

2004-2005 CATALOGUE

Western New England College

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In 2003, Western New England College was named among America's top 100 colleges considered "Hidden Gems" by *Washington Post* education reporter Jay Mathews.



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Western New England College 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 College.





A MESSAGE FROM THE PRESIDENT

This catalogue conveys a rich and powerful portrait of a special institution that provides outstanding educational opportunities for all students. The Schools 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 College School of Law too is firmly established. Over 34,000 Western New England College students have been

prepared through their education to enter the world of work as responsible citizens—adaptable, entrepreneurial, and creative.

Western New England College is about more than its educational offerings; it is as much about individuals at the College 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 on the part of all of us at this College.

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

A handwritten signature in dark ink, written in a cursive style. The name 'Anthony Caprio' is clearly legible, with a fluid, connected script.

Anthony S. Caprio

ABOUT WESTERN NEW ENGLAND COLLEGE

The College

Western New England College is a private, comprehensive, coeducational institution located on a 215-acre campus in a suburban neighborhood four miles from downtown Springfield. Originally 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 new and current campus began in 1958.

Programs, Schools, Faculty, and Students

Western New England College offers a wide range of undergraduate degree programs as well as graduate programs in Arts & Sciences, Business, Engineering, and Law. There are 157 full-time faculty members in the College's four schools. The College also offers undergraduate and graduate degree programs at sites across the Commonwealth of Massachusetts.

The College enrolls over 4,500 students: 2,250 full-time undergraduates, 500 in full- and part-time programs in the School of Law, and approximately 1,800 in part-time undergraduate and graduate degree programs offered on campus and at the College's off-campus locations. The College attracts students from 26 states, the District of Columbia, Puerto Rico, and more than 11 foreign countries. There are more than 34,000 alumni of the College.

Mission Statement

Purpose

Western New England College facilitates student learning. The College prepares students to bring multiple perspectives of understanding to help them achieve balance and flexibility as proactive solution seekers in the rapidly changing global environment in which they work and live.

Position

Western New England College is committed to being a leader regionally and recognized nationally in providing integrated profession-

al and liberal learning. The College is characterized by a synergy that results internally from the collaboration of its programs in Arts and Sciences, Business, Engineering, and Law and externally from the important strategic partnerships and alliances forged with the local and regional business, educational, and civic communities.

The College provides excellence in teaching for all students—full-time, part-time, undergraduate, graduate, and law—in an environment that proactively supports achievement and success in academics for all students and where all activities, curricular and cocurricular, are viewed as educationally purposeful. All students are regarded as a resource in excellence whose special talents and attributes will be challenged by their educational program to assure success in their professional and personal development and lives.

Defining Characteristics

Integrated liberal and professional learning

This is the hallmark of an education at Western New England College. Every program at the College, whether in the liberal arts or professional studies, has two primary objectives: to combine broad knowledge and critical thinking with professionally focused depth, and to apply theory to real-world issues. Each undergraduate student's curriculum compares and contrasts the values, perspectives, and assumptions of natural science, social and behavioral science, history, cultural studies, ethics, and aesthetics, to perspectives from professional disciplines. Students are encouraged to explore offerings outside their schools and departments and take courses to enhance their majors and enrich their lives.

Emphasis on learning beyond the classroom

Learning can occur anytime, anywhere, and not just within the confines of the classroom. Opportunities for reinforcing, testing, and applying the lessons of the classroom, as well as for developing the whole person, abound outside the classroom and course setting. Both the campus and the external communi-

ty serve as learning laboratories for our students. Educationally purposeful experiences are invaluable to a student's learning and understanding of theoretical concepts.

Collaboration and synergy among the Schools of the College

The conscious and sustained collaboration among and within each of the Schools results in a synergistic educational environment in which innovative programs and learning options for all students are assured and in which teaching and learning are undertaken at the intersections of disciplines, professional or liberal.

Strategic partnerships and alliances

Our alumni, area businesses, other educational institutions, government, and the civic community are important allies as the College pursues its mission. Through these partnerships, these groups and individuals mutually benefit from supporting and participating in the advancement of the College's goals while, at the same time, expanding the learning opportunities and resources of the College.

Commitments

Teaching excellence

The College places primary emphasis on the work of the classroom while encouraging faculty scholarship, which enhances teaching. The College believes that the integration of multiple perspectives on major issues, a concern for ethical values, and an awareness of the global interactions of our times—important features of the College's programs—all have their classroom origin in the blend of scholarship and teaching characteristic of the faculty.

An atmosphere of personal concern

Through its emphasis on ethical behavior, concern for every member of the community, and individual empowerment, all members of the College community—students, staff, and faculty—are viewed as valued partners in the educational mission.

A community that values diversity

The College values diversity in students, staff, and faculty as an essential dimension of the learning environment.

Innovative programs and learning formats

The College encourages the design of new programs and methods in all of its offerings to ensure responsiveness both to the constantly changing demands of the business and professional world and to the learning needs of all the College's students.

A responsive technological environment

The College devotes significant resources to providing technology that supports the learning and performance needs of all members of the College community.

History of the College

In 1919 the education committee of the Springfield Central YMCA, after experimentation with informal classes, decided to offer college-level courses for credit. As a result, the Springfield Division of Northeastern College, known as Springfield-Northeastern, was established. Classes, held in the evening in the YMCA building on Chestnut Street for students studying part-time, were offered in law, business, and accounting. The first 13 graduates emerged in 1922 with the degree Bachelor of Commercial Science. In 1923, the first seven law graduates were recognized.

The parent institution, now Northeastern University, decided in 1950 to cease operations in Springfield. In 1951, the Springfield Division of Northeastern University became Western New England College with an autonomous charter to grant and confer the degrees of Bachelor of Business Administration and Bachelor of Laws. Dr. John D. Churchill, who had served as director of the Springfield Division from 1919 to 1951, became the College's first president, serving until 1954. The demand for education, following the Second World War, compelled the College's officials to add academic programs at a new, larger site.

On April 26, 1956, early in the presidency of Dr. Beaumont A. Herman, the actual purchase of land for the current Wilbraham Road campus was completed. In that same year the first day program was started; it was in engineering, with 53 students enrolled. The first building, originally known as East Building, and later renamed Emerson Hall in recognition of the College's first trustee chairman, Robert R. Emerson, opened in 1959. The College's charter was expanded in that same

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year to permit the College to grant the bachelor's degree in any field of business administration, science, engineering, education, and law, and certain master's degrees.

The School of Arts and Sciences was established in 1967, and in 1968 permission was granted to award all degrees as usually conferred in the Commonwealth of Massachusetts except for the doctorate. In 1970 the Western New England College School of Law began awarding the Juris Doctor degree. The College received accreditation as a general purpose institution in 1972.

The College flourished on its new campus. The decades of the Sixties, Seventies, and Eighties saw the College's academic programs expanding, its student body growing, and the addition of a number of buildings including the D'Amour Library, the S. Prestley Blake Law Center, and St. Germain Campus Center.

In 1993, the Alumni Healthful Living Center, a modern athletic and fitness center, was dedicated; in 1999, the LaRiviere Center, a residential living and learning center featuring suite-style living with a computer lab and meeting rooms, was dedicated; in 2001, The Evergreen Village Townhouses opened for upperclass students; the Welcome Center, housing undergraduate admissions and continuing education opened in 2002; and Commonwealth Hall opened in 2003 housing 240 sophomore and freshman students. The campus originally consisted of 34 acres and has grown to 215 acres of contiguous property located four miles east of downtown Springfield.

Educational Opportunities

The College 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 lives 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 College also provides academic and other support services for students needing assistance in their studies and for those with disabilities.

The College provides opportunities for study abroad in England, France, Italy, Mexico, and, through an affiliation agreement with American University in Washington, DC, in many other countries. Furthermore, the College 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.

Classes are conducted in five major classroom-laboratory buildings that provide almost 70 classrooms and laboratories.

The St. Germain Campus Center serves as a focal point for student activities and services. Included within the center are the dining hall, snack bar, faculty lunchroom, student lounges, convenience store, conference and student organization rooms, activity areas, and bookstore.

The College maintains several 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 College's new multi-purpose turf stadium serves varsity sports including football, field hockey, and lacrosse. A variety of athletic, recreational, and health-related activities are conducted in the Alumni Healthful Living Center, which serve the entire College community.

D'Amour Library

The D'Amour Library, which opened in 1983, contains over 119,000 volumes and offers an inviting atmosphere for research and quiet study. WILDPAC, the online catalogue, lists the holdings of both libraries on campus, the D'Amour Library and the Law Library. Both libraries use the Innovative Interfaces, Inc. software. There are Internet connections to library catalogues in the neighboring towns.

The library provides on-campus and off-campus access to Internet resources through its web page at libraries.wnec.edu. Resources available from the library's web page include WILDPAC, an electronic encyclopedia, EBSCOhost, FirstSearch, Compendex, IAC, and Newsbank. These are a few of the full text and abstracting databases available both on and off campus. Articles from the databases and other resources online may be printed using the library's intranet.

Free Internet access is available at the library for research by students. Library staff members have also searched and included a list of websites pertaining to courses offered at the College. These sites are updated on an ongoing basis.

At the request of faculty members, Information Literacy classes are offered by reference librarians Monday through Thursday from 9 a.m. to 9 p.m. and Friday from 9 a.m. to 4 p.m. Individual Information Literacy instruction is available at any time. Reference service is available to students Sunday 1 to 7 p.m., Monday-Thursday 9 a.m. to 9 p.m., and Friday 9 a.m. to 4 p.m.

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 its web page. Internet access to library databases is available 24 hours a day.

The Law Library

The School of Law library offers an extensive collection of print and electronic resources, as well as a highly dedicated staff to assist in student and faculty research efforts. The library's collection of more than 370,000 volumes includes the newest research and reference volumes as well as reprints of important historical texts. Supplementing these resources are Internet access, audio and video collections, microform materials, and

electronic research services such as LexisNexis and Westlaw, which provide access to substantial additional materials. The library is also a designated depository for selected federal government documents.

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

Computers

- All students, faculty, and staff have email accounts with privileges to forward campus mail to personal email accounts. Voicemail is available through a campus telephone system.
- A campus-wide fiber network links all academic, dormitory, library, and administrative buildings.
- New wireless networks are being prototyped in the Law School, School of Engineering, and D'Amour Library. Further expansion is being considered.
- More than 490 PCs are located in public access areas.
- Churchill Hall has 75 computers including two classrooms and a computer lab.
- The Writing Center, located in Herman Hall, is equipped with 50 PCs in two computer rooms.
- The mathematics and computer science classroom and lab in Herman Hall has 30 high-end PCs.
- Specialized accounting and engineering labs are equipped with 12 and 63 PCs, respectively.
- D'Amour Library has access to numerous online catalogues and databases. It also has 30 public access PCs. Printing services are also available.
- The Educational Technology Center, located on the ground level of the D'Amour Library includes a PC classroom with 38 PCs and a training/conference room with 10 PCs. Both rooms contain multi-media digital projection technology.

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- The LaRiviere Living and Learning Center is home to a state-of-the-art computer classroom with 30 PCs. Multimedia projection technologies are also present.
- The School of Law provides a legacy wireless network that permits students with laptops to connect directly to the campus network from the Law Library, classrooms, and lounges. A new more high-speed wireless network is being engineered and prototyped.
- The School of Law Library houses two computer labs with 23 PCs and one MAC which are reserved for law school students. There are an additional 12 public access PCs.

Professional and Regional Accreditation

The New England Association of Schools and Colleges (NEASC) regionally accredits Western New England College 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 Bachelor of Social Work program is accredited by the Council on Social Work Education (CSWE).

In Business:

The School of Business is accredited by AACSB International - The Association to Advance Collegiate Schools of Business.

Western New England College is the only private AACSB accredited college in western Massachusetts. With accreditation, Western New England College is among an elite company of 466 AACSB International accredited business programs.



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 multi-year review.

In Engineering:

The Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET) has accredited the Bachelor of Science programs in electrical, industrial, and mechanical engineering.

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 College 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. The School of Business is a member of AACSB International—The Association to Advance Collegiate Schools of Business.





UNDERGRADUATE ADMISSIONS FOR FULL-TIME ENROLLMENT

How to Learn More About Western New England College

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 thus can provide applicants with a personal perspective of the College and student life. While an interview is not required, the College encourages students to arrange for a personal interview at the Admissions Office.

In addition to a campus visit and the College literature, information is available electronically at www1.wnec.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
E-mail: ugradmis@wnec.edu

How to Apply for 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).

1. Students should obtain an application from the College's Undergraduate Admissions Office or complete the application online at www1.wnec.edu/admissions.
2. The completed application form should be returned with the nonrefundable \$50 application fee.
3. Students should forward to the Admissions Office an official high school transcript(s) as well as an official transcript of first term senior grades when available. Transfer students should forward official transcripts of final secondary work, as well as any previous undergraduate study, to the Admissions Office.

4. Results of the SAT I or ACT examinations should be forwarded to the Admissions Office.
5. A recommendation from a guidance counselor or teacher is required. Engineering applicants should submit a letter from a math or science teacher.

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:

1. Students should obtain an application from the College's Undergraduate Admissions Office or complete the application online at www1.wnec.edu/admissions.
2. The completed application form should be returned with the nonrefundable \$50 application fee (U.S. dollars).
3. Students should 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 forward to the Admissions Office an official English translation of transcripts of final secondary school work as well as any previous undergraduate study.
4. The results of the Test of English as a Foreign Language (TOEFL) should be forwarded to the Undergraduate Admissions Office.
5. An Affidavit of Support form must be submitted to the Admissions Office.
6. An official bank statement declaring that the financial sponsor has sufficient funding to support the student's education at Western New England College should be submitted on the bank's stationery.
7. A recommendation from a guidance counselor or teacher is required.
8. After the Undergraduate Admissions Office has received the \$100 deposit (U.S. dollars) for tuition, an I20 Form will be issued to an accepted international student.

Specific Requirements for the Various Schools

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:

School of Arts and Sciences

The School of Arts and Sciences requires 4 units English; 1 unit laboratory science; 2 units mathematics equivalent to two of the following: algebra I, geometry, or algebra II; 1 unit United States history.

1. One unit of chemistry is required for prospective majors in biology and chemistry. In addition, one unit of physics is recommended for prospective majors in chemistry.
2. Prospective majors in pre-pharmacy and pre-physician assistant are required to present 2 units of laboratory science, including biology and chemistry. In addition, physics with laboratory is recommended.
3. Prospective majors in chemistry are required to present 3 units of mathematics. Prospective majors in mathematics and computer science are required to present 3 units of mathematics, a fourth year is recommended.
4. Prospective majors in pre-pharmacy and pre-physician assistant are required to present 3 units of mathematics, including algebra I and II and geometry. In addition, pre-calculus is recommended.

School of Business

The School of Business requires 4 units English; 1 unit laboratory science; 3 units mathematics equivalent to algebra I, geometry, and algebra II; 1 unit United States history.

School of Engineering

The School of Engineering requires 4 units English; 1 unit United States history; 4 units mathematics equivalent to algebra I, geometry, algebra II, and an additional year beyond algebra II which includes trigonometry; 1 unit laboratory science; and 1 unit physics or chemistry (preferably both).

When Admission Decisions Are Made

Western New England College begins accepting students for the fall semester after the first term senior grades are available. The Undergraduate Admissions Office continues to review applications until the class is filled. The College also enrolls students mid-year. Acceptance for the January semester begins in early fall. Generally, a student is notified of the admissions decision within two weeks after the application is complete.

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 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 health care provider.
2. Verification of health insurance coverage, in compliance with Massachusetts state law, or participation in the College's insurance program.

Transfer Credit Evaluation

The amount of transfer credit allowed is based upon work completed at previous 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 its merits on a course-by-course basis. Normally, credit is allowed for each course that is equivalent to a corresponding course at Western New England College 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 College.

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 School of Business requires that at least fifty percent of the business credit hours required for the business degree be earned at Western New England College.

Transfer Students' Degree Requirements

Customarily, a student who has received an associate 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 College, 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 College in order to be granted a degree. Students transferring to Western New England College may follow the requirements of their chosen major using the year when they become a student at Western New England College or the year when they first matriculated at their first college if less than four years prior to the transfer to Western New England College. This decision will be made by the student and approved by the chairperson of the major program.

Advising for Transfer Students

A personal consultation with an academic advisor from the school in which admission is sought, either prior to or after formal application, is encouraged. A personal consultation with an academic advisor permits the student to take part in the determination of current status as well as the planning of remaining academic work at the College.

Transfer Articulation Agreements

Transfer articulation agreements have been arranged between Western New England College and various community and junior colleges. Associate degree graduates who have followed the prescribed programs of study at these specific institutions are allowed the opportunity to complete requirements for baccalaureate degrees in two years at Western New England College.

Re-Admission Procedure

Former students of the College seeking re-admission should complete the following procedure:

1. The student must submit to the Student Administrative Services Office (SAS) a request for readmission (to be reviewed by the dean of the appropriate academic school). Official transcripts of any academic work taken since leaving the College must be submitted prior to the beginning of classes in the semester in which the student wishes to register.
2. Students under academic suspension must have the approval of the dean of the academic school to which they seek readmission.
3. The student is subject to all rules, regulations, and academic requirements effective in the College at the time of readmission.

UNDERGRADUATE ADMISSIONS FOR PART-TIME STUDY

How to Apply for Admission to Part-time Study

The Office of Continuing Education oversees admission to part-time study. Part-time students are defined as those enrolled for 11 or fewer credit hours per semester. Students are accepted on a rolling admissions basis.

1. Application forms for day and evening study may be obtained from the Office of Continuing Education, or electronically from the Continuing Education link at www1.wnec.edu/continuinged/
2. A completed application includes:
 - a. The completed, signed application form.
 - b. The nonrefundable \$30 application fee.
 - c. An official high school transcript or proof of the achievement of high school equivalency.
 - d. An official transcript from each institution of higher education attended.
3. Applicants may be required to complete specific college-level courses in a non-degree status prior to formal admission.
4. Students admitted to part-time status may register for either day or evening courses.

