MA.

#### *Stone Family Scholarship*

A \$1,000 scholarship is available to an undergraduate student beginning in their freshman year based upon financial need. This scholarship is renewable for the student's subsequent years at the University provided the student continues to have financial need. This scholarship was generously created by Peter B. Stone. Peter currently is the president and founder of P.B. Stone Associate, Inc., which provides merger and acquisition advisory services for privately held businesses. He resides in Naples, FL.

#### *Student Senate Endowed Scholarship*

This scholarship is awarded to a sophomore or junior in his or her spring semester who will be a returning student in the fall and who has an overall cumulative Western New England University GPA of at least 3.0. The student must have demonstrated financial need. The student also needs to have demonstrated and continue to demonstrate leadership qualities and service to a University organization or to the community through a University affiliation. This scholarship has been established with the proceeds of the sale of the Western New England College Afghan, developed by the Student Senate.

#### *Kevin R. Sullivan Endowed Memorial Scholarship*

A scholarship fund in the memory of Kevin R. Sullivan '81 BSBA was established by his family and friends. Awards are offered annually to full-time students who have demonstrated financial need and above-average academic performance. Preference is given to handicapped students and students entering their junior year.

#### *Roger J. and Catherine G. Sullivan Endowed Memorial Scholarship*

A scholarship is awarded annually to an undergraduate or graduate student enrolled in the College of Business who has financial need and is a veteran or the child of veteran. There is a secondary preference for a returning student who while attending school is caring for dependent children who are living in the same household. This scholarship was generously created by the Estates of Roger J. and Catherine G. Sullivan. The Sullivan's two daughters, Dianne Bowden and Maureen Kennelly created this scholarship in remembrance of their parents, Mr. Sullivan was a 1953 graduate from Western New England College and a Veteran of World War II. After graduating from Western New England, Mr. Sullivan was a successful businessman and credited his success with the education he received at Western New England College.

#### *Philip W. Suomu Scholarship*

A scholarship of \$1,000 is awarded to a full-time freshman with demonstrated financial need who is enrolled in the College of Business. If the student continues to meet the criteria, the scholarship is renewable and will provide financial aid support for the student's four years at the University. The scholarship was established through the generosity of Philip W. Suomu '83 MBA.

#### *Paul C. and Mary Theilig Endowed Scholarship*

Scholarships shall be awarded to undergraduate students with demonstrated financial need who maintain a cumulative grade point average of at least 3.0. Preference will be given to students from New England.

#### *The TJX Foundation Scholarship*

A scholarship based on financial need is available to an undergraduate student that is either a child from a single parent household or who is currently raising a family of their own. This scholarship was generously created by the TJX Foundation as part of their mission to provide assistance to disadvantaged women, children, and families.

#### *Susan Tober Endowed Memorial Scholarship*

A scholarship is awarded annually to a deserving student from a fund established by the Civitan Club of Springfield, MA, in memory of Susan Tober, an active club member. The student must have demonstrated scholastic achievement and financial need. Preference is given to residents of the greater Springfield area.

#### *Transfer Scholarship*

Merit scholarships are awarded annually to transfer students who enroll with at least 12 transfer credits. For consideration, students must have at least a 3.0 GPA from their previous college. Awards are renewable based on achieving and maintaining a 2.7 cumulative GPA, satisfactory academic progress, and full-time status.

Eligibility for the Phi Theta Kappa and Transfer Scholarships is normally based only on grades for college-level courses, usually referred to as 100-level (or higher) courses. A composite college GPA will be calculated for students who attended more than one college. Students who have at least a 3.5 GPA will usually be awarded a \$7,000 merit scholarship while students whose GPA is 3.00-3.49 will usually be awarded a \$5,000 merit scholarship.

#### *Brian P. Trelease Endowed Scholarship*

A merit scholarship is awarded to a student in the College of Business from a fund established by University Trustee Brian P.

Trelease '67 BBA/'71 MBA. Funding is based on the student attaining Dean's List standing.

#### *Trowbridge-Brown Endowed Scholarship*

Scholarships are awarded annually to seniors in the College of Arts and Sciences who have the highest GPAs at the end of the junior year. The award is from a fund established by Clara F. Trowbridge and Ruth Trowbridge Brown.