GRADUATE ADMISSIONS

How to Apply for Admission

Admission to all graduate degree programs at Western New England College requires an earned baccalaureate from an accredited college or university and additional materials as described below. Applicants to the part-time Master's programs may be admitted for any term on a rolling admissions basis. The online MBA option has fixed entry points. The application process and admission to 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 College 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 comprised of 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 Non-degree Graduate Status. Graduate credit earned at Western New England College in non-degree graduate status may be applied toward graduate degree requirements up to a normal limit of seven 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 semester of 2004 counts toward graduation only until the end of the 2012 summer session.

Application Procedures for Graduate Programs:

1. Obtain an application for part-time master's degree programs from the Office of Continuing Education or electronically from the Continuing Education home page at www1.wnec.edu/continuinged/
2. Submit a completed, signed application for graduate admission with the required fee to the Office of Continuing Education.

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 school.
6. Applicants for graduate certificate programs should contact the Office of Continuing Education for application procedures.

School of Arts and Sciences. The Master of Arts in Mathematics (MAMT) and Master of Arts in English for Teachers (MAET) programs are designed primarily for middle and secondary school teachers in the specific disciplines. These programs are also available to teachers with an interest in further study in either mathematics or English and to individuals seeking a career change to teaching.

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. Applicants who have not taught must provide three letters of recommendation from persons who are qualified to comment on their potential success in teaching;
5. A current resume.

The Master of Education in Elementary Education (MEEE) program is designed primarily for elementary teachers who hold an initial license in the field, but is also available to all teachers who have an interest in graduate study in the areas provided by this coursework.

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;
4. Three letters of recommendation, at least one of which must be from the candidate's supervisor;
5. A current resume.

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 who fail to meet the admission standards or those desiring to take courses without the initial intent of pursuing the degrees can request provisional status, which allows them to take up to two courses in the desired program. A provisional 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. Non-degree 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.

School of Business. For the Master of Business Administration (MBA) and the Master of Science in Accounting (MSA) 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 from an accredited college or university.

- b. A satisfactory score on the Graduate Record Examination (GRE) or Law School Admission Test (LSAT) taken no more than five years prior to application date and before first graduate enrollment at Western New England College;
 - c. Professional certification, such as Certified Public Accountant, which meets Western New England College School of Business standards.
3. Two letters of recommendation.
 4. Submission of two essays.
 5. Optional resume.

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

1. The MSME and MSEE programs require a baccalaureate degree in mechanical and electrical engineering, respectively, from an accredited college or university. The MSEM program requires a baccalaureate degree in engineering, or a closely related field, from an accredited college or university.
2. A grade point average in the last half (usually 60 credit hours) of undergraduate work of a minimum of B (3.0). Candidates who fail to meet this admission standard can request provisional status.
3. Two letters of recommendation from persons acquainted with the applicant's business, professional, or academic achievements.
4. An official score report of the Graduate Record Examination (GRE), if requested by the admission review committee.

School of Law. The School of Law offers full- and part-time programs designed to be completed in three and four years respectively. A total of 88 academic credits are required for graduation. Additional information and an application form are available by contacting:

Admissions Office, Western New England College School of Law, 1215 Wilbraham Road, Springfield, MA 01119, 413-782-1406, or email: lawadmis@wnec.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 admitted conditionally at the discretion of the committee. Conditionally admitted students are informed of their special requirements at the time of acceptance. Conditions may include, but are not limited to, satisfactory completion of prerequisite courses; demonstrated academic performance in graduate courses at Western New England College; and satisfactory completion of undergraduate English and/or mathematics courses.

School of Law

Admission to 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

Candidates for this program are required to apply to both the MBA program through the School of Business and the JD program through the School of Law.

Status

Applicants to graduate programs in Arts and Sciences, Business, and Engineering at Western New England College 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.

Provisional Status

Students may be permitted to enroll in courses leading to a degree under provisional status before the application and evalua-

tion process is complete. The provisional 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 provisional 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 non-degree status.

Non-Degree Status

Students who wish to take graduate courses outside of a degree program may be admitted as non-degree status students. Non-degree 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 College graduate courses. Non-degree students may apply a maximum of seven credits toward a degree if they complete the application process and are accepted as degree status students. Non-degree 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. Advising of non-degree students is provided through the Office of Continuing Education.

NON-DEGREE STATUS

How to Register for Courses Taken in Non-degree Status

The Office of Continuing Education offers non-degree 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 non-degree status may not be applicable to the program chosen at the time of matriculation. Non-degree students are not eligible for most types of financial aid.

Certificates

Undergraduate certificates are available in chemistry, communication, community corrections (on-line), and computer studies. Graduate certificates are offered in graduate study in management, computer engineering, electrical engineering, engineering management, and mechanical engineering. Information is available through the Office of Continuing Education.

Undergraduate Non-Degree 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 College. Non-degree students must satisfy published course prerequisites and may be required to submit official transcripts as proof of appropriate preparation. Advising of non-degree students is provided through the Office of Continuing Education.

Graduate Non-Degree Study

Please refer to Non-Degree Status, above.



UNDERGRADUATE POLICIES, PROCEDURES, AND REQUIREMENTS FOR DEGREES

Basic Structure of the Undergraduate Degree

At Western New England College 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 can require up to 132 credit hours.

Course Loads

The College considers 12-17 credit hours 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 requires the recommendation of the student's advisor and approval by the dean of the academic school in which the student is enrolled.

Online Course Load

Full-time undergraduate students at Western New England College, 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 College courses.

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 com-

plete 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 College in a structured degree program.

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

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

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

Senior: 87 credit hours or more completed (95 or more credit hours in the School 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 College. A student not continually enrolled is expected to meet the requirements current at the time of readmission.

22 Undergraduate Academic Programs

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

1. General College requirements, see p. 39.
2. School requirements designed to broaden and deepen students' knowledge of disciplines outside of their majors.
3. The requirements of a major, see p. 55.

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 College. Transfer hours are not included in determining the Western New England College 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 College.
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 College.
8. Complete an Application for Degree form, which will place the student's name on the list for October, February, or May degree conferral, as appropriate.

Student Responsibilities and Academic Advising

It is the student's responsibility to understand the requirements of the chosen degree program and to plan for their orderly fulfillment. Each full-time student is assigned a faculty advisor who assists in making decisions to attain the student's desired academic goals. Although the advisor will be helpful, the ultimate responsibility for decisions remains with the student. Academic advising is also provided for part-time students. In the freshman year of full-time study, the academic advisor is assigned on the basis of enrollment in First Year Seminar.

It is important that students work with their academic advisors to develop an academic plan enabling them to complete many of the fundamental General College Requirements by the end of the sophomore, or second, full year of their four year program. While this may not always be possible due to schedule limitations of certain programs, students should work 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. It is important for students to choose elective courses that both broaden and deepen their knowledge of disciplines and skills that are important for success and well-being beyond their college experiences. This can be done by careful planning with an academic advisor.

POLICIES AND PROCEDURES

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 Freshman & Transfer Students.

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.

Course Offerings

Western New England College attempts to offer the widest possible selection of courses each year, but the College 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 College 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 College also reserves the right to change the requirements for graduation, the tuition, and the fees charged as circumstances dictate and needs arise.

Change in Student's Major Degree Program

Any change or modification of the student's major degree program requires the written permission of the student's academic dean. Concurrent registration in more than one academic program leading to separate degrees is not allowed without the written permission of the appropriate academic dean. Forms for these permissions may be obtained in the Student Administrative Services (SAS) office.

Course work for a student's degree program may be pursued elsewhere only with the prior written permission of the student's academic dean. Change of degree program may result in assignment to the catalogue requirements in effect at the time of the change.

Students are not permitted to pursue courses for credit on a non-degree status after having completed 36 credit hours of work at Western New England College.

Integrity of Scholarship

Honesty in all academic work is expected of every student. This means giving one's own answers in all class work, 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, which will be in effect for that entire semester. The statement of policy on attendance, appropriate to each class, is read at the first class meeting.

It is especially important for freshmen 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. Final examinations are given in all courses in accordance with a schedule published by the Academic Schedule Office. Students must take examinations on the day and at the time posted unless other arrangements have been approved in advance by the school dean and forwarded to the Academic Schedule Office. Updates of the final exam schedule are posted at strategic locations around campus and on the Academic Schedule Office's website, www.wnec.edu/acadsched

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 College 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 College established a college-wide Writing and Reading Advisory Board 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 College Requirements. (A detailed description of the writing requirements appears in the English course descriptions on pp. 188). 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 College has a Writing Center that is under the supervision of the director of the College Writing and Reading Program. In the Center, which is equipped with two computer rooms as well as print resources, trained writing assistants work with students at all ability levels in all phases of the writing process. There, students may work on writing assignments in any course from across the curriculum, design

individualized improvement programs, or work on personal writing projects.

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 school in which they are enrolled has granted a specific written exemption. Exemptions are considered on the basis of completion of prior physical education work at an approved college or university, prior active military service, advanced standing, physical incapacity, or other related circumstances. Only two PEHR credit hours count in the 122 credit hours total required for graduation.

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."

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, 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.

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 College. 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. 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 school. 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 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 regarding payments, p. 308.)

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 College

If it becomes necessary to withdraw from the College, an official withdrawal form must be completed and filed with the Student Administrative Services (SAS) office. Students are expected to consult with the Dean of Students, the Dean of Freshman and Transfer Students, or the Director of Continuing Education before taking such action. When such conditions as severe illness or absence from the area prevent a student from filing the form in person, an application for withdrawal by mail is acceptable. A letter should state the reasons necessitating the withdrawal. The date on which the official withdrawal form is filed with the Student Administrative Services office is considered to be the date of withdrawal. (See the section on Withdrawals and Refunds, p. 308.)

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 3.30-3.79.

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 3.30-3.79.

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 College 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 College and who have a grade point average in those courses of 3.50 or higher graduate *With Honors*.

Probation, Suspension, and Dismissal

Student academic progress is reviewed each semester to assure consistency with the standards outlined in the following statements. For the purpose of review, the number of credit hours defined in the standards will include credits transferred.

In instances when the opportunity to appeal suspension or dismissal for academic reasons is given, students must exercise that option within one week of the date of the notice of intent. If option to appeal is not exercised, the notice of intent (dismissal or suspension) shall be automatically imposed. All matters relating to academic status are made part of the student record.

All notices of suspension and dismissal shall be mailed to the home address of the student by both regular first class mail and certified return receipt mail. A copy of the notice will be sent to the student's faculty advisor and the assistant dean of the student's school.

Students with fewer than 19 credit hours will automatically be placed on academic probation if they attain less than a 1.7 grade point average at the end of their first semester at the College. A student with less than a 1.3 grade point average placed on academic probation must confer or meet with the Dean of Freshmen and Transfer Students no later than the end of the first week of the next academic semester and reach a written agreement with the Dean as to the conditions that the student must meet to continue at the College. A student who does not confer or meet with the Dean of Freshmen and Transfer Students will be automatically dismissed from the College. If the student fails to meet the conditions stated in the written agreement, the student shall be suspended from the College with the right of appeal to the Academic Standards Committee.

Students shall be automatically placed on probation if their semester grade point average subsequent to their first semester at the College is less than 2.0. If a student is placed on probation, the student shall meet with the assistant dean of the appropriate school

prior to the end of the first week of the next semester and enter into a written agreement stating the conditions upon which the student may continue at the College. If those conditions are not met, the student shall be suspended from the College with a right of appeal to the Academic Standards Committee.

A student on probation who does not achieve a 2.0 semester grade point average in the following semester shall be automatically suspended from the College for one semester. Students suspended from the College may file an appeal with the Academic Standards Committee. Upon review, the Academic Standards Committee may lift the suspension immediately and permit the student to continue at the College on probation with written conditions, or may suspend the student for one semester and establish conditions which must be met prior to the student returning to the College and/or conditions (i.e., specified course load or credit limitations) which the student must meet upon returning to the College. In cases in which conditions are imposed, the student may be dismissed from the College if the conditions are not met. Should the student not appeal the suspension by the end of the "suspension semester," the suspension shall convert to a dismissal from the College without the right of appeal. Any student who has an appeal for academic suspension upheld by the Academic Standards Committee must in every subsequent semester maintain semester GPA of 2.0 and complete 12 credits. If the student does not meet these requirements, suspension is automatic but appealable to the committee.

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 2.0 overall or in their major shall be automatically placed on probation. The student placed on probation shall meet with the assistant dean of the appropriate school prior to the end of the first week of the next semester and enter into a written agreement stating the conditions upon which the student may continue at the College. If those conditions are not met, the student shall be suspended from the College with a right of appeal to the Academic Standards Committee.

The Academic Standards Committee shall meet during the intersession between fall and spring semesters, as well as at the end of the spring semester.

Appeals of the Academic Standards Committee decisions will only be allowed if new information not previously disclosed is submitted in writing prior to the start of classes. This final appeal will be submitted and reviewed by the Vice President for Academic Affairs.

SPECIAL ACADEMIC OPPORTUNITIES

Advanced Placement (AP)

The College will normally grant credit for an AP course in which a student scores a 3, 4 or 5. 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 School will determine how the credits will be applied for courses taught in that school.

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 four-year, three-year, and two-year full tuition scholarships and provides \$250-\$400 a month to cadets with these tuition scholarships. 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 School of Arts and Sciences are limited to 15 credit hours, School of Business students are limited to 12 credit hours, and School 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 at www.umass.edu/afrotc.

Army ROTC

Full-time undergraduate and graduate students with at least four semesters remaining to graduation may apply to participate in the Army ROTC program at Western New

England College. Upon successful completion of the program, students receive commissions as second lieutenants in the U.S. Army.

Upper-level students (juniors and seniors) who commit to pursuing the commission receive a \$350-\$400 per month stipend while participating in ROTC. Scholarships are available in the Army program for freshmen and sophomores. These scholarships cover tuition, laboratory fees, and books and also pay each recipient a \$350-\$400 per month stipend.

There are limits to the amount of ROTC credit that can be counted toward a degree. Students majoring within the School of Arts and Sciences are limited to 15 credit hours, School of Business students are limited to 12 credit hours, and School 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 science at the Western New England College ROTC Building 413-782-1332 or 1-800-434-WNEC.

Air Force/Army ROTC College Incentive

Western New England College will provide full room and board to any student receiving a four-year ROTC scholarship. If the student selects Gateway for residence, they will receive full room and \$1,500.

Other students, including Advance Designees, who receive ROTC scholarships after enrolling at the College will receive full room during the period that they qualify for the ROTC scholarship.

The incentive will be considered part of all gift aid a student may receive from the College based on merit or need. In no case will the total gift aid provided by the College 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 dean of the school 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 section on Fees, p. 306.) See the academic calendar for deadline to change from "audit to credit" status or "credit to audit" status.

Graduate courses in the Schools of 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 College and who also have the listed prerequisites for the course selected. Courses in the School of Law are not available for alumni auditors. The College does not maintain any record of registration or completion of courses by alumni auditors.

Certificate Programs

Western New England College 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. The undergraduate certificate programs in chemistry, computer studies, criminal justice and communication can be found on p. 146. Information on graduate certificate programs in business and engineering can be found on pages 260 and 264.

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 Student Administrative Services (SAS) office for evaluation. CLEP credit may not be used to meet upper-level course requirements.

Credit for Nontraditional Educational Experience

The College 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 Office of Continuing Education for referral to Charter Oak State College where appropriate.

Cooperating Colleges of Greater Springfield (CCGS)

Western New England College, 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 College, and Westfield State College.

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 six semester hours 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, wintersession, and continuing education classes. Information concerning additional guidelines and registration procedures may be obtained from the Student Administrative Services (SAS) office.

Credit-in-Escrow

Able 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 College 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 College 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, personal mission statements, critical thinking, information literacy, public speaking skills, personal identity, and an introduction to a major, or exploring fields of study.

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 Program

The Honors Program at Western New England College is intended to give academically qualified and motivated students the opportunity to join a community of like students and participate in challenging courses taught by some of the college's best faculty. The program allows 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. Honors students generally take one honors course per semester for their first three years and work on a senior honors project during their final year. Honors courses tend to be small, discussion-based seminars, often taught by pairs of professors from different disciplines. Whatever the topic, honors courses encourage students to develop and support their own ideas, both orally and in writing, and to build critical reading and analytic skills. New honors students automatically become members of the Honors Student Union, and as such play an active role in the governance of the Honors Program, helping to plan future course offerings and program activities.

Admission

Entering freshmen with a high school GPA of at least 3.5 and SAT scores of 1100 or better will be invited to submit a written application to the 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. In some cases, the Honors Admissions Committee may wish to interview honors applicants. Application decisions will be made by the Honors Admissions Committee before and during the Summer Orientation and Registration Program (SOAR).

Transfer students entering Western New England College as freshmen, sophomores, or juniors, who achieved at least a 3.5 GPA at their previous colleges, may apply for admission to the Honors Program. At the discretion of the Director, transfer credit from three honors courses at other schools may be awarded up to a maximum of nine semester-hours. Second semester Western New England College freshmen may also apply for admission to the Honors Program if they have compiled a 3.5 GPA in their first semester at the College. If admitted, these students will enter the Honors Program in the fall of their sophomore year.

Honors Courses

The Honors Program at Western New England College is not a major in itself, but is open to students in any major. Students who have been admitted to the Honors Program must complete 6 HON courses (18 semester-hours) and a senior honors project in order to graduate with College Honors. Honors students are normally expected to take one honors course each semester for their first three years and work on their honors project during their senior year. All freshman honors students must take at least one introductory (100-level) honors course before proceeding to higher level honors courses. At least two of their six honors courses must be at the 300 level, and at least one of them must be an interdisciplinary honors course team-taught by faculty from two different schools or disciplines. Students also have the option of taking a faculty-directed research course (HON 333) as one of their six honors courses; this is an independent study supervised by a member of the honors faculty and approved by the Honors Research Committee.

Senior Honors Project

Each senior honors student works closely with an honors advisor to plan and execute a final project of his or her choice. This project can take any form the student wishes and does not necessarily need to be within the student's major; creativity is encouraged. This project must be worth at least 3 semester-hours of credit, and will normally take the form of an independent study (HON 495) with the student's honors advisor; 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 Research Committee.

Maintaining Honors Status

Students in the program must maintain a 3.3 overall GPA to graduate with College 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 School 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 B.A. degree shall apply.

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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 School of Business.

International Exchange Program School of Business

The International Exchange Program provides students an opportunity to study through exchange agreements that Western New England College has signed with some of the top universities located in countries such as France (courses taught in English), England, Scotland, and Ireland.