#### *Trustee Scholarship*

This scholarship is used to assist financially needy students to gain an education and makes numerous awards each year to students who would be unable to attend college without financial assistance. These awards are of varying amounts and preference is given to students with GPAs of 3.0 or above.

#### *Richard H. Tucker Endowed Memorial Scholarship*

One or more scholarships are awarded annually to deserving undergraduate engineering students. The scholarship is named in memory of Richard H. Tucker '80 BA, and was established by his family.

#### *Tuition Assistance Grants*

The University, to assist financially needy students to gain an education, makes numerous awards each year to students who would be unable to attend college without financial assistance. These awards are of varying amounts.

#### *Janice Gruppioni Underhill Endowed Memorial Scholarship*

This endowed scholarship is given to a full-time undergraduate student with demonstrated financial need. Preference is given to students with a physical disability. Should there be no student that meets the above criteria this scholarship has a secondary preference to be awarded to a commuting student. This scholarship was established in memory of Janice by her brother, Thomas A. Gruppioni '77 BSBA.

#### *Nicholas V. Vanech Memorial Scholarship*

A scholarship is awarded to an undergraduate student who has overcome a significant hardship in life and has financial need. This scholarship was generously created by Dean N. and Denise E. Vanech. Dean is the Chairman and Chief Executive Officer of Olympus Capital Investments, LLC located in New Jersey. Dean received a Bachelor of Science in Business Administration from Western New England University in 1982 and Denise received a Bachelor of Science in Business Administration from Western New England University in 1984.

#### *M. Rainé Veronesi Endowed Memorial Scholarship*

This endowed fund was created by Professor Emeritus of Mechanical Engineering, Richard R. Veronesi, Class of 1961, and Mara M. Veronesi, Class of 1985, in loving memory of their wife and mother, M. Raine Veronesi, Class of 1986. The scholarship will be awarded to a returning student enrolled in the College of Arts and Sciences who has demonstrated financial need and maintains a cumulative GPA of 3.9 or higher. Preference will be given to a full or part-time female student majoring in Liberal Studies, Psychology, or Criminal Justice.

#### *Richard R and M Raine Veronesi Endowed Mechanical Engineering Merit Scholarship*

This endowed fund was created by Professor Emeritus of Mechanical Engineering, Richard R. Veronesi, Class of 1961, and Mara M. Veronesi, Class of 1985, in recognition of Professor Veronesi's many

years of service and devotion to Western New England. The scholarship will be awarded to a student majoring in Mechanical Engineering who has demonstrated financial need and maintains a cumulative and major GPA of 3.9 or higher. The scholarship is renewable provided the recipient continues to meet the scholarship criteria. Richard R. Veronesi taught Mechanical Engineering in the College of Engineering for nearly forty years, receiving the Excellence in Teaching Award in 1998 and attaining the title of Professor Emeritus upon his retirement in 2002.

#### *Dr. Hoyt D. Warner Endowed Memorial Scholarship*

Scholarships are awarded starting in the sophomore year for students majoring in Computer Science or Information Technology who display an interest in assisting their fellow computer science students. The recipients must have demonstrated financial need and a Western New England University GPA of at least 2.7. The scholarship is renewable for students' subsequent years at the University provided they continue to have financial need and maintain a GPA of not less than 2.7. The scholarship was created by family, friends, and colleagues of Professor Hoyt Warner, who taught computer science at Western New England College from 1984 to 1998 and made a strong contribution to the development and growth of the Computer Science program.

#### *Westbank Endowed Scholarship*

This scholarship is awarded to an entering freshman from Hampden County who is enrolled in the College of Business and who has demonstrated financial need and academic promise. The endowed fund was established with contributions from Westbank, at the generous suggestion of Donald Chase '75 BBA, president of Westbank.

#### *Charles R. Pollock Western New England University Academic Achievers Scholarship*

Western New England University annually awards scholarships of varying amounts up to the cost of full tuition to students who are MassMutual Academic Achievers. The scholarship is renewable for up to three additional years of full-time, undergraduate study if at least a 2.70 cumulative GPA is maintained. Selection is based on financial need, high school average, awards and recognitions, community and school involvements, and other considerations.

#### *Western New England University Scholarships*

Scholarships of varying amounts are awarded annually to deserving students who have demonstrated financial need and above-average academic performance. These awards are made possible by generous gifts from friends and alumni of the University through general scholarship giving.