Students who participate in the International Exchange Program may study abroad for one semester or a full academic year. Courses taken at these universities can fulfill specific degree requirements at Western New England College. Students pay Western New England College tuition and fees for the semester(s) they spend abroad. Financial aid, scholarships, grants or other forms of financial support and tuition payments can be used in International Exchange Program. Housing fees are paid to the host universities.

Internships

In any discipline, qualified juniors and seniors may undertake an internship 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 School of Arts and Sciences, students are limited to six credit hours; in the School of Business and School of Engineering, students are limited to three credit hours. A student must hold at

least junior standing 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, a student must make arrangements with the **Career**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. If the student's academic dean approves the internship, the student will be authorized to register for the internship.

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 Schools 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 School approves the application, the student will be given a form authorizing registration for the work.

New England Center for Children Program

Western New England College 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 stu-

dents 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.

Off-Campus Programs

At present, programs are offered at specific sites leading to one or more of the following degrees: Associate of Arts in Liberal Studies, Bachelor of Arts in Liberal Studies, Bachelor of Science in Law Enforcement, Master of Science in Engineering Management, and Master of Science in Criminal Justice.

In 2003-2004 the College offered instruction at the following sites: Norwood Junior High School, Bedford High School, Malden High School, Archbishop Williams High School in Braintree, Greater New Bedford Regional Vocational Technical High School, Off-Campus Programs Campus at Devens, and at the Springfield Main Campus.

Pre-Law and 3+3 Law Program

Western New England College has offered legal education for many years, and the Western New England College 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 College students who want to attend Western New England College School of Law can earn their bachelor's and Juris Doctor's degrees in just six years instead of seven in the 3+3 Law program. To qualify for this program, students must have a minimum grade point average of 3.3 and score at the 50th percentile on the LSAT (or at the median score for the previous year's matriculants, whichever is higher). Students who qualify can enter the School of Law in the fall of their fourth undergraduate year and receive their bachelor's degree at its end. They are eligible to obtain their Juris Doctor degree after two more years of study.

It is not possible, however, for all majors to qualify for the 3+3 program. Chemistry, computer science, mathematics, social work, and all 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.

Transfer students must successfully complete at least 15 credit hours of undergraduate studies at Western New England College in order to apply for this program.

Students considering a career in law are eligible for membership in a 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, Professor William Mandel, 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 107,108,117,118; CHEM 105,106,209,210,219,220; PHYS 133,134; MATH 133,134; one year of a modern foreign language; and either BIO 310 or CHEM 314 and 324. As early as possible, all pre-medical and pre-dental students should consult the dean of the School 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 College 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 College 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

Western New England College provides numerous study abroad opportunities. These programs enhance career opportunities and graduate school qualifications, increase understanding of other cultures in the global community and international marketplace, improve foreign language skills, facilitate communication with other ethnic and national groups, and enable students to gain

insights into themselves as they encounter the differences of other cultures. Besides air fares, the costs are usually equivalent to those of Western New England College, and the educational experience can be priceless. Financial aid either from the institution or the government, can be carried over.

Western New England College students have a wide variety of institutions to choose from depending on their interests. They include the following:

Regent's College, London, has a student population of 750 students and offers a full range of undergraduate courses with majors in business, international relations, management, international business, and psychology. Internships are available at sites such as CNN News, the Museum of London, and constituency offices of Parliament as well as at galleries, therapy centers, lobbying organizations, and archives.

Richmond College, London, an institution of 1,100 students in two London locations, also offers a complete undergraduate curriculum. The college's majors include anthropology/sociology, art history, business administration, British studies, communications, computing, economics, environmental studies, history, international business, international relations, literature, mathematical science, political science, psychology, studio art, systems engineering, management, and theatre arts. Internships are available at such sites as the Institute for Economic Affairs, CNN News, Merrill Lynch, Chancarell Publishing, Poole Edwards, and the U.S. Embassy. Richmond also offers semesters at their Study Centres in Italy and Japan.

The Alliance Française, Paris, an institute for the promotion of French language and culture, offers courses at various levels in French, specialized French, and teacher training. The French government issues certificates and diplomas. Especially significant are the programs for students who want to teach French and the French-for-Business programs which train people for general business, the hotel industry, and administrative work.

The American University of Rome offers a semester or a year in Rome as well as Summer Study programs. The courses offered include Italian language, literature, art, architecture, Western civilization, communications, cinema, anthropology, economics, international relations, politics, sociology, business administration, finance, and banking. Accommodations are arranged at nearby apartments, and cultural excursions to Rome and the surrounding region are integral to the academic program. Internships sites have included American Express, Amnesty International, Associated Press, Banca di Roma, Canadian Embassy, Christies Fulbright Commission, and J. P. Morgan Bank.

The World Capitals Program of American University, another way to have a study abroad experience, has had an affiliation with Western New England College since 1974. When students participate in the program their faculty consist of professors from American University and from the university in the chosen city. The classroom education is supplemented with seminars and internships with key people in government, business, journalism, and the arts as well as field trips to sites of cultural and historical significance.

The list of cities includes Beijing, Hong Kong, Berlin, Brussels, Buenos Aires, Copenhagen, London, Madrid, Moscow, Prague, Rome, and Santiago. Programs include language study in each city and take advantage of opportunities in each locale, such as international business (Hong Kong, Copenhagen, and Paris), film studies (Prague and Rome), The European Union (Brussels, London, and Paris), and political science (Berlin, Brussels, Buenos Aires, London, Madrid, Moscow, Prague, and Santiago).

Students may study abroad at other institutions and their work will be transferred to Western New England College upon completion. Opportunities also exist for study throughout the world, especially in Mexico, Italy, and Australia.

For information on any of these programs, students should contact Dr. Saeed Ghahramani, Dean of the School of Arts and Sciences, director of the Study Abroad Program, or Dr. Alfred Ingham IV, assistant director of the Study Abroad Program.

Summer Session and Wintersession

Western New England College is in session throughout the year. To supplement the regular academic year, there is a summer session with courses offered both day and evening, and a wintersession 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 wintersession. Schedule information may be obtained by contacting the Office of Academic Scheduling (www.wnec.edu/acadsched), the Student Administrative Services (SAS) office, or the Office of Continuing Education.

Teacher Education Programs

The philosophy of these programs is one of providing academically well-prepared students with the professional preparation necessary to be effective teachers. They emphasize skills in classroom instruction, assessment, and management. The Massachusetts Department of Education has approved all of the College'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 College 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.

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 appropriate program coordinator.

Licensure requires more than just meeting course requirements. It is based upon competency standards. Interested persons must get a more detailed description of the program and the alternative procedures to meet

these standards. It is important to note that the designs of the following programs reflect changes that have been made to adapt to new Massachusetts regulations that went into effect October 1, 2001. Students who transfer into the College for their junior year will not be able to complete these programs in two years.

For the program completers in the academic year 2002-2003, Western New England College had a 100% pass rate on all Massachusetts Tests for Educator Licensure (MTEL).

Elementary Education Program

Throughout the history of Western New England College, graduates have gone on to careers in education. Since the establishment of the School of Arts and Sciences in 1967, the College's Secondary Education Program has been grounded on majors in the cultures, social sciences, mathematics, and the sciences. Following this tradition, in 1997 the College initiated a teacher licensure program for students interested in preparing for careers in elementary education, grades 1-6.

Students preparing for the Elementary Teacher license must select a major in one of the prescribed liberal arts and sciences disciplines. Students enrolled in the Elementary Education Program can complete the College's General College requirements, the School of Arts and Sciences requirements, and the teacher education requirements in four years with the following majors: English, history, sociology, political studies, and psychology. Students may also major in mathematics, but may not be able to graduate within the normal four-year academic program. Therefore, undergraduates are urged to work with the Education Department early in their college careers to carefully plan their college course of study. Detailed course information sheets are available from the Coordinator of the Elementary Education Program. A student must register with the Elementary Education Program by the end of the student's first year. A student will be notified of acceptance into the program during 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 and a one-on-one discussion with the Coordinator of the Elementary Education Program,
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,
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. Appropriate review sessions are offered on campus for students.

Students will be notified by letter in the spring of their junior year about their eligibility for the advanced level of the Elementary Education Program. 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 by getting a special recommendation from the chairperson of the student's major department and by passing the MTEL tests.

Required courses for students enrolled in the Elementary Education Program:

1. General College Requirements
 - ENGL 132 English Composition I*
 - and —
 - ENGL 133 English Composition II*
 - MATH 107 Math for Elementary Educators I
 - and —
 - MATH 108 Math for Elementary Educators II
 - BIO 103 Life Sciences I (Laboratory Science)
 - and —
 - PHYS 191 Basic Physics

*= or higher sequence

2. Requirements of the School of Arts and Sciences

Humanities Requirements:

- MUS 101 Music Appreciation
- ENGL 339 Children's Literature
- ENGL 290 Literary Horizons
- PH xxx Philosophy (3 credits)

Behavioral and Social Science Requirements:

- POSC 102 American National Government
- HIST 105 World Civilization — and —
- HIST 106 World Civilization
- HIST 111 United States History to 1877 — and —
- HIST 112 United States History 1878 to the Present
- ECO 101 Introduction to Economic Issues
- PSY 101 Introduction to Psychology
- PEHR 163 Games Children Play (1 credit)

The sequence of education and psychology courses which must be completed for this program includes the following:

- ED 301 Principles and Problems of Education
- PSY 304 Educational Psychology
- ED 350 Teaching of Elementary Reading and Language Arts*
- ED 375 Elementary Curriculum and Methods*
- ED 425 Elementary Education Topics*
- ED 479 Elementary Teaching Practicum**
- ED 480 Elementary Practicum Seminar

*Course includes 25 hours of fieldwork

**Course includes 300 hours in a full-time field-based practicum

Since ED 425, ED 479, and ED 480 are taken as a block, 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 these three courses.

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 competency standards set down by the Massachusetts Department of Education in a 300-hour practicum.

Currently the College'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.

Successful completion of the College's state approved program and the Massachusetts Tests for Educator Licensure (MTEL) leads the graduate to 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 College'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 College students are urged to request information early in their College years directly from the Department of Education in the state(s) from which they seek an additional license.

Secondary Education Program

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, business, chemistry, English, history, mathematics, and political studies.

Students selecting this career option are required to satisfy all degree requirements for a major program as well as to meet the requirements of the Secondary Education Program. It is important for students to speak with their academic advisors early in their college careers if they intend to pursue this option. In addition to satisfying the requirements shown on the degree audit statement for the major, there could be a course or more that teacher licensure candidates have to take beyond the major requirements as shown.

Students considering this option are advised to consult with the Director of the Secondary Education Program as soon as possible.

Since it requires the integration of 22 credit hours of education course work in education into the major program, students are encouraged to start planning for it early in their academic careers. 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 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 sessions 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 getting a special recommendation from the chairperson of the student's major department and by passing the MTEL tests.

The courses which must be completed for this program include the following:

ED 301 Principles and Problems of Education; PSY 304 Educational Psychology; ED 380 Secondary Education Topics; ED 403 Methods of Teaching in Secondary Schools; ED 409 Practicum in Secondary Teaching (9 credit hours); and ED 410 Secondary Practicum Seminar.

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 all require 25 hours of field work.

The course ED 409 requires a minimum of 150 hours in a full-time, field-based practicum.

Like the Elementary Education Program, the Secondary 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 following five years of successful teaching experience and involves completion of a Performance Assessment Program or an appropriate master's degree program

Washington Semester

Western New England College 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 Government and Politics, British Government and Politics, Business, Arts and Cultures, Journalism, Justice, Foreign Policy, Urban Affairs, or Public Administration. 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 the dean of the School of Arts and Sciences.

GENERAL COLLEGE REQUIREMENTS

Foundations

Fundamental to every student's success in college and beyond is competency in four areas that provide the foundation for life-long learning and for personal and professional effectiveness. These areas are mathematical analysis, communication, critical thinking and computer competence. The College 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 School 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 School 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 School.

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 school will specify requirements to achieve computer competence and information literacy.

Perspectives of Understanding

In its Mission Statement, the College 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, to other phenomena relevant to the students' experience, or to personal career aspirations. Perspectives of Understanding included in this requirement are Natural Science, Behavioral Science, History, Cultural Studies, Ethics, and Aesthetics, as described below.

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

- 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: If the integrated liberal and professional course includes one of the required perspectives, it will satisfy the requirement in that area. 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

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.

Behavioral Science Perspective

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

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.

Cultural Studies Perspective

The cultural studies perspective gives students a basic understanding of how people from at least one other culture view the world. To accomplish that, this component provides information about the major aspects of the culture: its religion, philosophy, ethical principles, literature, form of government, economy, arts, customs, traditions, and ways of life. Additionally, the cultural studies perspective enables students to see conflicts and disagreements within the culture.

Ethical Perspective

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

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

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

The College's Strategic Plan commits to a goal of making learning beyond the classroom (LBC) a significant element of every 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 two different LBC experiences, one for every two years of full-time study.

Normally each LBC experience will include:

- a) a minimum of fifteen (15) hours of involvement in an activity that provides a demonstrable opportunity for the student to reinforce or enhance understanding or skills introduced in the classroom,
- b) completion of a minimum 1000 word reflections 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:

- a) internships, senior projects, study abroad, or no more than one other course based experience that would incorporate an LBC opportunity,
- b) structured group activities in such areas as student clubs and associations, athletic teams, etc.,

- c) individual workplace-based or volunteer activities, on campus or off campus.

Evaluation of all LBC experiences will be through a member of the College's faculty or professional staff as determined by each School. Given the volume of LBC experiences processed each year, the Schools may arrange for readers who are part of the College 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 life-long 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 School will develop courses to meet its needs. See p. 30.

Personal Health and Wellness

Personal health and wellness courses focus on the theory and practice of life span wellness and fitness activities, and on the knowledge, attitudes, habits and skills needed to live well. Two one-credit courses in personal health and wellness are required of students in all majors. These courses are only required for full-time students.

SCHOOL OF ARTS AND SCIENCES

Dean Saeed Ghahramani

Associate Dean Ann Kizanis

Assistant Dean Alfred T. Ingham IV

Technology Liaison John P. Willemain

Programs of Study

The School of Arts and Sciences has three primary objectives:

1. To provide academic major and minor programs within the School as career preparation and as concentrations in the various fields of the liberal arts.
2. To provide the courses that satisfy general College requirements in keeping with the founding purpose of the School 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 Schools, and elective courses for the enrichment of students across the College.

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

The School of Arts and Sciences offers courses and programs leading to a Bachelor of Arts degree with majors in economics, communication, English, philosophy, political science, history, international studies, liberal studies, mathematics, political studies, psychology, or sociology; a Bachelor of Science degree with majors in biology, chemistry, computer science, criminal justice, law enforcement or psychology; and a Bachelor of Social Work degree. Programs 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 College 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 area 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 study abroad.

Minors

The course work for a degree may include one or more of the minors offered by the College. A minor may not be completed in the same discipline as the major. Descriptions of the requirements for the minors are listed on p. 141. Students wishing to take a minor must complete a form in the Office of the Dean, School of Arts and Sciences, no later than the beginning of the final semester.

Department Chairs and Faculty

Department of Communication and Humanities

Professor Emmett Barcalow, Chair

Professors Glen Ebisch, Martha Garabedian, Nancy Hoar, Burton Porter;

Associate Professor Jean-Marie Higiroy;

Assistant Professor Douglas Battema

Department of Criminal Justice and Sociology

Associate Professor Larry Field, Chair

Professor Richard Luxton;

Associate Professor Raymond Zucco;

Assistant Professors John Claffey, Alfred Ingham, Dawna Komorosky, Michaela Simpson;

Professional Educator Denise Kindschi Gosselin

Department of Economics

Professor Michael Meeropol, Chair

Professors John Andrulis, Herbert Eskot;

Associate Professor Arthur Schiller Casimir;

Assistant Professors Michael Enz, Carlos Liard-Muriente

Department of Education

Assistant Professor Deb Patterson, Chair

Professor Robert Klein

Department of English

Associate Professor Chip Rhodes, Chair

Professor Edward Jansen;

Associate Professors Janet Bowdan, Shelly Regenbaum, Brad Sullivan, Delmar Wilcox;

Assistant Professors Josie Brown-Rose, Jeffrey Yu;

Professional Educators William Grohe, Linda J. Oleksak, Anne Rice;

Administrator with faculty status Rosemary O'Donoghue

Department of History and Political Science

Professor Marc Dawson, Chair

Professors John Anzalotti, Theodore South, Donald Williams, Vladimir Wozniuk;

Associate Professors John Seung-Ho Baick, William Mandel;

Assistant Professor Peter Fairman

Department of Mathematics and Computer Science

Professor Dennis Luciano, Chair

Professors Saeed Ghahramani, Ann Kizanis, Richard Pelosi, Leh-Sheng Tang;

Associate Professors Mikhail Chkhenkeli, Alan Gorfin, Lorna Hanes, Lisa Hansen;

Assistant Professors Jennifer Beineke, Enam Hoq, David Mazur;

Visiting Assistant Professor Ray Kozlowski;

Professional Educator John Willemain

Department of Physical and Biological Sciences

Professor Lorraine Sartori, Chair

Professors Walter Coombs, Robert Holdsworth, David Savickas;

Associate Professors Gail Fletcher, Daniel Hatten, William Macanka, Karl Martini, Anne Poirot;

Instructor Karl Sternberg

Department of Psychology

Professor Dennis Kolodziejski, Chair

Professor Kathleen Dillon;

Associate Professors Chris Hakala; Sheralee Tershner;

Assistant Professor Dongxiao Qin

Department of Social Work

Associate Professor Sara Weinberger, Chair

Professor George Caulton;

Associate Professor Jeff Schrenzel

Requirements

Students in the School of Arts and Sciences are required to satisfy the General College Requirements, as indicated on p. 39 - 41. All students majoring within the School 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 at least one more perspectives course, for a total of at least eight courses, within the area of Perspectives of Understanding on p. 40.
4. Humanities Requirement. Complete at least six additional credit hours chosen from among art, cultures, languages, literature, music, and philosophy. Of these, at least three credit hours must be in upper level literature. Note: The following courses do not count in fulfilling this requirement: 100-level English courses, COMM 320 Professional Communication, COMM 340 Business Communication, and nonliterary Special Topics courses.

- 5 Behavioral/Social Science Requirements. Complete at least six additional credit hours chosen from among criminal justice, economics, education, geography, political science, history, international studies, psychology, social work, and sociology. From among these six credits and the three credits from the Behavioral Perspective, at least three credit hours must be in political science, economics, or International Studies 101, and three credit hours must be in psychology or sociology. Note: Introduction to Statistics for the Social Sciences does not count in fulfilling this requirement.
6. 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.

Each student's program is developed in close consultation with a faculty advisor.

Non-business majors can apply no more than 25% of business coursework to their graduation requirements.

SCHOOL OF BUSINESS

Dean Stanley Kowalski Jr.

Assistant Dean for Graduate Programs
Harlan Spotts

Assistant Dean for Undergraduate Programs
Paul Tarsa

School of Business Mission Statement

Our mission is to facilitate learning about business to prepare the diverse community of students whom we serve for successful careers and productive lives. Our greatest priority is to create a varied and responsive learning environment for our students. Through an emphasis on teamwork, communication, and problem solving skills, combined with an atmosphere of personal concern for the learning needs of each student, we provide academic challenge and individual support to enable each student to strive for personal and professional excellence.

High quality in our business programs is facilitated through the integration of liberal and professional curricula, the extensive use of information technology, and learning experiences beyond the classroom. Our educational programs are designed to support our students in gaining the knowledge and skills needed to enable them to become active in their communities, and ready for the personal and professional challenges of a rapidly changing global environment.

In all our programs and processes we maintain high quality through continuous improvement. In our undergraduate programs, the goal is preparation for entry to careers and graduate studies; in our graduate programs, the goal is career enhancement. Our part-time programs at both the undergraduate and graduate levels reflect our historical and continuing commitment to the educational needs of working adults.

We are committed to faculty scholarship with primary emphasis on instructional development and applied research. Service to the College and community is valued and encouraged as an essential responsibility of every member of the faculty.

We value all our stakeholders. Our students, alumni, the faculty and staff of the College, our trustees, and the business community are important partners in our mission. We view each of these groups as an invaluable resource in our continuing efforts to enhance the learning of our students.

The School of Business is accredited by AACSB International - The Association to Advance Collegiate Schools of Business.

Western New England College is the only private AACSB accredited college in western Massachusetts. With accreditation, Western New England College is among an elite company of 466 AACSB International accredited business programs.



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 multi-year review.

Key Mission Elements:

Diverse community of students – We serve students from more than 30 states and several countries, however, the vast majority of our students are primarily from the New England, New Jersey, and New York areas. We have traditional undergraduate students and working adults who are pursuing their undergraduate and graduate degrees part-time. Additionally, our students represent a wide range of levels in terms of academic preparation.

The active integration of liberal and professional learning – The College is committed to meaningful integration of the liberal arts and professionally oriented courses in each of its programs of study. At least 50% of every student's business program must be in non-business courses. The School of Business has successfully worked with colleagues in the Arts and Sciences to develop and deliver nonbusiness courses that are appropriate for business majors. The required math sequence, economics sequence, communication courses, and the Ethics in the Professions course (delivered by the philosophy faculty) are examples of successful synergies across schools.

The extensive use of information technology – Technology is widely available to students and faculty and is used extensively across the curriculum. Technology is effective as an instructional tool and as a knowledge base to adequately prepare students for career entry or career enhancement. Mainstream software packages (e.g. Microsoft Office) are utilized in key courses in the business core. In general, the Stakeholder Advisory and our alumni are key resources in this regard.

An emphasis on learning beyond the classroom – LBC is a requirement for every student in the College. Opportunities include internships, cocurricular clubs and organizations, Junior Achievement, Habitat for Humanity, Mason Square Program, and other community service and cultural activities. The College sees LBC as a means for enhancing the student's readiness for transition to career entry and good citizenship. The College has created and staffed the Full-time position of Director of Learning Beyond the Classroom.

Atmosphere of personal concern – Every member of the faculty is charged with responsibility for assisting students with decisions about their programs, majors, and development toward their career. There is a strong norm of faculty intervention, both with advisees and with students in our courses, to ensure appropriate support, especially for student performance problems. Faculty register students for courses as part of the academic advising process.

Committed to faculty scholarship – Our goal is the continuing intellectual contribution by every member of our faculty. To support this goal, there is a wide array of resources for faculty intellectual development including a program of sabbaticals, summer grants, release time, reduced course preparations, instructional grants, on-line course development grants, professional memberships, and travel support. Research and/or Scholarship (Intellectual Contributions) constitutes an important part of the Annual Review of each faculty member.

Our stakeholders, important partners in our mission – Each of our stakeholder groups is a critical source of feedback and input for innovation and improvement. Trustees, alumni, and the business community are also key sources of instructional support as teachers and speakers; of practicum, internship, net-

working, and employment opportunities for our students; and of service and research opportunities for our faculty.

Goals for students in the School of Business include:

1. Integrated understanding of the fundamental systems of business (management, marketing, accounting, finance, and information systems).
2. Depth of understanding and specific competencies in at least one of these fundamental business systems.
3. Effectiveness in personal and professional communication. (Ability to listen and to present ideas clearly, both orally and in writing, in organizational settings.)
4. Capacity for effective and ethical decisions. (Ability to generate, evaluate, select, and implement alternatives consistent with decision goals and standards of ethical behavior.)

Concerning the General College Requirements specific to the School of Business all entering freshmen must complete the first year Business Seminar. This course addresses the foundation for the Critical Thinking, Oral Communications and Information Literacy components of the General College Requirements. The Computer Literacy component is satisfied through a two-course sequence in Computer Information Systems. All business students will also be required to complete one LBC experience for every two years of full time study.

5. Ability to research industries, organizations, and issues to support business decision processes. (Identify and access appropriate information sources, select and summarize relevant information.)
6. Ability to apply critical thinking skills (analysis, inference, explanation, interpretation, and evaluation) to understand and respond to business issues.
7. Ability to use statistical and financial analysis in evaluating data and business problem solving.
8. Ability to generate new alternatives and innovative solutions to business problems.

9. Integrated understanding of the broad range of factors (global, political, social, legal, regulatory, environmental, technological, and demographic) that shape and transform the business environment.
10. Ability to perform effectively on teams. (Ability to work collaboratively to complete complex tasks, to provide and accept task-related input and feedback, and to share responsibility for team performance.)
11. Competency in the use of computer/information technology (business information software and systems, the Internet, and other data sources) to access and manage information, and to support communication.
12. Capacity to select a career direction and to identify and pursue career oriented learning and employment opportunities.

Department Chairs and Faculty

Department of Accounting and Finance

Associate Professor William Bosworth, Chair

Professors Claire Bronson, May H. Lo;

Associate Professors R. Loring Carlson, John Coulter, Sharon Lee, Shekar T. Shetty, Thomas Vogel;

Assistant Professor Khim L. Sim

Department of Management

Professor Anthony F. Chelte, Chair

Professors Russell Fanelli, William Ferris, Peter Hess, Ned Schwartz, Harvey Shrage;

Associate Professors Lynn Bowes-Sperry, Janice Jackson, Minoo Tehrani, Sharianne Walker;

Assistant Professors Daniel Covell, Jeanie Forray

Department of Marketing and Computer Information Systems

Associate Professor Paul Costanzo, Chair

Professors Anil Gulati, Jerzy Letkowski, Marilyn Pelosi;

Associate Professors Elizabeth Elam, David Russell, Harlan Spotts;

Assistant Professors Tuncay Bayrak, Janelle Goodnight;

Professional Educators Peter Daboul, James McKeon;

Requirements

Most majors in the School of Business lead to the degree Bachelor of Science in Business Administration. Complete requirements for each of the majors in the School of Business are specified under a separate section of this catalogue devoted to major programs. They are accounting, computer information systems, finance, general business, management, marketing, marketing communications/advertising, and sport management. Each undergraduate major in the School 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. Complete at least 33 credit hours of course work at the 300-400 level.
2. Complete at least 12 credit hours of course work at the 300-400 level in the major at Western New England College. The identification of these upper-level courses are listed under each major.
3. Apply no more than 12 credit hours of ROTC courses towards the graduation requirements.
4. Meet all of the requirements specified under Academics, Undergraduate Policies, Procedures, Requirements, and General College Requirements in this catalogue.
5. School of Business Core Requirements (80 credit hours)

School of Business Core Requirements (80 credits)

The following courses are required of all business majors and include College-wide requirements. All are three credit courses unless otherwise noted.

Business Courses (39 credits)

BUS 101 First Year Seminar*
 CIS 102 Computer Tools for Business
 MAN 101 Principles of Management
 AC 201 Financial Reporting
 MK 200 Principles of Marketing
 CIS 202 Introduction to Information Systems
 AC 202 Managerial Accounting
 QM 201 Introduction to Business Statistics
 FIN 214 Introduction to Finance

BUS 301 Integrated Business Operations
 LS 301*** Legal Aspects of Business
 QM 310 Quality and Operations Management
 BUS 450 Business Strategy

**Required of all entering freshman and transfer students with fewer than 15 credit hours. Transfer students with 15 or more credit hours take a general elective in its place.*

****For Sport Management majors, LS 360 fulfills this requirement.*

Non-Business Courses (41 credits)

ENGL 132-133 English Composition I & II (6 cr)
 MATH 111-112** Analysis for Business and Economics I & II (6 cr)
 — or —
 MATH 123-124 Calculus I & II for Management, Life and Social Sciences (6 cr)
 Lab Sciences** Choice of any two: biology, chemistry, geology, meteorology, or physics (6 cr)
 EC 205-206 Principles of Economics I & II (6 cr)
 PSY 101 Introduction to Psychology
 — or —
 SO 101 Introduction to Sociology
 HIST xxx History Requirement
 COMM 201 Principles of Communication
 PH 310 Ethics in the Professions
 CUL xxx** Elements of Culture Requirement
 PEHR 151* Personal Health and Wellness (1 cr)
 PEHR 153-159* Lifetime Activities Series (1 cr)

**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 non-business elective credit counted toward graduation.

***Students in BBA program may substitute one Business Math course for Math 111-112 or 123-124; one non-lab science for the two lab sciences; and one humanities elective for CUL XXX.*

Non-business majors can apply no more than 25% of business coursework to their graduation requirements.

SCHOOL OF ENGINEERING

Dean Carl Rathmann

Assistant Dean Richard Grabiec Jr.

Graduates of the School of Engineering, now numbering more than 3000, are active throughout the engineering profession:

- serving the engineering needs of local, national, and multinational communities and enterprises;
- applying their knowledge in an ethically responsible manner to provide solutions that meet society's needs;
- engaging in lifelong learning which keeps them abreast of contemporary issues and the state of the art in their disciplines, and are aware of how these solutions may impact society and the environment;
- functioning on engineering teams and are effective communicators inside and outside of those teams; and
- successfully pursuing advanced degrees.

They have benefited from a learning environment that:

- considers student success to be of paramount importance and to be fostered by maintaining a positive and supportive climate;
- offers personalized instruction with a high degree of faculty-student interaction;
- is practice-oriented, and therefore has strong laboratory, project, and workplace components;
- incorporates collaboration with industry as part of the undergraduate experience;
- emphasizes non-technical professional skills as well as technical competence;
- has curricula responsive to the needs of industry and society; and
- strives to make our students sensitive to the cultural and professional environments in which they work and live.

The School of Engineering has been preparing students for successful engineering careers for over fifty 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 sobering obligations upon beginning their careers.

The School of Engineering recognizes that the professional education of students for such a task requires a *partnership* of faculty, staff, administrators and students. It is only with all partners working hard together, and with mutual respect for each other, that our common goal of excellence in preparation of students for the engineering profession can be achieved.

Students in the School of Engineering are expected to bring to this partnership

- a willingness to learn and to demonstrate their mastery of the subject material,
- the intent and motivation to graduate and to achieve their stated degree objectives as optimally as possible,
- an appropriate attitude regarding the seriousness of their studies, and
- an appreciation of the value of their education.

Throughout their academic careers in the School of Engineering, they should acquire not only the technical expertise that can be learned in the classroom and the laboratory, but also an esteem for the profession, a maturity of manner, a respect for colleagues, and a credo to guide both personal and professional behavior. These qualities are what makes a graduate of Western New England College's School of Engineering desirable.

Faculty members of the School of Engineering are expected to bring to the partnership the experiences of having been students themselves and then having practiced in the profession, acquiring the expertise that only practice can perfect, and, very importantly, an eagerness to share this expertise with students.

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 School 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.

Guided by the faculty's commitment to that obligation, the School of Engineering has adopted the following statements to guide its development and to declare publicly who we are, what we see ourselves becoming, our core values, our educational philosophy, and our educational objectives. These formal statements are publicly displayed throughout Sleith Hall, the home of the School of Engineering.

The Mission of the School of Engineering

The mission of the School of Engineering is to provide its students with a supportive environment that facilitates the art, science, and responsibilities of engineering.

The Vision of the School of Engineering

The School of Engineering seeks to become nationally recognized for graduating highly qualified engineers who upon graduation can quickly assume their professional responsibilities, be immediate contributors, be innovative practitioners in their disciplines, and be successful in advanced studies.

The Values of the School of Engineering

The School of Engineering holds these values as core to its mission:

- maintaining curricula which emphasize problem solving skills, laboratory expertise, communication competency, interdisciplinary teamwork, and leadership, and which demand mastery of sound theoretical bases in mathematics, science and engineering fundamentals;
- assuring the relevancy of programs by utilizing communication channels among the faculty, alumni, industry leaders and other institutions to seek pertinent advice;
- developing in each student a strong sense of professionalism, a set of high ethical standards, and the pride that comes from accomplishment;
- providing an environment in which each person, including non-traditional and disadvantaged students, can achieve personal excellence as part of a lifelong commitment to learning;
- sustaining the unique qualities of the school's faculty by seeking practicing scholars with both advanced degrees and substantial professional experience;
- supporting and recognizing innovation and excellence in teaching;
- promoting applied research by the faculty and fostering scholarly interaction among faculty, college colleagues, students and practicing professionals; and
- exercising careful stewardship of resources provided to operate and improve the school's programs.

The Educational Objective of the School of Engineering

This educational philosophy is summarized in the educational objective of the School of Engineering which is to produce engineers whose careers and professional behavior are marked consistently by:

- The highest standards of honesty and integrity;
- Creative, viable and holistic solutions that reflect concern for social, political, economic and environmental constraints and consequences;
- Personal accountability for their professional activities;
- A continuing quest for professional and personal advancement;
- A work ethic that embraces teamwork, accurate and thorough communication, and timeliness in task completion;
- An allegiance to employer and/or client; and
- A personal flexibility sufficient to adapt to rapid or major change.
- Each of the degree programs has specific program educational objectives supporting these school objectives.

Programs of Study

The School of Engineering offers curricula leading to the degrees:

Bachelor of Science in Biomedical Engineering (B.S.BME.)

Bachelor of Science in Electrical Engineering (B.S.E.E.)

Bachelor of Science in Industrial Engineering (B.S.I.E.)

Bachelor of Science in Mechanical Engineering (B.S.M.E.)

The last three degree programs are professionally accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore MD, 21202-4012, (410) 347-7700.

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, without 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 School of Arts and Science, each program also integrates liberal and professional learning to provide the balance needed by modern engineering practitioners.

The School 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 does modern practice play 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 through the School's IDEA Center.

While undergraduate courses are regularly offered days and evenings, it is not generally possible to complete an entire degree program in the evening. By arrangement, time-specific needs of students are accommodated by minimizing the inconvenience to the students, as best as the school is able.

Graduate study is offered primarily in the evenings and online leading to the degrees:

Master of Science in Electrical Engineering (M.S.E.E.)

Master of Science in Engineering Management (M.S.E.M.)

Master of Science in Mechanical Engineering (M.S.M.E.)

Articulation 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 School 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, formal articulation agreements have been signed with the following community colleges: Berkshire, Dutchess, Greenfield, Holyoke, Hudson Valley, Manchester Technical, Mohawk Valley, Rhode Island, and Springfield Technical, as well as Southern Connecticut State University. Other agreements are being developed.

Department Chairs and Faculty

Department of Biomedical Engineering

Associate Professor Steven Schreiner, Chair

Professor Judy Cezeaux;

Assistant Professor Diane Muratore

Department of Electrical and Computer Engineering

Associate Professor James Moriarty, Chair

Professors Stephen Crist, Ronald Musiak, Kourosh Rahnamai;

Associate Professor John Burke;

Assistant Professor Steven Northrup;

Professor Emeriti William Bradley, Rene Dube, James Masi

Department of Industrial and Manufacturing Engineering

Professor Eric Haffner, Chair;

Associate Professors Richard Grabiec, Thomas Keyser;

Assistant Professors William Brown, Abdul Kamal;

Professor Emeritus J. Byron Nelson

Department of Mechanical Engineering
Professor Said Dini, Chair

Professors Mohammed Khosrowjerdi, Carl Rathmann;

Associate Professors Richard Mindek, Mary B. Vollaro;

Assistant Professors Bart Lipkens, Glenn Vallee;

Professor Emeriti Robert Azar, Wellen Davison, Alan Karplus, Walter Presz, Henry Sundberg, Richard Veronesi

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 academic advisors permit students to participate in both the determination of their current status and the planning and scheduling of further course work. The College is committed to helping students succeed and seeks to challenge students with strong backgrounds and gives advanced placement for those who qualify.

Non-business majors can apply no more than 25% of business coursework to their graduation requirements.

Freshman Year

Fall Semester

ENGL 132 English Composition I

ENGR 102 First Year Engineering Seminar

ENGR 103 Introduction to Engineering

MATH 133 Calculus I

PEHR 151 Personal Health and Wellness

PHYS 133 Mechanics

Spring Semester

ENGL 133 English Composition II

ENGR 105 Computer Program Design

ENGR 110 Engineering Problem Solving

MATH 134 Calculus II

PEHR 153-199 Lifetime Activity Series

PHYS 134 Electricity and Magnetism

Individual curricula in biomedical 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 in the First Year Engineering Seminar and 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 independent 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, mathematics, science, or business. Undergraduate engineering students may take 500-level engineering courses for which they have satisfied the prerequisite requirements.

Learning Beyond the Classroom (Undergraduate Programs)

The College's Strategic Plan commits to a goal of 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.