#### *Mark Philip Willett Memorial Endowed Scholarship*

Annual scholarships are available to part-time students in the College of Engineering who are pursuing an undergraduate degree in Electrical Engineering. Individuals pursuing a concentration in computer engineering will receive special consideration. These scholarships are provided from a fund established by Constance Marie Willett, Ph.D. (MBA 1991) in memory of her brother, Mark Philip Willett (BSCPE 1988). Recipients must have a Western New England University cumulative GPA of 2.7 or higher, or be incoming freshmen. Preference will be given to individuals who possess good character and demonstrated leadership skills, with special consideration given to those who have overcome adversity as well. This award is for one year only; however, if the recipient continues to meet the established criteria, he/she will be considered for renewal on the same basis as new applicants.

*Wesley and Frances Wilson Scholarship*

Scholarships of amounts varying from \$200 to \$600 are available to full-time students. At least 10 awards are made each year. Preference is given to students in the greater Springfield, MA, area. The scholarship is funded through a trust established by E. Wesley and Frances Wilson, friends of Western New England University.

*The Women's Opportunity Endowed Scholarship*

A scholarship of not less than \$500 will be awarded to a full- or part-time female student, who demonstrates financial need, and who is committed to the pursuit of academic excellence.

*Theodore R. Zern First Year Student Endowed Scholarship*

A scholarship is awarded in the spring semester to a full-time freshman with demonstrated financial need and who also attended full-time during the immediately preceding fall semester. The scholarship was created through the generosity of dean of freshman and transfer students Theodore R. Zern and his wife, Roxanne. Dean Zern is the chief architect for the University's First Year Program and was with Western New England College for almost 40 years until his retirement.

*Federal Financial Assistance Programs*

The U.S. Department of Education provides financial aid for higher education. The following paragraphs serve as a guide to the six major financial aid programs in the U.S. Department of Education. These programs are available to full-time and part-time undergraduate students.

*Federal Pell Grants*

The Pell Grant program is available to undergraduate students demonstrating financial need. Eligible students may receive up to \$5,645 each year. Students may apply for these grants by submitting the Free Application for Federal Student Aid. These forms may be obtained from a high school guidance counselor or at [www.fafsa.gov](http://www.fafsa.gov).

*Federal Supplemental Educational Opportunity Grants*

Supplemental Educational Opportunity Grants are available to a limited number of undergraduate students with extreme financial need. These grants range from \$200 to \$4,000 a year.

*Federal Perkins Loan*

The University has established and administers a Perkins Student Loan Fund. Eligible students may borrow amounts not exceeding \$27,500 aggregate for pre-baccalaureate, and \$60,000 aggregate for all undergraduate and graduate years. Western New England University has a \$4,000 maximum per year.

*Federal Work-Study*

Part-time student employment is available to many students with financial need. Preference is generally given to applicants having the greatest financial need.

*Federal Direct Ford Student Loans*

Eligibility for a subsidized loan is based on financial need as determined by the analysis of a Free Application for Federal Student Aid. If a student does not qualify for a need based loan, the student may apply using the same application process and loan limits for an unsubsidized loan. The interest that accrues during periods of enrollment for a subsidized loan is paid by the federal government. The interest that accrues during periods of enrollment for an unsubsidized loan is paid by the student. Application can be made by completing the Free Application for Federal Student Aid. Freshman

students may borrow up to \$3,500 per year, sophomores may borrow up to \$4,500 per year, juniors and seniors may borrow up to \$5,500 per year. All undergraduate students may borrow up to an additional \$2,000 in an unsubsidized loan. Graduate students may borrow up to \$20,500 per year. The total amount that undergraduates may borrow is \$31,000, while the total for graduate students is \$138,500 (including undergraduate loans). First and second year independent students may borrow up to \$4,000 additionally under the unsubsidized loan program. Third and fourth year students may borrow up to \$5,000 additionally under the unsubsidized loan program.

*Federal Direct Parent Loan for Undergraduate Students (PLUS)*

Parents of dependent undergraduate students may borrow up to the cost of attendance minus any other financial aid resources under the PLUS Program. The interest rate for the PLUS loan is adjusted annually with a cap of nine percent. To apply go to <https://studentloans.gov/> for application and Master Promissory Note.