CONTINUING EDUCATION

L. Douglas Kenyon, Director

Linda K. Bowman, Associate Director, Continuing Education, and Director, Professional Development

Ida B. Wilcox, Assistant Director, Springfield Off-Campus Programs and Professional Development

Judy Cadden, Assistant Director, Student Services

Lisa M. Vachon, Educational Counselor/Recruiter

Part-time Day and Evening Study

Undergraduate

Western New England College 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 College may accept qualified part-time students into its daytime undergraduate degree programs, with the exception of Pre-pharmacy and the Pre-physician's Assistant Programs, which require full-time study. Part-time evening degree programs are, in the School of Arts and Sciences: Law Enforcement and Liberal Studies; in the School of Business: Accounting, Computer Information Systems, General Business, Management, Online Bachelor of Business Administration; in the School of Engineering: Electrical, Electrical with Computer concentration, Industrial, Mechanical, Mechanical with Manufacturing concentration.

Undergraduate Non-degree Options

Certificates

Western New England College makes several certificate programs available to those who do not wish a degree, but who want specialized training that goes beyond a few courses in a subject. The undergraduate Certificate Programs in chemistry, community corrections (online), computer studies, and communication can be found on p. 146. Further information is available through the Office of Continuing Education.

Undergraduate Non-degree Courses

Temporary non-degree 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. Qualifications include high school graduation or its equivalent, the maintaining of an average of at least 2.0 in courses taken at Western New England College and the completion of all course prerequisites. Students may enroll in a maximum of 36 credits under non-degree status. Advising and registration of non-degree students takes place in the Office of Continuing Education. Non-degree students may also apply for the certificate programs, which are described in greater detail on p. 146.

Professional Development

Western New England College provides opportunities for professional development through conferences, workshops, seminars and non-credit programming. These programs are designed to help professionals quickly update and acquire the job-related skills and information they need.



UNDERGRADUATE MAJOR PROGRAMS

ACCOUNTING MAJOR

School of Business

General Information

The course of study for accounting majors is designed to provide the professional education needed for careers in a broad range of positions in industrial, public, and institutional accounting. The combination of training in accounting, managerial 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 for a fifth-year, Master of Science in Accounting program that is intended to meet the 150-hour academic requirement that has been adopted by many state Accounting Boards. 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 Opportunities

Accounting majors find positions in national and regional public accounting, corporate and financial accounting, taxation, internal audit, and governmental and non-profit accounting. The major provides an excellent foundation for legal careers and advanced business degrees.

Faculty

Professor May H. Lo

Associate Professors: R. Loring Carlson, John Coulter, Thomas Vogel

Assistant Professor: Khim L. Sim

Program Objectives

1. Understand the use of accounting information in the planning, controlling, and decision-making processes in organizations.
2. Classify and summarize financial information in accordance with Generally Accepted Accounting Principles.
3. Apply appropriate techniques of analysis and evaluation to financial and non-financial information.
4. Apply auditing standards and techniques and measure internal control objectives.
5. Knowledge of the basic concepts of federal taxation.

Course of Study

1. Core Requirements for All Business Majors (80 credit hours) See page 58.
— plus —
2. Required Accounting courses (21 credit hours)
 - AC 305 Financial Reporting II
 - AC 306 Financial Reporting III
 - AC 309 Cost Accounting
 - AC 330 Accounting Information Systems
 - AC 407 Financial Reporting IV
 - AC 413 Fundamental Concepts of Taxation
 - AC 419 Auditing and Assurance Services
 — plus —
3. Other required courses (6 credit hours)
 - COMM 320 Professional Communication
 - or —
 - COMM 340 Business Communication
 - EC 311 Money and Banking
 — plus —
4. Electives (15 credit hours)
 - BUS xxx Business Elective (3 cr.)
 - Non-Business Electives (12 cr.)

Total credit hours required for graduation – 122

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 College (not including AC 305-306). The credits from upper level accounting courses will be accepted in transfer consistent with the College's policies, provided that their completion date is nine years or less from the time of matriculation.

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.

Suggested Sequence of Courses

Notes:

* Is a prerequisite

† Has a prerequisite

MR Major Requirement

GCR General College Requirement

BUSR School of Business Requirement

Freshman Year

Credit Hours

Fall Semester

BUS 101	First Year Seminar (GCR/BUSR)	3
ENGL 132*	English Composition I (GCR)	3
MATH 111*	Analysis for Business and Economics I (GCR/BUSR) — or —	
MATH 123*	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
HIST xxx	History Requirement (GCR)	3
MAN 101	Principles of Management (BUSR) — or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PEHR 151*	Personal Health and Wellness (GCR)	1
		16

Spring Semester

ENGL 133	English Composition II (GCR)	3
MATH 112	Analysis for Business and Economics II (GCR/BUSR) — or —	
MATH 124	Calculus I for Management, Life and Social Sciences (GCR/BUSR) Non-Business Elective (BUSR)	3
MAN 101*	Principles of Management (BUSR) — or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PSY 101	Introduction to Psychology (BUSR) — or —	
SO 101	Introduction to Sociology (BUSR)	3

PEHR 153-159 Lifetime Activity Series (GCR)	1
	16

Sophomore Year

Credit Hours

Fall Semester

AC 201* †	Financial Reporting (BUSR)	3
MK 200* †	Principles of Marketing (BUSR)	3
CIS 202* †	Introduction to Information Systems (BUSR)	3
EC 205*	Principles of Economics I (BUSR) Non-business Elective (BUSR)	3
		3
		15

Spring Semester

AC 202†	Managerial Accounting (BUSR)	3
QM 201†	Introduction to Statistics (BUSR)	3
FIN 214†	Introduction to Finance (BUSR)	3
EC 206†	Principles of Economics II (BUSR)	3
COMM 201†	Principles of Communication (BUSR)	3
		15

Non-credit career planning — Completion of individual development/career plan required for registration for junior year.

Junior Year

Credit Hours

Fall Semester

BUS 301	Integrated Business Operations (BUSR)	3
COMM 320	Communication (MR) —or—	
COMM 340	Business Communication (MR)	3
AC 305	Financial Reporting II (MR)	3
AC 309	Cost Accounting (MR)	3
Lab Science	Laboratory Science Requirement (GCR)	3
		15

Spring Semester

PH 310	Ethics in the Professions (BUSR)	3
QM 310	Quality and Operations Management (BUSR)	3
AC 419	Auditing and Assurance Services (MR)	3
AC 306	Financial Reporting III (BUSR)	3
Lab Science	Laboratory Science Requirement (GCR)	3
		15

Senior Year*Fall Semester*

		Credit Hours
AC 330	Accounting Information Systems (MR)	3
LS 301	Legal Aspects of Business (BUSR)	3
AC 413	Fundamental Concepts in Taxation	3
	Non-business Elective (GCR)	3
BUS	Business Elective (MR)	3
		<u>15</u>

Spring Semester

HUM xxx	Humanities Elective (BUSR)	3
EC 311	Money and Banking	3
BUS 450	Business Strategy (BUSR)	3
	Non-Business Elective	3
AC 407	Financial Reporting IV (MR)	3
		<u>15</u>

BIOLOGY MAJOR**School of Arts and Sciences****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. The purpose in either case is employment in a biologically oriented field.

Career Opportunities

Biology graduates are employed as laboratory technicians, product analysts, and quality control technicians. Others are in research, teaching, and in graduate work leading to the professions.

Faculty

Professors: Walter Coombs, Robert Holdsworth, Lorraine Sartori

Associate Professor: Gail Fletcher

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 process and controls on the physiology of vertebrate organisms.
7. To achieve additional understanding in population biology, organismic biology, or cellular and molecular biology.
8. To develop quantitative problem solving skills and data analysis.
9. To understand the structure and physiology of plants.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements, p. 39 and 43.

Course of Study

1. Required biology courses (30 credit hours)
 - BIO 107-108 General Biology I & II
 - BIO 117-118 General Biology Laboratories I & II
 - BIO 201 Plant Biology
 - BIO 210 Vertebrate Physiology
 - BIO 220 Vertebrate Physiology Laboratory
 - BIO 213 Ecology
 - BIO 306 Genetics
 - BIO 310 Cell Biology
 - BIO 455 Evolution
2. Required chemistry courses (16 credit hours)
 - CHEM 105-106 General Chemistry I & II
 - CHEM 209-210 Organic Chemistry I & II
 - CHEM 219-220 Organic Chemistry Laboratories I & II
3. Seven additional credit hours in biology courses at or above the 200 level (which may include CHEM 314 Biochemistry).
4. Twelve to fifteen additional credit hours in math, physics, and statistics courses
 - MATH 109 Pre-calculus Mathematics — or —
 - MATH 133 Calculus I (or the equivalent)
 - PHYS 103-104 Elementary Physics I & II — or —
 - PHYS 133 Mechanics — and —
 - PHYS 134 Electricity and Magnetism
 - MATH 120 Introductory Statistics for the Arts and Sciences — or —
 - PSY 207 Introduction to Statistics for the Social Sciences (Does not count as mathematics for General College Requirements)

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

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.

Notes:

- * Is a prerequisite
- † Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year

	Credit Hours
<i>Fall Semester</i>	
BIO 107*	General Biology I (GCR/MR) 3
BIO 117*	General Biology Lab I (MR) 1
CHEM 105*	General Chemistry I (MR) 4
ENGL 132*	English Composition (GCR) 3
LA 100	First Year Seminar (GCR) 2
MATH 109	Pre-Calculus Mathematics (GCR/MR) 3
	<hr style="width: 100%; border: 0.5px solid black;"/> 16

Spring Semester

BIO 108†	General Biology II (GCR/MR) 3
BIO 118†	General Biology Laboratory II (MR) 1
CHEM 106†	General Chemistry II (MR) 4
ENGL 133†	English Composition II (GCR) 3
MATH 120	Introductory Statistics for the Arts and Sciences (GCR/MR) 3
PEHR 151	Personal Health and Wellness (GCR) 1
	<hr style="width: 100%; border: 0.5px solid black;"/> 15

Sophomore Year

	Credit Hours
<i>Fall Semester</i>	
BIO 201†	Plant Biology (MR) 4
CHEM 209†	Organic Chemistry I (MR) 3
CHEM 219†	Organic Chemistry Laboratory I (MR) 1
LIT xxx	Literature Requirement (A&SR) 3
HIST xxx	Historical Perspective (GCR) 3
PEHR 153-199	Lifetime Activities Series (GCR) 1
	<hr style="width: 100%; border: 0.5px solid black;"/> 15

Spring Semester

BIO 213†	Ecology (MR)	3
CHEM 210†	Organic Chemistry II (MR)	3
CHEM 220†	Organic Chemistry Laboratory II (MR)	1
CS xxx	Computer Competence (GCR)	3
EC xxx	EC xxx (A&SR) — or —	
POSC xxx	(A&SR)	3
HUM xxx	Humanities Elective (A&SR)	3
		<hr/> 16

Junior Year

Credit Hours

Fall Semester

BIO 306†	Genetics (MR)	4
CUL 2xx	Cultural Studies Perspective (GCR)	3
PHYS 103 XXX	Elementary Physics I (MR) Integrated Liberal Professional Perspectives (GCR)	3
GEN xxx	General Elective	2
		<hr/> 15

Spring Semester

BIO 455†	Evolution	3
BIO 2xx†	Biology Elective (MR)	3
ART xxx	Aesthetic Perspective (GCR)	3
PHYS 104†	Elementary Physics II (MR)	3
GEN xxx	General Elective (GCR)	3
		<hr/> 15

Senior Year

Credit Hours

Fall Semester

BIO 2xx	Biology Elective (MR) Area II Requirement –	4
XXX	PSY xxx or SO xxx (A&SR) Behavioral Sciences Perspective (GCR)	3
XXX	Social Science Elective (A&SR)	3
BIO 210	Vertebrate Physiology	3
BIO 220	Vertebrate Physiology Laboratory	1
GEN xxx	General Elective	3
		<hr/> 17

Spring Semester

BIO 310†	Cell Biology (MR)	4
PH xxx	Ethical Perspective (GCR)	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		<hr/> 13

BIOMEDICAL ENGINEERING MAJOR**School of Engineering****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 College 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. In the junior year, the student has the opportunity to choose one of three concentration areas: bioinstrumentation, biomechanics, or cell and tissue engineering. The student is exposed to the major physiological systems during each of the final four semesters through laboratory work, courses, and through the capstone senior design project.

Career Opportunities

The biomedical engineering program at Western New England College 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.

Faculty

Professor Judy Cezeaux

Associate Professor: Steven Schreiner

Assistant Professor: Diane Muratore

Program Educational Objectives

Graduates of the Western New England College Biomedical Engineering Program will

1. function successfully in one of a variety of environments including industry, hospitals/clinics, graduate school, or professional school.
2. have the necessary skills to participate as a productive team members to solve engineering projects at the interface of medicine and engineering and incorporate safety, ethical, professional, and societal concerns into their designs.
3. be critical thinkers, able to defend engineering designs and concepts effectively in both written and oral communications.
4. be actively engaged in life-long learning as evidenced, for example, by participation or leadership in relevant professional societies, continuing their education, or attendance at relevant workshops, meetings, or seminars. Common Core

Notes:

* Is a prerequisite

† Has a prerequisite

MR Major Requirement

GCR General College Requirement

ER Engineering Requirement

Freshman Year

Credit Hours

Fall Semester

ENGL 132*	English Composition I (GCR/ER/MR)	3
ENGR 102*	First Year Engineering Seminar (GCR/ER/MR)	1
ENGR 103*	Introduction to Engineering (GCR/ER/MR)	4
MATH 133*	Calculus I (GCR/ER/MR)	4
PEHR 151	Personal Health and Wellness (GCR)	1
PHYS 133*	Mechanics (GCR/ER/MR)	4
		<hr/> 17

Spring Semester

ENGL 133*†	English Composition II (GCR/ER/MR)	3
ENGR 110*	Engineering Problem Solving (GCR/ER/MR)	2
MATH 134*†	Calculus II (GCR/ER/MR)	4
ENGR 105*	Computer Program Design (GCR/ER/MR)	3
PEHR 153-199	Lifetime Activities Series (GCR)	1
PHYS 134*	Electricity and Magnetism (GCR/ER/MR)	4
		<hr/> 17

Sophomore Year

Credit Hours

Fall Semester

BME 201*†	Foundations of Biomedical Engineering (MR)	3
CHEM 105†	General Chemistry I (ER/MR)	4
ENGR 206*†	Engineering Mechanics (ER/MR)	3
ENGR 208*†	Foundations of Electrical Engineering (ER/MR)	4
MATH 236*†	Differential Equations (ER/MR)	3
		<hr/> 17

Spring Semester

BME 202*†	Biomedical Systems (MR)	3
CHEM 106*†	General Chemistry II (MR) General Education Requirement† (GCR/ER/MR)	4
ENGR 212*†	Probability and Statistics (ER/MR)	3
MATH 235*†	Calculus III (ER/MR)	3
LBC xxx	Learning Beyond the Classroom (GCR)	
		<hr/> 16

Junior Year

Credit Hours

Fall Semester

BME 301*†	Engineering Physiology I (MR)	3
BME 305*†	BME Laboratory I (MR)	1
BME 331*†	Bioinstrumentation (MR)	3
MATH 350*†	Engineering Analysis I (ER/MR)	3
	BME Concentration Elective (MR)	3
	General Education Requirement† (GCR/ER/MR)	3
		<hr/> 16

Spring Semester

BME 302*†	Engineering Physiology II (MR)	3
BME 306*†	BME Laboratory II (MR)	1
BME 340†	Biomaterials (MR)	3
BME 350*†	Biothermodynamics (MR)	3
	BME Concentration Elective (MR)	3
	General Education Requirement (GCR/ER/MR)	3
		<hr/> 16

Senior Year*Fall Semester*

		Credit Hours
BME 405*†	BME Senior Laboratory (MR)	1
BME 437*†	Senior Design Project I (MR)	3
BME 451†	Biomechanics (MR)	3
	BME Concentration Elective (MR)	3
	BME Technical Elective (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
		<hr/> 16

Spring Semester

BME 440†	BME Senior Design Project II (MR)	4
	BME Technical Elective (MR)	3
	BME Technical Elective (MR)	3
	BME Concentration Elective (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
LBC xxx	Learning Beyond the Classroom (GCR)	
		<hr/> 16

¹General Education courses must be selected in such a way to insure that all "perspective of understanding" requirements have been satisfied. (See page 40).

Biomedical Engineering Technical Electives

Any course labeled BME xxx that is not part of the required curriculum may be used to fulfill a BME technical elective.

Bioinstrumentation Concentration Courses

BME 332	Biomedical Imaging
BME 380	Biomedical Practicum
BME 433	Biomedical Signal Processing
CPE 271	Digital Design
CPE 305	Object Oriented Design

CPE 310	Machine & Assembly Language
CPE 420	Computer Architecture
EE 314	Fields and Waves
EE 422	Control Systems
IE 312	Engineering Economic Analysis
ENGR 333	Independent Study
MATH 501	Engineering Analysis II

Biomechanics Concentration Courses

BME 332	Biomedical Imaging
BME 380	Biomedical Practicum
BME 452	Biofluid Mechanics
IE 308	Work Analysis and Human Factors
IE 312	Engineering Economic Analysis
IE 314	Manufacturing Processes
IE 315	Quality Control and Engineering Statistics
IE 422	Industrial Safety and Ergonomics
IE 424	Computer Integrated Manufacturing
ENGR 333	Independent Study
MATH 501	Engineering Analysis II

Cell and Tissue Engineering Concentration Courses

BME 332	Biomedical Imaging
BME 380	Biomedical Practicum
BME 452	Biofluid Mechanics
BME 460	Cell and Tissue Engineering
CHEM 209	Organic Chemistry I with Lab
CHEM 210	Organic Chemistry II with Lab
CHEM 314	Biochemistry with Lab
ENGR 333	Independent Study
MATH 501	Engineering Analysis II

Additional courses in Genetics, Cellular Physiology, and Human Anatomy are available through the Department of Biology and Cooperating Colleges of Greater Springfield (CCGS).

Premedical Students:

Biomedical Engineering students intending to apply to medical school are advised to select the Cell and Tissue Engineering Concentration, seek the advice of the pre-medical advisor as soon as practical, and take the following courses:

BIO 107 & 108	General Biology I & II with Lab
CHEM 209	Organic Chemistry I with Lab

CHEM 210 Organic Chemistry I with
Lab

CHEM 314 Biochemistry with Lab

Total credit hours required for graduation will vary from 131 to 135 depending upon concentration electives selected as part of the student's program of study.

The 2.0 required grade point average in the major is based upon all BME courses pursued in the student's degree program.

CHEMISTRY MAJOR

School of Arts and Sciences

General Information

The chemistry curriculum is designed to provide the student with a solid background in the principles of chemistry, augmented by practical laboratory experience. Skills are acquired through hands-on experience with such techniques as spectrophotometric, electroanalytic, and chromatographic methods.

Career Opportunities

A baccalaureate degree in chemistry provides diverse opportunities for employment or for advanced training in chemistry or related fields including medicine and biochemistry. Many graduates of the program have sought and gained entrance to graduate study in chemistry and other related fields.

Faculty

Associate Professors: William Macanka, Anne Poirot

Program Objectives

1. To understand and apply the scientific method as a logical means to discover and test chemical concepts.
2. To gain an understanding of some fundamental physical laws of nature governing the behavior of substances.
3. To develop laboratory techniques and skills, using both classical and modern instrumental methods, necessary to determine chemical and physical properties of materials and make accurate qualitative and quantitative assessment of material compositions.
4. To learn to represent in two and three dimensions the structures of ions, molecules, and other chemical complexes using various notations or conventions.
5. To identify functional groups in complex molecules and predict and understand their properties and reactivities.

- To understand the role of chemical forces, both intramolecular and intermolecular, in determining chemical and physical properties of substances.
- To develop an awareness of the chemical literature as a reflection of current knowledge.

General and School Requirements

See General College Requirements and Arts and Sciences Requirements pp. 39 and 43.

Course of Study

- Required chemistry courses (39 credit hours)

CHEM 105-106	General Chemistry I & II
CHEM 209-210	Organic Chemistry I & II
CHEM 211	Analytical Methods
CHEM 219-220	Organic Chemistry Laboratories I & II
CHEM 221	Analytical Methods Laboratory
CHEM 312	Instrumental Analysis
CHEM 314	Biochemistry
CHEM 317-318	Physical Chemistry I & II
CHEM 322	Instrumental Analysis Laboratory
CHEM 324	Biochemistry Laboratory
CHEM 327-328	Physical Chemistry Laboratories I & II
CHEM 421	Inorganic Chemistry
- Mathematics and physics courses (19 credit hours)

MATH 133-134	Calculus I & II
MATH 235	Calculus III
PHYS 133	Mechanics
PHYS 134	Electricity and Magnetism

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.

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.

Notes:

- * Is a prerequisite
- † Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year

<i>Fall Semester</i>		Credit Hours
CHEM 105	General Chemistry I (GCR/MR)	4
ENGL 132	English Composition I (GCR)	3
LA 100	First Year Seminar (GCR)	2
MATH 133	Calculus I (GCR/MR)	4
PHYS 133	Mechanics (MR)	4
		17

Spring Semester

CHEM 106†	General Chemistry II (GCR/MR)	4
ENGL 133†	English Composition II (GCR)	3
MATH 134†	Calculus II (GCR/MR)	4
PEHR 151	Personal Health and Wellness (GCR)	1
PHYS 134	Electricity and Magnetism (MR)	4
		16

Sophomore Year

<i>Fall Semester</i>		Credit Hours
CHEM 209†	Organic Chemistry I (MR)	3
CHEM 211†	Analytical Methods (MR)	3
CHEM 219†	Organic Chemistry Laboratory I (MR)	1
CHEM 221	Analytical Methods Laboratory (MR)	1
MATH 235†	Calculus III (MR)	3
CS xxx	Computer Competence Requirement (GCR)	3
PSY/SO xxx	Behavioral Science Perspective PSY xxx or SO xxx (A&SR)	3
		17

Spring Semester

CHEM 210†	Organic Chemistry II (MR)	3
CHEM 220†	Organic Chemistry Laboratory II (MR)	1
CHEM 312	Instrumental Analysis (MR)	3
CHEM 322	Instrumental Analysis Laboratory (MR)	1
ENGL xxx	Literature (A&SR)	3
PEHR 153-199†	Lifetime Activities Series (GCR)	1
XXX	Integrated Liberal and Professional Perspective (GCR)	3
		<u>15</u>

Junior Year*Fall Semester*

CHEM 317	Physical Chemistry I (MR)	3
CHEM 327	Physical Chemistry Laboratory I (MR)	1
CHEM 314†	Biochemistry (MR)	3
CHEM 324†	Biochemistry Laboratory (MR)	1
CUL 2xx	Cultural Studies Perspective	3
GEN xxx	General Elective	3
		<u>14</u>

Spring Semester

CHEM 318†	Physical Chemistry II (MR)	3
CHEM 328†	Physical Chemistry Laboratory II (MR)	1
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		<u>13</u>

Senior Year*Fall Semester*

EC/POSC xxx	Social Science Requirement— EC xxx/POSC xxx (A&SR)	3
HIST xxx	Historical Perspective (GCR)	3
PH xxx	Ethical Perspective (GCR)	3
XXX	Social Science Elective (A&SR)	3
CHEM 421†	Inorganic Chemistry (MR)	3
		<u>15</u>

Spring Semester

XXX	Humanities (A&SR)	3
ARTS xxx	Aesthetics Perspective (GCR)	3
CHEM xxx	300 or 400 CHEM Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		<u>15</u>

COMMUNICATION MAJOR**School of Arts and Sciences****General Information**

Students in the communication major explore all areas of communication studies including interpersonal communication, mass communication, oral communication, nonverbal communication, intercultural communication, and the various aspects of mediated communication. They learn to analyze a variety of communication situations and target messages to diverse audiences through a broad range of channels.

Career Opportunities

Some graduates of the communication major continue their education in graduate school or law school. Others go to work for public service organizations, hospitals, newspapers, insurance companies, and other businesses. Some graduates become teachers. Our graduates tell us that their communication education 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.

Faculty

Professor: Nancy Hoar

Associate Professor: Jean-Marie Higirot

Assistant Professor: Douglas Battema

Program Objectives

These objectives are ambitious and comprehensive. They cannot be achieved without hard work.

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, including language.
4. To enhance students' understanding of the conditions for both success and failure in communication, as well as abuses of the power to communicate.
5. To encourage critical reflection on the information and values transmitted by major 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 abilities to convey information, to explain, and to persuade in ways that are understandable, whether in writing or orally, are of great value in personal, family, professional, and political life. So, too, is the ability to read with comprehension.

1. To improve students' ability to read fluently and with comprehension, as well as to analyze, a variety of written texts.
2. To improve students' ability to write clear, grammatical, rhetorically effective prose.
3. To improve students' ability to communicate effectively both orally and nonverbally in a variety of situations, as well as to understand the nonverbal communication of others.
4. To enhance students' appreciation of and skill at listening as important to the communication process.
5. To enhance students' skills in using electronic media.

Theoretical and Practical Communication Content

1. To increase students' knowledge of various theories of communication.
2. To increase students' knowledge of the various forms of communication important to the contemporary world.
3. To enhance students' knowledge of and appreciation of the various forms that language may take and the various uses of language.

General and School Requirements

See General College Requirements and Arts and Sciences Requirements on p. 39 and 43.

Course of Study

1. Required Courses (42 credit hours)
 - COMM 201 Principles of Communication
 - COMM 202 Public Speaking
 - COMM 205 Mass Communication
 - COMM 218 Introduction to Journalism
— or —
 - COMM 321 Nonverbal Communication
 - ENGL 311 The English Language
 - COMM 320 Professional Communication
 - COMM 340 Business Communication
— or —
 - ENGL 344 Expository Writing
 - COMM 348 Intercultural Communication
 - COMM 490 Seminar in Communication
 - MATH 207 Introductory Statistics for the Arts & Sciences
 - PH 110 Critical Thinking
 - Plus two COMM courses at the 300-level.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
 † Has a prerequisite
 MR Major Requirement
 GCR General College Requirement
 A&SR School of Arts and Sciences Requirement

Freshman Year Credit Hours

Fall Semester

ENGL 132	English Composition I (GCR)	3
LA 100	First Year Seminar (GCR)	2
MATH 1xx	Mathematics (GCR)	3
GEN xxx	General Elective	3
CS 131	Computing for the Arts and Sciences (GCR)	3
PEHR 151	Personal Health and Wellness (GCR)	1
		15

Spring Semester

ENGL 133	English Composition II (GCR)	3
MATH 120	Introductory Statistics for the Arts & Sciences (MR/GCR)	3
GEN xxx	General Elective	3
EC xxx	Economics or Political Science (A&SR) or	3
POSC xxx	or	
HIST xxx	Historical Perspective (GCR)	3
PEHR 153-199	Lifetime Activities Series (GCR)	1
		16

Sophomore Year Credit Hours

Fall Semester

COMM 201	Principles of Communication (MR)	3
PH 110	Critical Thinking (MR)	3
LAB xxx	Laboratory Science Requirement (GCR) Behavioral/Social Science Requirement Economics or Political Science, Psychology or Sociology or Communication (A&SR)	3
CUL 2xx	Cultural Studies Perspective (GCR)	3
		15

Spring Semester

ENGL xxx	Literature Requirement (A&SR)	3
LAB xxx	Laboratory Science Requirement (GCR)	3
COMM 218	Introduction to Journalism (MR) — or —	
COMM 321	Nonverbal Communication (MR)	3
ARTS xxx	Aesthetic Perspective (GCR) (Art, Film, Music, or Theatre)	3
COMM 205	Mass Communication (MR)	3
		15

Junior Year Credit Hours

Fall Semester

COMM 202	Public Speaking (MR)	3
ENGL 344	Expository Writing (MR) — or —	
COMM 340	Business Communication (MR)	3
COMM 348	Intercultural Communication (MR)	3
PSY xxx	or	
SO xxx	Behavioral Science Perspective (GCR)	3
PH xxx	Ethical Perspective (GCR)	3
		15

Spring Semester

ENGL 311	The English Language (MR)	3
GEN xxx	General Electives	9
COMM 3xx	COMM Elective	3
		15

Senior Year Credit Hours

Fall Semester

COMM 320	Professional Communication (MR)	3
GEN xxx	General Electives	9
COMM 3xx	COMM Elective	3
		15

Spring Semester

COMM 490	Seminar in Communication (MR)	3
COMM 480	Internship Integrated Liberal/Professional Perspective (GCR/MR)	3
GEN xxx	General Electives	9
		15

COMPUTER INFORMATION SYSTEMS MAJOR

School of Business

GENERAL INFORMATION

The computer information systems major emphasizes application of computer systems to the solution of complex problems in business, government, and non-profit organizations. The curriculum consists of courses designed to provide an understanding of business functions, strong computer programming fundamentals, a solid knowledge of end-user computing, and proficiency in oral and written communication. Practical applications of computer systems in finance, accounting, management, and marketing are studied.

Students have the opportunity to make extensive use of the computer systems available on campus.

Career Opportunities

Career opportunities for computer information systems majors include programming, systems analysis, end-user computing support, information systems management, and many other information careers. Traditionally, many graduates take up programmer-analyst positions with a broad range of companies where their responsibilities include the design and development of user-oriented computer systems.

There is sufficient flexibility in the major to allow students to pursue individual interests and to choose among technically and humanistically oriented electives.

Faculty

Professors: Anil Gulati, Jerzy Letkowski, Marilyn Pelosi

Associate Professor: David Russell

Assistant Professor: Tuncay Bayrak

Executive in residence: Peter Daboul

Program Objectives

1. Demonstrate competency in the design and development of Multi-user interactive applications.

Integrating applications with end-user software
2. Ability to perform in-depth systems analysis including:

Feasibility studies

The use of modeling tools and concepts

The use of cost-benefit analysis

The presentation of solutions
3. Understand the principles and practice of system development and maintenance in order to:

Perform structured design

Apply contemporary application development tools and techniques

Develop software including coding, testing, and implementation

Project Management
4. Understand major information technologies in a business context:

Database management systems

Networking, communications, and the Internet

Operating systems and computer architectures
5. Learn the role and impact of information technology on organizations:

Management of information systems

Information technology as a strategic enabler

Information technology as a means of supporting management

Course of Study

1. Core Requirements for All Business Majors (80 credit hours) See p.47.
— plus —
2. Required CIS courses (18 credit hours)
 - CIS 210 Technological Foundations of Information Systems
 - Foundations of Web Technologies
 - CIS 300 Object Oriented Programming
 - CIS 321 Database Management Systems
 - CIS 413 Data Communication Systems and Networks
 - CIS 417 Systems Analysis and Design
 - CIS 430 Enterprise Computing
 - plus —
3. Electives (24 credit hours)
 - CIS 3xx-4xx Electives* (3 cr.)
 - CIS 480 CIS Internship (3 cr.)
 - or —
 - Business Elective (3 cr.)
 - Non-Business Electives (18 cr.)

*Not to include CIS 480

Total credit hours required for graduation–122

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 College.

Courses to be included in computing the 2.0 minimum average in the major are as follows: all CIS courses or their equivalents.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- † Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- BUSR School of Business Requirement

Freshman Year

	Credit Hours
<i>Fall Semester</i>	
BUS 101 First Year Seminar (GCR/BUSR)	3
ENGL 132* English Composition I (GCR)	3
MATH 111* Analysis for Business and Economics (GCR/BUSR)	3
— or —	

MATH 123*	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	
HIST xxx	History Requirement (GCR)	3
MAN 101	Principles of Management (BUSR)	
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PEHR 151*	Personal Health and Wellness (GCR)	1
		16

Spring Semester

ENGL 133	English Composition II (GCR)	3
MATH 112	Analysis for Business and Economics II (GCR/BUSR)	
	— or —	
MATH 124	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
	Non-Business Elective (BUSR)	3
MAN 101*	Principles of Management (BUSR)	
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PSY 101	Introduction to Psychology (BUSR)	
	— or —	
SO 101	Introduction to Sociology (BUSR)	3
PEHR 153-159	Lifetime Activity Series (GCR)	1
		16

Sophomore Year

	Credit Hours	
<i>Fall Semester</i>		
AC 201* †	Financial Reporting (BUSR)	3
MK 200* †	Principles of Marketing (BUSR)	3
CIS 202* †	Introduction to Information Systems (BUSR)	3
EC 205*	Principles of Economics I (BUSR)	3
	Non-business Elective (BUSR)	3
		15

Spring Semester

AC 202†	Managerial Accounting (BUSR)	3
QM 201*†	Introduction to Statistics (BUSR)	3
FIN 214†	Introduction to Finance (BUSR)	3

EC 206†	Principles of Economics II (BUSR)	3
COMM 201	Principles of Communication (BUSR)	3
		<u>15</u>

Non-credit career planning – Completion of individual development/career plan required for registration for junior year.

Junior Year Credit Hours

<i>Fall Semester</i>		
BUS 301	Integrated Business Operations (BUSR)	3
PH 310	Ethics in the Professions (BUSR)	3
	Non-business Elective (BUSR)	3
CIS 210* †	Foundations of Web Technologies (MR)	3
Lab Science	Laboratory Science Requirement (GCR)	3
		<u>15</u>

Spring Semester

LS 301	Legal Aspects of Business (BUSR)	3
QM 310†	Quality and Operations Management (BUSR)	3
CUL xxx	Elements of Culture Requirement (GCR)	3
CIS 300	Object-Oriented Programming	3
Lab Science	Laboratory Science Requirement (GCR)	3
		<u>15</u>

Senior Year Credit Hours

<i>Fall Semester</i>		
CIS 321*†	Database Management Systems (MR)	3
CIS 413*†	Data Communication Systems and Networks (MR)	3
CIS 3xx-4xx	CIS Elective (MR)	3
	Non-business Elective (GCR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

BUS 450	Business Strategy (BUSR)	3
CIS 417*†	Systems Analysis and Design (MR)	3
CIS 430†	Enterprise Computing (MR)	3
CIS 480	CIS Internship (MR)	
	— or —	
	Business Elective (MR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

COMPUTER SCIENCE MAJOR

School of Arts and Sciences

General Information

The broad focus of study involves the understanding and design of computers and computational processes and their applications. This computer science major, which leads to a Bachelor of Science degree, puts special emphasis on the conceptual design of the written instructions, known as software, that directs computers or computer applications, and the interaction of this software code with computer machinery. The program is interdisciplinary in nature and involves course work in computer science, computer engineering, and mathematics. This capability affords students the opportunity to obtain a solid dose of hardware courses taught by engineers and mathematics courses taught by mathematicians.

The program places emphasis on object-oriented programming languages, beginning with Java in the first year sequence followed by a substantial exposure to other contemporary languages such as C/C++ in later courses.

The curriculum concentrates on the scientific, mathematical, and theoretical aspects of the design of computer systems while also developing communications skills through a strong liberal arts curriculum.

Students choose from two areas of concentration: Information Technology (IT) or Software Development. The IT concentration prepares students to work as a systems administrator, handling the installation and maintenance of desktop software and hardware; a server administrator configuring and managing user accounts, email services, and data bases; or a network administrator overseeing the physical connectivity of Internet or intranet connections. The Software Development concentration provides a strong background in programming and software development and 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 concentration offers students uniqueness and strength in today's

job market. There is sufficient flexibility to allow students to pursue additional course work in software and/or hardware development, mathematics, business, information processing, and information technology.

The program has been structured to follow the current recommendations of the Computer Science Curriculum Committee of the Association of Computing Machinery.

Career Opportunities

Graduates in computer science develop the creativity and patterns of thought required of computer scientists and will be well prepared to go on to advanced study or to enter various professional fields. Past graduates found employment with some of the highest starting salaries of any major in the College. Organizations in business, industry, and the private sector are eager for candidates with the knowledge and skills that the graduates of this program possess. Graduates are well prepared to enter careers in software design, software development, software management, systems programming, systems analysis, technical and software support, and computer consulting, as well as network and system administration. Increasingly sophisticated uses of computers continue to be found in all areas of commerce and industry. The computer science graduate has the scientific and analytic training plus the knowledge of software and hardware, which is necessary to develop these new applications.