*Other Financial Assistance**State Scholarships*

Many states have established scholarship and grant programs to assist residents of their state. In Massachusetts, for example, students judged to be eligible can receive a \$1,600 award while attending a private institution within the Commonwealth. Other areas, such as Connecticut, New Hampshire, Pennsylvania, Rhode Island, Vermont, Maine, and Washington, DC, have similar programs. Application can be made by completing the Free Application for Federal Student Aid or by writing to your state Board of Higher Education. This program is available to full-time undergraduate students.

*Outside Assistance*

Many scholarship and financial assistance programs are available to deserving students through local and state civic groups, clubs, and organizations. Students are urged to seek out such programs in their local areas. Student Administrative Services also has several external scholarship publications for students to utilize. One may reference on the Internet ([www.finaid.org](http://www.finaid.org) or [www.fastweb.com](http://www.fastweb.com)) for links to other sources.

*Alternative Financing*

Several banks offer loans to students and parents to help pay for college. Loans can range from \$2,000 to cost of attendance. The interest rates are variable. No collateral is required, and borrowers must have a good credit rating and the ability to repay. Student Administrative Services has additional information and can refer families to participating lenders. These programs are available to full-time and part-time students.

*Joan B. Mulcahy Student Loan Fund*

In 1971 an emergency student loan fund was established through the generosity of faculty, staff, students, and friends of the University in memory of Joan B. Mulcahy. This fund is used to assist students in need of lesser loans for relatively short periods of time and for help as emergencies develop. The fund is self-supporting through repayments, and loans are granted on an interest-free basis. The fund is administered by the dean of students. This program is available to full-time and part-time undergraduate students.

## LEGAL MATTERS

Western New England University is required by various state and federal statutes to publish information about certain legislation that may affect some or all of our students. That information is presented below.

### Student Absence Due to Religious Beliefs

The General Laws of Massachusetts, Chapter 151C, Section 213 states the following: "Any student in an educational or vocational training institution, other than a religious or denominational educational or vocational training institution, who is unable, because of his religious beliefs, to attend classes or to participate in any examination, study, or work requirement on a particular day shall be excused from any such examination or study or work requirement, and shall be provided with an opportunity to make up such examination, study, or work requirement which he may have missed because of such absence on any particular day; provided, however, that such makeup examination or work shall not create an unreasonable burden upon such school. No fees of any kind shall be charged by the institution for making available to the said student such opportunity. No adverse or prejudicial effects shall result to any students who avail themselves of the provisions of the section."

### Controlled Substances Act

Part of the federal omnibus drug legislation is the "Drug-Free Workplace" Act of 1988. Under the provisions of this legislation federal grants or contracts must certify that they will provide drug-free work places; individuals receiving funding directly from the federal government will also have to certify that their conduct will be drug free. In the case of colleges and universities, the Department of Education has said individual Pell Grant recipients will have to certify that they are drug free to receive their student aid awards.

If colleges and universities do not promote drug-free work places, drug-free awareness programs, or establish procedures for reporting violations, they are subject to sanctions including suspension of payments, suspension or termination of grants, or debarment, thus ineligible to receive grants or awards from a federal agency during the term of debarment.

Students applying for financial aid involving federal funding must certify that they are drug free, and that they will remain drug free, in order to receive such federally funded student aid awards. Appropriate forms for such certification are available in the Office of Student Administrative Services of the University.

No fees of any kind shall be charged by the institution for making available to the said student such opportunity. No adverse or prejudicial effects shall result to any students who avail themselves of the provisions of this section.

### Confidentiality of Student Records

The Family Educational Rights and Privacy Act of 1974 (revised 1988, 1993) assures students the right to inspect and review all University records, files, and data directly related to them, with the exception of medical and psychiatric records, confidential recommendations submitted before January 1, 1975, records to which a student has waived the right of access, and financial records of the student's parents. The Privacy Act also prohibits the distribution of grades to parents or guardians without the prior written consent of the student, or a statement of dependency from the parent when the student is a dependent under the criteria of the Internal Revenue Code.

The Privacy Act requires the University to respect the privacy of education records but provides the right to make public at its discretion, without prior authorization from the individual student, the following personally identifiable information: name of student; local and permanent addresses and telephone numbers (including cellular telephone numbers); email address; class year; school or division of enrollment, major field of study; enrollment status; date and place of birth; dates of attendance at Western New England University, nature and dates of degrees, honors and awards received; weight and height of student athletes; participation in officially recognized sports and activities; and high school and any institution of higher learning previously attended.