Faculty

Professor: Leh-Sheng Tang

Associate Professor: Lisa Hansen

Visiting Assistant Professor: Ray Koslowski

Professional Educator: John Willemain

Program Objectives

The computer science curriculum is designed in content and method to enable the student to meet the following standards:

1. To learn concepts of computer science:
 - Become independent learners
 - Have the foundation and framework for learning new concepts
 - Prepare for rapid acquisition and assimilation of specifics of real problems and systems
2. To develop and justify theories:
 - Analyze complex systems, make conjectures
 - Argue the truth of assertions systematically
3. To apply the process of abstraction:
 - Conduct systematic investigations
 - Derive general principles and abstractions
 - Experiment to verify principles and correctness of abstractions
 - Use statistical analysis of experiments
4. To design systems:
 - Discover and analyze requirements for a system
 - Create well-structured and testable specifications
 - Design a system to meet the specifications
 - Construct and implement a system meeting the specification and satisfying the requirements
5. To gain experience:
 - In communication in technical and non-technical area
 - In analysis and design of systems
 - In collaborative group work
6. To develop skills:
 - In high-level language programming in two standard languages
 - In design and application of data structures
 - In algorithm selection and design
 - In hardware principles; hardware/software tradeoffs
 - In systems analysis

Course of Study

Software Development Option

1. Required computer science and engineering courses (35 credit hours)

CS 181-182	Computer Science I & II
CS 283-284	Data Structures I & II
CS 351	Programming Languages
CS 366	Design and Analysis of Algorithms
CS 411	Operating Systems
CS 490	Software Engineering
CPE 271	Digital Design
CPE 330	Computer Organization
CPE 420	Computer Architecture
2. Required mathematics and science courses (32 Additional credit hours)

MATH 123-124	Calculus I & II for Management, Life, and Social Sciences
MATH 261-262	Discrete Structures I & II
MATH 306	Linear Algebra
MATH 363	Math Foundations and Methods for Computer Science
PH 204	Symbolic Logic
PH 310	Ethics in the Profession
PHYS 133	Mechanics
PHYS 134	Electricity and Magnetism
3. Technical Elective (three credit hours). One additional computer science course numbered 300 or above.

Course of Study

Information Technology Option

1. Required computer science and engineering courses (36 credit hours)

CS 181-182	Computer Science I & II
CS 283-284	Data Structures I & II
CS 330	Web Applications Development
CS 360	Data Communication Systems and Networks
CS 361	Network Administration Lab
CS 411	Operating Systems
CS 412	Systems Administration Lab
CS 364/CIS 321	Database Management Systems
CPE 271	Digital Design
CPE 330	Computer Organization

2. Required mathematics and science courses (26 additional credit hours)

MATH 123-124	Calculus I & II for Management, Life, and Social Sciences
MATH 120	Introductory Statistics for Arts & Sciences
MATH 250	Applied Discrete Mathematics
PH 204	Symbolic Logic
PH 310	Ethics in the Profession
PHYS 133	Mechanics
PHYS 134	Electricity and Magnetism
3. Internship or attainment of some significant IT certification (e.g. Java, Oracle, MCSE, RHCE). (3 credit hours)

Notes: Students with a strong secondary school mathematics background and an interest in engineering and science may elect to enroll in MATH 133-134 in lieu of MATH 123-124

Students who have not completed secondary school physics may elect to enroll in PHYS 131-132 Elements of Mechanics I & II in lieu of PHYS 133.

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

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year		Credit Hours
<i>Fall Semester</i>		
CS 181*	Computer Science I (MR/GCR)	4
MATH 123/133*	Calculus (MR/GCR)	3/4
ENGL 132*	English Composition (GCR)	3
HIST xxx	Historical Perspective (GCR)	3
LA 100	First Year Seminar (GCR)	2
PEHR 151	Personal Health and Wellness (GCR)	1
		16/17

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Spring Semester

CS 182* **	Computer Sciences II (MR)	4
MATH 124/134* **	Calculus II (MR/GCR)	3/4
PH 204*	Symbolic Logic (A&SR/MR)	3
ENGL 133**	English Composition II (GCR)	3
EC/POSC xxx	Behavioral Science Perspective (GCR)	3
PEHR 153-199	Lifetime Activities Series (GCR)	1
		<u>17/18</u>

Software Development Option

Sophomore Year

Credit Hours

Fall Semester

CS 283* **	Data Structures I (MR)	3
MATH 261* **	Discrete Structures II (MR)	3
PHYS 133*	Mechanics (MR/GCR)	4
ENGL xxx	Literature Requirement (A&SR)	3
PSY/SO xxx	Behavioral Science Perspective (A&SR)	3
		<u>16</u>

Spring Semester

CS 284* **	Data Structures II (MR)	3
MATH 262* **	Discrete Structures II (MR)	3
PHYS 134 **	Electricity and Magnetism (MR/GCR)	4
XXX xxx	Integrated Liberal and Professional Perspectives (GCR)	3
ARTS xxx	Aesthetic Perspective (GCR)	3
		<u>16</u>

Junior Year

Fall Semester

CS 351**	Programming Languages (MR)	3
MATH 363**	Mathematical Foundations and Methods for Computer Science (MR)	3
CPE 330* **	Computer Organization (MR)	3
GEN	General Elective	3
CUL xxx	Cultural Studies Perspective (GCR)	3
		<u>15</u>

Spring Semester

MATH 306**	Linear Algebra(MR)	3
CS 366**	Design and Analysis of Algorithms (MR)	3
CPE 271*	Digital Design(MR)	3
GEN xxx	General Electives	3
XXX	PSY/SO/EC/POSC/HIST/ED/CJ (A&SR)	3
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

CS 411**	Operating Systems (MR)	3
PH 310**	Ethics in the Professions (MR/GCR)	3
	Ethical Perspective	
CS xxx	Computer Science Elective (MR)	3
CPE 420**	Computer Architecture (MR)	3
GEN xxx	General Electives	3
		<u>15</u>

Spring Semester

CS 490**	Software Engineering (MR)	3
CS xxx	Computer Science Electives	6
GEN xxx	General Electives	4
		<u>13</u>

Information Technology Option

Sophomore Year

Credit Hours

Fall Semester

CS 283* **	Data Structures I (MR)	3
MATH 120	Introductory Statistics for A&S (MR)	3
PHYS 133*	Mechanics (MR/GCR)	4
ENGL xxx	Literature Requirement (A&SR)	3
PSY/SO xxx	Behavioral Science Perspective (A&SR) (PSY xxx or SO xxx)	3
		<u>16</u>

Spring Semester

CS 284* **	Data Structures II (MR)	3
MATH 250**	Applied Discrete Structures (MR)	3
PHYS 134**	Electricity and Magnetism (MR/GCR)	4
XXX	Integrated Liberal and Professional Perspectives (GCR)	3
ARTS xxx	Aesthetic Perspective (GCR)	3
		<u>16</u>

Junior Year*Fall Semester*

CS 330**	Web Applications Development (MR)	3
CPE 330* **	Computer Organization (MR)	3
CS 364/CIS 321	Database Management Systems	3
GEN xxx	General Elective	3
CUL xxx	Cultural Studies Perspective (GCR)	3
		<hr/> 15

Spring Semester

CS 360**	Data Communication Systems and Networks (MR)	3
CS 361**	Network Administration Lab	2
CPE 271*	Digital Design (MR)	3
GEN xxx	General Electives	6
XXX	PSY/SO/EC/POSC/HIST/ED/CJ (A&SR)	3
		<hr/> 14

Senior Year

Credit Hours

Fall Semester

CS 411**	Operating Systems (MR)	3
CS 412**	Systems Administration Lab (MR)	2
PH 310**	Ethics in the Professions (MR/GCR)	3
	Ethical Perspective	
GEN xxx	General Electives	6
		<hr/> 14

Spring Semester

CS xxx	Internship or IT Certification (MR)	3
CS xxx	Computer Science Electives	6
GEN xxx	General Electives	6
		<hr/> 15

CRIMINAL JUSTICE MAJOR**School of Arts and Sciences****General Information**

The Bachelor of Science in Criminal Justice degree 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.

Criminal justice practitioners are eligible to enroll in the B.S. in Law Enforcement program that was specifically designed for in-service professionals. (For BSLE program and admission information, please contact the Office of Continuing Education and see p. 52)

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; and positions as industrial security specialists with major security companies and corporations.

Faculty

Associate Professor: Larry Field

Assistant Professors: John Claffey, Alfred Ingham, Dawna Komorosky

Professional Educator: Denise Kindschi Gosselin

Program Objectives

1. Professional preparation in the career field of criminal justice: to understand the law, areas, science, and obligations of the practitioner.
2. Professional preparation for the specific field of law enforcement: to understand the methods and practice of law enforcement.

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- Professional preparation in the specific field of court operation: to understand their history and operation.
- Professional preparation in the specific field of corrections: to understand its history, development, and operation.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p.39 and 43.

Course of Study

- Required criminal justice courses (39 credit hours)
 - CJ 101 Introduction to Criminal Justice
 - CJ 210 Criminology
 - CJ 211 Corrections
 - CJ 214 Drugs, Society, and the Criminal Justice System
 - CJ 218 Police and Society
 - CJ 220 Evidence
 - CJ 310 Criminal Law
 - CJ 311 Criminal Investigation
 - CJ 312 Criminal Procedure
 - CJ 314 The Judicial Process
 - CJ 325 Forensic Science
 - CJ 340 Ethical Decision-making in Law Enforcement
 - CJ 410 Research Methods in Criminal Justice
- Other required arts and sciences courses (59 credit hours). See Note 4.
 - ART xxx Required Arts Course
 - BIO 101 Basic Biology: Organisms
 - CHEM 101 Modern Chemistry I
 - ENGL 132 English Composition I
 - ENGL 133 English Composition II
 - ENGL 2xx-3xx Literature
 - ENGL 2xx-3xx Literature
 - POSC 102 American National Government
 - POSC 325 Constitutional Law
 - HIST 1xx History
 - HIST 1xx History
 - CUL 2XX Elements of Culture
 - LA 100 First Year Seminar
 - MATH 115 Contemporary Mathematics I
 - MATH 120 Statistics
 - PH 1xx Philosophy
 - PSY 101 Introduction to Psychology
 - SO 101 Introduction to Sociology

- SO 309 Social Deviation and Control
— or —
- PSY 306 Abnormal Psychology
— or —
- PSY 315 Social Environment and Human Behavior
- SO 314 American Culture and the Black Experience
— or —
- SO 305 The Sociology of Urban Life
— or —
- SO 311 Sociology of Minority Groups

Suggested Sequence of Courses

Notes

- * Is a prerequisite
- † Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year

Credit Hours

Fall Semester

CJ 101*	Introduction to Criminal Justice (MR/A&SR)	3
SO 101*	Introduction to Sociology — or —	
PSY 101	Introduction to Psychology (MR/A&SR)	3
ENGL 132*	English Composition I (GCR/MR)	3
MATH 115*	Contemporary Mathematics I (GCR/MR) ⁶	3
LA 100	First Year Seminar (GCR) ⁵	2
PEHR 151	Personal Health and Wellness (GCR)	1
		<hr/> 15

Spring Semester

SO 101*	Introduction to Sociology — or —	
PSY 101	Introduction to Psychology (MR)	3
CJ 218	Police and Society — or —	
CJ 220	Evidence — or —	
CJ 211	Corrections (MR)	3
ENGL 133	English Composition II (GCR/MR)	3
MATH 120	Statistics (GCR/MR) ⁶	3
BIO 101*	Basic Biology: Organisms — or —	
CHEM 101*	Modern Chemistry I (GCR/MR)	3
		<hr/> 15

Sophomore Year

	Credit Hours
<i>Fall Semester</i>	
CJ 210*	Criminology (MR) 3
CUL 2xx	Elements of Culture Cultures Requirement (GCR/MR) — or —
PH 1xx	Ethical Perspective – Philosophy (A&SR/MR) 3
BIO 101*	Basic Biology: Organisms ¹ — or —
CHEM 101*	Modern Chemistry I (GCR/MR)1 3
ENGL 2xx	Literature Requirement (MR/A&SR) 3
HIST 1xx	Historical Perspective (GCR/MR) 3
PEHR 153-199	Lifetime Activities Series (GCR) 1
	<u>16</u>

Spring Semester

CJ 211	Corrections — or —
CJ 218	Police and Society — or —
CJ 220	Evidence (MR) 3
POSC 102*	American Government (MR/A&SR) 3
CJ 310	Criminal Law & Procedure — or — 3
CJ 340	Ethical Decision-making in Law Enforcement — or —
CJ 342	Juvenile Justice
ENGL 2xx	Literature Requirement (MR/A&SR) 3
ART xxx	Elements of Culture – Arts Requirement 3
	<u>15</u>

Junior Year

	Credit Hours
<i>Fall Semester</i>	
CJ 311*	Criminal Investigation — or —
CJ 312	Criminal Procedure — or —
CJ 314	The Judicial Process (GCR) 3
CS 131	Computing for the Arts and Sciences (GCR) 3
GEN xxx	General Elective 3
CJ 410	Research Methods in Criminal Justice (MR) — or —
GEN xxx	General Elective 3
CJ 480	Internship in Criminal Justice ³ — or —
GEN xxx	General Elective 4
	<u>16</u>

Spring Semester

CJ 211	Corrections — or —
CJ 218	Police and Society — or —
CJ 220	Evidence (MR) 3
CJ 310	Criminal Law — or —
CJ 340	Ethical Decision-making in Law Enforcement — or —
CJ 342	Juvenile Justice (MR) 3
POSC 325	Constitutional Law 3
SO 311	Sociology of Minority Groups (MR) — or —
SO 314	American Culture and the Black Experience — or —
SO 305	The Sociology of Urban Life (MR) 3
CJ 481	Internship in Criminal Justice — or — 3
CJ 325	Forensic Science (MR) 3
	<u>15</u>

Senior Year

	Credit Hours
<i>Fall Semester</i>	
CJ 311	Criminal Investigation — or —
CJ 312	Criminal Procedure — or —
CJ 314	The Judicial Process (MR) 3
CJ 214	Drugs, Society, and the Criminal Justice System (MR) 3
CUL 2xx	Elements of Culture - Cultures Requirement (GCR) — or —
PH xxx	Ethical Perspective - Philosophy (MR/A&SR) 3
GEN xxx	General Elective — or —
CJ 480	Internship in Criminal Justice ³
HIST xxx	History Requirement (GCR/MR) 3
	<u>15</u>

Spring Semester

SO 309	Social Deviation and Control — or —
PSY 306	Abnormal Psychology — or —
PSY 315	The Social Environment and Human Behavior (MR) 3
CJ 310	Criminal Law — or —

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CJ 340	Ethical Decision Making — or —	
CJ 342	Juvenile Justice (MR)	3
SO 311	Sociology of Minority Groups — or —	
POSC 325	Constitutional Law (MR)	3
CJ 481	Internship in Criminal Justice — or —	
CJ 325	Forensic Science (MR)	3
CJ 410	Research Methods in Criminal Justice — or —	
GEN xxx	General Elective	3
		<hr/> 15

Notes:

1. Since biology and chemistry are prerequisites for Forensic Science, it is important to take these as early as possible.

2. Because upper-level courses are offered in alternate semesters, several choices are listed for each semester.

3. CJ 480/481 (Internship) is no longer required, but is highly recommended, subject to availability.

4. It is recommended that each student take 15 credit hours in 6 semesters and 17 credit hours in 2 semesters because the college requires a total of 122 credit hours credit for graduation. To fulfill graduation requirements the student must complete 39 hours of required CJ courses, 59 hours of required Arts and Sciences courses, 22 hours of electives, 2 credit hours of PEHR. The requirements of the School of Arts and Sciences and the General College Requirements are met by the required courses for the CJ major.

5. A one-credit hour elective must be taken at some point to fill in the deficit caused by LA 100's being a 2-credit course.

6. MATH 115 and 207 are sufficient for the math requirement and should be taken during the freshman year.

ECONOMICS MAJOR

School of Arts and Sciences

General Information

The objective of the economics program 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 College'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 non-profit 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.

Faculty

Professors: John Andrulis, Herbert Eskot,
Michael Meeropol

Associate Professor: Arthur Schiller Casimir

Assistant Professors: Michael Enz, Carlos
Liard-Muriente

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 non-profit 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 and School Requirements

See General College Requirements and School of Arts and Sciences Requirements, p. 39 and 43.

Course of Study

1. Required economics and mathematics courses (24 credit hours):
 - EC 205 Principles of Economics I
— or —
 - EC 101 Introduction to Economic Issues
 - EC 206 Principles of Economics II
— or —
 - EC 208 Principles of Applied Microeconomics
 - EC 305 Macroeconomics
 - EC 306 Microeconomics
 - EC 490 Seminar: Issues in Contemporary Economics
 - MATH 111 Analysis for Business and Economics I & II*
 - MATH 112 Analysis for Business II
— or —
Two more advanced courses in mathematics:
 - MATH 207 Introduction to Statistics or the Arts and Sciences
— or —
 - QM 201 Introduction to Business Statistics
— or —
 - PSY 207 Statistics for the Social Sciences
2. Fifteen additional credit hours selected from:
 - EC 300-400 Upper-level economics courses

3. Eighteen additional credit hours in social science courses, including three credit hours each of political science, history, psychology, and sociology. (Also satisfies the Social and Behavioral Science Perspective.)

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.