A student may limit the release of the above information by submitting a written request to Student Administrative Services (SAS). However, drug and alcohol related incidents, which violate federal, state, or municipal laws, or any University policy related thereto, may be disclosed to parents under the following circumstances: (1) the student is under the age of 21, and (2) the University determines that the student has committed a disciplinary violation with respect to the use or possession of alcohol or drugs. Further details on the issue of privacy are also available at SAS.

### Firearms Possession

The General Laws of the Commonwealth of Massachusetts "(MGLC. 269 Section 10 (j))" prohibit the unauthorized possession of any firearm on the campus of any college or university within the Commonwealth. Students should be aware that the Commonwealth of Massachusetts strictly enforces its firearm laws. In Massachusetts, conviction for the illegal possession of a firearm carries a mandatory one-year jail sentence.

### Hazing

Under Massachusetts General Laws, Chapter 269, Sections 17, 18, and 19, any form of "hazing" is considered to be a criminal offense punishable by a fine and/or imprisonment. Furthermore, persons who witness or have knowledge of hazing incidents and fail to report them are also subject to similar penalties.

Each Western New England University student organization and athletic team, at the beginning of the academic year, and every student, at the time of registration, is provided with a copy of the Massachusetts General Laws concerning hazing. The officers of student clubs and organizations are required to sign a formal statement acknowledging receipt of such regulations and verifying their adherence to refrain from any harassment or activities which may serve to cause embarrassment to prospective members, initiates, or pledges. Any student organization found to be involved in such hazing or harassment of members or prospective members will have its recognition immediately withdrawn and be required to disband. Individual organizers and participants in hazing will be subject to strong disciplinary action, including immediate dismissal from the University.

### Immunizations and Health Record Requirements

The laws of the Commonwealth of Massachusetts require full-time students to present evidence of immunization against measles, mumps, rubella, diphtheria, tetanus, hepatitis B, and meningitis.

It is strongly recommended that female students receive the vaccine to protect them from human papillomavirus, the cause of cervical cancer.

Furthermore, effective August 2005, Massachusetts General Laws, Chapter 76, 15D and related regulations of the Massachusetts Department of Public Health (105 CMR 224.70) requires all new students at public and private residential schools that provide education to students in grades 9-12 and all new full- and part-time, undergraduate and graduate students in degree granting programs at postsecondary institutions that provide or license housing, to:

- Receive information about meningococcal disease and vaccine; and
- Provide documentation of receipt of one dose of meningococcal vaccine within the last five years, or qualify for one of the exemptions to immunization established by the statute.

All full-time students are required to provide a history and obtain a physical examination by a licensed healthcare provider within the previous 12 months. Immunizations, history, and physical examination must be submitted to Health Services and will be kept on file. No full-time student may continue beyond 30 days of the first day of class without the required verification.

The Health Services staff will administer required immunizations without charge if the Commonwealth is providing the immunizations. Physical examinations can be scheduled with Health Services for a fee.

### Non-Discrimination Policy

Western New England University is committed to the principle of equal opportunity in education and employment. The University does not discriminate on the basis of sex, race, color, creed, national origin, age, religion, sexual orientation, gender identity, gender expression, veteran status, or disability in admission to, access to, treatment in, or employment in its programs and activities.

The following person has been designated to handle inquiries regarding the University's nondiscrimination policies: Executive Director of Human Resources, Western New England University, 1215 Wilbraham Road, Springfield, MA 01119-2684. Inquiries concerning the application of nondiscrimination policies may also be referred to the Regional Director, Office for Civil Rights, U.S. Department of Education, J.W. McCormack P.O.C.H., Room 222, Boston, MA 02109-4557.

### Selective Service Registration

All male students who have not served either on active military duty or are not members of the Reserves and/or National Guard, or are not citizens of specific Federated States or Trust Territories, within 30 days of their 18th birthday must register with Selective Service. Furthermore, under Federal Regulations, Subpart C-Statement of Educational Purpose and Selective Service Registration Status, Sections 668.31, .32 and .33, appropriate registration with Selective Service is necessary before receiving any funds under Title IV, Higher Education Act Programs. The student can register for Selective Service during the FAFSA application process or by going online to [www.sss.gov](http://www.sss.gov). Until this has been done, he is ineligible to receive Title IV funding, including Perkins Loans, Ford Direct Loans, Supplemental Loans, Pell Grants, Work-Study, and similar federal monies.

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### Sexual Harassment

It is the policy of the University to maintain a working and educational environment free from all forms of sexual harassment or intimidation. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature are serious violations of University policy and will not be condoned or tolerated. Not only is sexual harassment a violation of University policy, but it may also violate federal and state laws. Any employee or student who is subjected to sexual harassment or intimidation should immediately contact the Executive Director of Human Resources and the Career Development Center, in the case of an employee, or the Vice President for Student Affairs and Dean of Students, in the case of a student. All complaints of sexual harassment will be investigated promptly and confidentially. Any employee or student who violates this policy will be subject to appropriate disciplinary action up to and including dismissal from the University.

### Smoke-Free Environment

In accordance with the provisions of the Massachusetts Clean Indoor Air Act of 1988, the University has established smoking policies for the campus. All campus buildings are smoke free.

### Student Right-to-Know and Campus Security Act (Clery Act)

The University is in compliance with the federal Student Right-to-Know and Campus Security Act which requires colleges to disclose graduation rates for students and to make available certain statistics and campus security policies. According to the requirements, data in these areas were tabulated beginning July 1, 1991, and reported during the summer of 1992 and each summer thereafter. It is the University's policy to provide information concerning security services available on campus. The University also practices the policy of notifying the University community as soon as possible after the commission of any crime that might portend personal danger to either students or employees. Campus crime statistics are available from the University's Department of Public Safety. Also, Student Administrative Services makes available data on graduation rates, athletic participation rates, and financial support.

Pursuant to the Campus Sex Crimes Prevention Act, any member of the Western New England University community may obtain information provided by the Commonwealth of Massachusetts as to any registered sex offender who may be enrolled or working at the University by contacting the Department of Public Safety.

### Universal Health Care

The Commonwealth of Massachusetts passed the Universal Health Care Act in 1988. Its provisions require that all full-time and three-quarter-time students be covered by health insurance that contains comprehensive, specified areas. Students must either enroll in the policy provided by the University or negotiate a hard waiver stipulating that the personal coverage already possessed contains all of the required coverage. No student can be admitted to class until one of the above options has been exercised.

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## TRAVEL DIRECTIONS

### From the East and West (Boston, Albany) via the Massachusetts Turnpike (I-90)

Leave the Mass. Pike at Exit 6. Turn left onto I-291. Take Exit 5 off I-291 ("Route 20-A West to East Springfield"). Bear right at the end of the exit ramp on Page Blvd. Take the left at the first light onto Roosevelt Ave. Take Roosevelt Ave. 2.5 miles to the intersection with Wilbraham Road (fifth traffic light). Turn left onto Wilbraham Road and follow it 1.5 miles through the second light. Turn right into the parking lot of the Kevin S. Delbridge Welcome Center. (Total 5.6 miles from Mass. Pike.)

### From the North via Interstate 91

Leave I-91 at Exit 8, ("Ludlow, Boston I-291"). Travel to Exit 5B, ("East Springfield"). Turn right off of the ramp onto Page Blvd. At the first light, turn left onto Roosevelt Ave. Take Roosevelt Ave. 2.5 miles to the intersection with Wilbraham Road (fifth traffic light). Turn left onto Wilbraham Road and follow it 1.5 miles through the second light. Turn right into the parking lot of the Kevin S. Delbridge Welcome Center. (Total 8.6 miles from I-91.)

### From the South via Interstate 91

Leave I-91 at Exit 2 ("East Longmeadow"). Follow signs ("Route 83") to the light at the intersection of Longhill and Sumner Ave. Turn right onto Sumner Ave. Travel straight on Sumner Ave. (which becomes Allen St.) to the light at the intersection of Allen St. and Bradley Road (3.2 miles). Turn left onto Bradley Road and travel 1.6 miles to Wilbraham Road and turn right. Travel 0.2 miles and turn right, into the parking lot of the Kevin S. Delbridge Welcome Center. (Total 5.7 miles from I-91.)



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Writing Proficiency

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