Suggested Sequence of Courses

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

Notes:

- * Is a prerequisite
- † Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year		Credit Hours
<i>Fall Semester</i>		
EC 101*	Introduction to Economic Issues (MR/A&SR) — or —	
EC 205*	Principles of Economics	3
MATH 111*	Analysis for Business & Economics (GCR/MR)	3
LA 100	First Year Seminar (GCR)	2
CS 131	Computing for the Arts & Sciences (GCR)	3
ENGL 132*	English Composition I (GCR)	3
PEHR 151*	Personal Health and Wellness (GCR)	1
		15
<i>Spring Semester</i>		
EC 206*†	Principles of Economics II (MR) — or —	
EC 208	Principles of Applied Microeconomics	3
MATH 112†	Analysis for Business Economics II (GCR/MR)	3
ENGL 133†	English Composition II (GCR)	3
PHIL xxx	Ethical Perspective (GCR)	3
HIST xxx	Historical Perspective (GCR/MR)	3
GEN xxx	General Elective	1
PEHR 151-199†	Lifetime Activities Series (GCR)	1
		17

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Sophomore Year Credit Hours

Fall Semester

EC 305†	Macroeconomics (MR)	3
MATH 207	QM 201 or PSY 207 (MR)	3
LAB xxx	Natural Science Perspective (GCR)	3
CUL 2xx	Cultural Studies Perspective (GCR)	3
PSY,SO,POSC xxx	Area II Requirement- Psychology/Political Science/Sociology Requirement (MR)	3
		15

Spring Semester

EC 306†	Microeconomics (MR)	3
LAB xxx	Natural Science Perspective (GCR)	3
ENGL xxx	Literature Requirement (SR)	3
PSY,SO,POSC xxx	Psychology/Sociology/ Political Science Requirement (MR)	3
EC 3xx	Economics Elective (MR)	3
		15

Junior Year Credit Hours

Fall Semester

EC 3xx†/4xx†		3
EC 3xx†/4xx†		3
PH/ART/FILM/ENGL/SPAN/FR xxx	Humanities Requirement (SR)	3
PSY,SO,POSC xxx	Psychology/Sociology/ Political Science Requirement (MR)	3
XXX	Comparative Perspective (GCR)	3
		15

Spring Semester

EC 3xx†/4xx†		3
MUS,FILM,ART xxx	Aesthetic Perspective (GCR)	3
HIST/POSC/SO/PSY/CJ/SW	Social Science Requirement (GCR & SR)	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		15

Senior Year Credit Hours

Fall Semester

EC 3xx†/4xx†		3
GEN xxx	General Elective (GCR)	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		15

Spring Semester

EC 490†	Seminar: Issues in Contemporary Economics (MR)	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		15

Note: A one-credit course must be taken at some point during the four-year sequence. Students who begin the program with EC 101 may wish to take that one credit as an independent study in economics, during the second semester of the freshman year.

ELECTRICAL ENGINEERING MAJOR

School of Engineering

General Information

Electrical and computer engineers are at the forefront of today's technological revolution. The internet has filled our lives with their influences. Electrical and computer engineers touch every aspect of today's modern world. Our graduates are uniquely qualified to become systems engineers, capable of designing hardware and software. Electrical and computer engineers work in the communications, controls, biomedical, aerospace, electronics, materials, energy, defense and other diverse commercial sectors.

The academic program in electrical and computer engineering provides the student with a thorough background in electronic and systems design. The student may tailor the program to their specific interests by selecting appropriate technical or design electives. Elective areas include electronics, and land-based wireless communications, VLSI, digital signal processing (DSP), signal and filters, power generation and transmission, controls and robotics as well as image processing. 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 laboratories.

Our labs are well equipped and all facilities are available for undergraduate use.

There are two concentrations within the program: electrical concentration and computer concentration. Both concentrations have common courses for the first two years. The program leading to the B.S.E.E. degree is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Career Opportunities

The electrical concentration provides a broad based education that leads to employment in a diverse spectrum of industries in both private and public sectors, for example, power utility, aerospace, defense, telephone, automobile, chemical, and consumer electronic industries.

The computer concentration emphasizes specialized course work in the design of large and small computer hardware and software systems. Microminiaturization of digital devices, such as single chip microcomputers, has made it possible for the designers to embed these devices in many products.

Consumer products have been changed by the addition of digital devices creating growth in manufacturing and employment opportunities. Electrical engineers with computer concentration continue to be in demand in all types of public and private enterprises. The biggest employers of electrical engineering graduates with computer concentration are software companies and the aerospace and defense industries.

Design Experience

Students are introduced to engineering design in the freshman year in First Year Engineering Seminar and Introduction to Engineering courses. Sophomore and junior courses and labs provide progressively more sophisticated design experiences within the student's discipline. All programs are culminated by a capstone senior design project course in which each student works on an independent project 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 environment.

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 free 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. Undergraduate engineering students may take 500-level engineering courses for which they have satisfied the prerequisite requirements.

Faculty

Professors: Stephen Crist, Ronald Musiak, Kourosh Rahnamai

Associate Professors: John Burke, James Moriarty

Assistant Professor: Steven Northrup

Professor Emeriti: William Bradley, Rene Dube, James Masi

Electrical Engineering Strategic Plan

Vision

The electrical engineering program at Western New England College 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 Program (ECE) is to provide students with a supportive environment that facilitates learning to solve problems in electrical and computer engineering.

The Electrical Engineering Program is committed to excellence in student learning. Graduates of the program will be problem solvers, able to apply engineering principles to electrical and computer systems. The faculty and staff of the ECE program use their background in teaching, research, and industry to prepare students to be successful as they move into the workforce or graduate school.

Objectives

In support of the program objectives for the school of engineering, the Electrical Engineering program will prepare our students to be proficient at putting theory into practice, capable of life-long learning, and be aware of the social, ethical and environmental issues associated with their professional activities.

Program outcomes

The outcomes necessary to achieve our program objectives are that our students will have:

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 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 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
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
12. an ability to model, analyze, simulate and design circuits and systems
13. an ability to use computer and/or laboratory tools in the design of circuits and systems
14. an ability to build, test, and debug prototype circuits and systems and analyze results
15. an ability to use the principles of design to solve open-ended engineering problems

Common Core

Notes:

- * Is a prerequisite
- † Has a prerequisite
- GCR General College Requirement
- ER Engineering Requirement
- MR Major Requirement

Freshman Year

Credit Hours

Fall Semester

ENGL 132*	English Composition I (GCR/ER/MR)	3
ENGR 102*	First Year Engineering Seminar (GCR/ER/MR)	1
ENGR 103*	Introduction to Engineering (GCR/ER/MR)	4
MATH 133*	Calculus I (GCR/ER/MR)	4
PHYS 133*	Mechanics (GCR/ER/MR)	4
PEHR 151	Personal Health and Wellness (GCR)	1
		17

Spring Semester

ENGL 133†	English Composition II (GCR/ER/MR)	3
ENGR 105*	Computer Program Design (GCR/ER/MR)	3
ENGR 110*	Engineering Problem Solving (GCR/ER,MR)	2
MATH 134*†	Calculus II (GCR/ER/MR)	4
PHYS 134*†	Electricity and Magnetism (GCR/ER/MR)	4
PEHR 151-199†	Lifetime Activities Series (GCR)	1
		17

Sophomore Year

Credit Hours

Fall Semester

CHEM 105*	General Chemistry I (ER/MR)	4
EE 205*†	Linear Circuits I (ER/MR)	4
ENGR 206* ***	Engineering Mechanics (MR)	3
MATH 236*†	Differential Equations (ER/MR)	3
	General Education Requirement ²	3
		17

Spring Semester

CPE 271*	Digital Design (MR)	4
EE 206* ***	Linear Circuits II(MR)	4
ENGR 212* ***†	Probability and Statistics (ER/MR)	3
MATH 235* ***	Calculus III (ER/MR)	3
	General Education Requirement ² (GCR/ER/MR)	3
LBC xxx	Learning Beyond the Classroom (GCR)	1
		17

Electrical Engineering Concentration

Electrical engineering graduates also have the ability to do the following:

Apply their knowledge and skills in a variety of professional electrical engineering positions dealing with 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.

Course of Study

Junior Year

Credit Hours

Fall Semester

EE 301*†	Signals and Systems I (MR)	3
EE 303*†	Electronic Circuits I (MR)	3
EE 312*†	Semiconductor Devices (MR)	3
EE 319*†	Electrical Engineering Laboratory I (MR)	2
MATH 350*†	Engineering Analysis I (MR)	3
	General Education Requirement ² (GCR/ER/MR)	3
		17

Spring Semester

EE 302*†	Signals and Systems II (MR)	3
EE 314*†	Fields and Waves (MR)	3
EE 320*†	Electronic Circuits II (MR)	3
EE 322*†	Electrical Engineering Laboratory II (MR)	2
	Technical Elective ¹ (MR)	3
	General Education Requirement ² (GCR/ER/MR)	3
		17

Senior Year

Credit Hours

Fall Semester

EE 422†	Control Systems (MR)	3
EE 423†	Electronic Communication I (MR)	3
EE 427†	EE Laboratory III (MR)	2
EE 439*†	Professional Awareness (MR)	1
	Design Elective ³ (MR)	3
	Technical Elective ¹ (MR)	3
		15

Spring Semester

EE 440 [†]	Senior Design Projects (MR)	3
	General Elective (MR)	3
	Technical Elective ¹ (MR)	3
	Design Elective ³ (MR)	3
	General Education Requirement ² (GCR/ER/MR)	3
LBC xxx Classroom (GCR)	Learning Beyond the Classroom (GCR)	

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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 (See page 40).

³ Design electives must be selected from a list published in each semester's course schedule and approved by the advisor.

Total credit hours required for graduation – 132.

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

Undergraduate engineering students may take 500-level engineering courses for which they have satisfied the prerequisite requirements.

Computer Concentration

Electrical engineering graduates with computer option will also have the ability to apply their knowledge and skills in a variety of professional engineering positions dealing with design, manufacturing, operation, and service of small or large computer hardware and software systems.

Course of Study

Notes:

*	Is a prerequisite
†	Has a prerequisite
MR	Major Requirement
GCR	General College Requirement
ER	Engineering Requirement

Junior Year

Credit Hours

Fall Semester

CPE 310*†	Machine and Assembly Language (MR)	3
EE 301*†	Signals and Systems I (MR)	3
EE 303*†	Electronic Circuits I (MR)	3
CPE 305†	Object Oriented Design for Engineers (MR)	3
EE 319* †	EE Laboratory I (MR)	2
MATH 350*†	Engineering Analysis I (MR)	3
		<hr/> 17

Spring Semester

CPE 350*†	Advanced Programming Languages (MR)	3
CPE 360*†	Microprocessor Systems & Design (MR)	3
EE 302*†	Signals and Systems II (MR)	3
EE 320*†	Electronic Circuits II (MR)	3
EE 322*†	EE Laboratory II (MR)	2
	General Education Requirement ¹ (GCR/ER/MR)	3
		<hr/> 17

Senior Year

Credit Hours

Fall Semester

CPE 420*†	Computer Architecture (MR)	3
CPE 427†	Computer Laboratory (MR)	2
EE 439*†	Professional Awareness (MR)	1
	General Education Requirement ¹ (GCR/ER/MR)	3
	Design Elective ² (MR)	3
	Technical Elective ³ (MR)	3
		<hr/> 15

Spring Semester

CPE 470†	Real-time Embedded Controls (MR)	3
EE 440†	Senior Design Projects (MR)	3
	General Elective (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
	Technical Elective ³ (MR)	3
LBC xxx Classroom (GCR)	Learning Beyond the Classroom (GCR)	

15

¹ General Education courses must be selected in such a way to insure that all "perspective of understanding" requirements have been satisfied. (See page 40.).

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.

Total credit hours required for graduation – 132

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

Undergraduate engineering students may take 500-level engineering courses for which they have satisfied the prerequisite requirements.

ENGLISH MAJOR

School of Arts and Sciences

General Information

The English major concentrates mainly on the careful reading of texts. Students not only gain a sound sense of the English and American literary traditions, but also develop valuable skills in reading, writing, and analysis.

Career Opportunities

With this specialized preparation, English majors are able to consider a wide variety of career opportunities. They may go on to graduate study in literature, law, journalism, and other fields; to careers in teaching, journalism, public relations; or to any work in which analyzing, assembling, and communicating information are important.

Faculty

Professor: K. Edward Jansen

Associate Professors: Janet Bowdan, Shelly Regenbaum, Chip Rhodes, Brad Sullivan, Delmar Wilcox

Assistant Professors: Josie Brown-Rose, Jeffrey Yu

Professional Educators: William Grohe, Linda Oleksak, Anne Rice

Administrator with faculty status: Rosemary O'Donoghue

Administrative Personnel: Lisa Drnec-Kerr, Louise Pelletier

Program Objectives

These objectives are ambitious and comprehensive. They cannot be achieved without the hard work of the student.

I. Intellectual Range

1. To enlarge and deepen the student's understanding of human nature in its variety of character types, motives, aspirations, and moral and intellectual development.

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2. To expand and deepen the student's understanding of human society in its variety of institutions, achievement, and capacity for good or ill.
3. To extend the range of the students' reading so that their minds and spirits will have sources of nourishment other than popular entertainment.
4. To increase the students' career opportunities by expanding their imaginative grasp of the world in which they work and of the people with whom they work.

II. Critical Skills

1. To increase the student's ability to read and understand a variety of literary works. Although not directly taught, the ability to read non-literary works should also increase.
2. To improve the student's ability to write clear, grammatical, rhetorically effective prose. Practice will come mainly in the form of critical essays about literature, but the fundamental writing skills should be useful in a wide variety of contexts.
3. To help prepare students for their careers by increasing their communication skills as described in A and B.

III. Literary Content

1. To increase the students' knowledge of English, American, and world literature.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements, p. 39 and 43.

Course of Study

The following classes are required for all English Majors:

ENGL 231	British Literature I
ENGL 232	British Literature II
ENGL 251	American Literature I
ENGL 252	American Literature II
ENGL 314	Shakespeare: Plays and Poems
	-or-
ENGL 315	Shakespeare: The Tragedies
	-or-
ENGL 316	Shakespeare: The Comedies and Histories
ENGL 344	Expository Writing
ENGL 410	English Seminar

Five additional courses, of which one must treat a major author or authors, one a period, and one a theme.

Suggested Sequence of Courses

Notes:

*	Is a prerequisite
†	Has a prerequisite
MR	Major Requirement
GCR	General College Requirement
A&SR	School of Arts and Sciences Requirement

Freshman Year

Credit Hours

Fall Semester

ENGL 132	English Composition I (GCR)	3
LA 100	First Year Seminar (GCR)	2
MATH 1xx	Mathematics (GCR)	3
GEN xxx	Humanities (A&SR)	3
CS 131	Computing for the Arts and Sciences (GCR)	3
PEHR 151	Personal Health and Wellness (GCR)	1
		<hr style="width: 100%; border: 0.5px solid black;"/>
		15

Spring Semester

ENGL 133	English Composition II (GCR)	3
PEHR 153-199	Lifetime Activities Series (GCR)	1
MATH 1xx	Mathematics (GCR)	3
PH xxx	Ethical Perspective -Philosophy (GCR/A&SR)	3
POSC xxx/EC xxx	Economics/Political Science (A&SR)	3
HIST xxx	History Perspective (GCR)	3
		<hr style="width: 100%; border: 0.5px solid black;"/>
		16

Sophomore Year

Credit Hours

Fall Semester

ENGL xxx	Two literature survey courses from among ENGL 231, 232, 251 or 252 (MR)	6
GEN xxx	Behavioral Science Perspective (GCR)	3
GEN xxx	Integrated Liberal and Professional Perspective General Elective (A&SR) (GCR)	3
LAB xxx	Laboratory Science Requirement (GCR)	3
		<u>15</u>

Spring Semester

ENGL xxx	Two Literature survey courses from among ENGL 231, 232, 251 or 252 (MR)	6
CUL 2xx	Elements of Culture – Cultures Perspective (GCR) Behavioral Science Requirement	3
PSY xxx/SO xxx	Psychology or Sociology (A&SR)	3
LAB xxx	Laboratory Science Requirement (GCR)	3
		<u>15</u>

Junior Year

Credit Hours

Fall Semester

ARTS xxx	Elements of Culture – Aesthetic Perspective Arts Requirement (A&SR)	3
ENGL xxx	English Elective (MR)	3
ENGL 314	Shakespeare: Plays and Poems — or —	
ENGL 315	Shakespeare: The Tragedies — or —	
ENGL 316	Shakespeare: The Comedies and Histories (MR)	3
GEN xxx	General Electives (GCR)	7
		<u>16</u>

Spring Semester

ENGL 344	Expository Writing (MR)	3
ENGL xxx	English Electives (MR)	6
GEN xxx	General Electives	6
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

ENGL xxx	English Electives (MR)	6
GEN xxx	General Electives	9
		<u>15</u>

Spring Semester

ENGL 410	English Seminar (MR)	3
GEN xxx	Electives	12
		<u>15</u>

Literature Concentration:

ENGL XXX	English Elective (300 level or higher)
ENGL XXX	English Elective (300 level or higher)
ENGL XXX	Major Author
ENGL XXX	Period
ENGL XXX	Theme

Secondary Education Concentration:

ENGL 214	World Literature I
ENGL 333	Independent study
ENGL XXX	Major Author
ENGL XXX	Period
ENGL XXX	Theme

Elementary Education Concentration:

ENGL 214	World Literature I
ENGL 333	Independent study
ENGL XXX	Major Author
ENGL XXX	Period
ENGL XXX	English Elective

African American/Elementary Education Concentration:

ENGL 313	African American Lit I
ENGL 318	African American Lit II
ENGL 345	Major African American Authors

NGL 214	World Literature I
NGL 333	Independent Study

Recommended courses:

CUL 263	France and the French Caribbean
	-or-
CUL 310	Race Relations: U.S. and South Africa
ENGL 343	Literature of Africa and the African Diaspora
ENGL 341	Caribbean Literature

African American Concentration:

ENGL 313	African American Lit I
ENGL 318	African American Lit II
ENGL 341	Caribbean Literature
ENGL 343	Literature of Africa and the African Diaspora
ENGL 345	Major African American Authors

Recommended courses

SO 314	American Culture and the Black Experience
HIST 354	Civil War and Reconstruction
EC 106	Economics of Poverty and Discrimination
CUL 263	France and the French Caribbean -or-
CUL 310	Race Relations: U.S. and South Africa

FINANCE MAJOR

School of Business

General Information

Courses in finance provide the professional education for a wide spectrum of careers in finance. Accounting, economics, quantitative analysis, and institutional studies 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 institutional investment management, personal financial management, security analysis, or corporate financial management.

Career Opportunities

Finance majors find positions in security analysis, personal financial planning, banking, corporate financial management, underwriting, institutional portfolio management, and insurance. Students are encouraged to take professional exams after graduation, and many graduates have gone on to earn master's degrees.

Faculty

Professor: Claire Bronson

Associate Professors: William Bosworth,
Sharon Lee, Shekar T. Shetty

Program Objectives

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.
5. Demonstrate the ability to determine strategies for corporate decision-making based on an accurate assessment of risks and rewards.

Course of Study

1. Core Requirements for All Business Majors (80 credit hours) See p.47.
— plus —
2. Required Finance courses (15 credit hours)
 - FIN 312 Financial Markets and Institutions
 - FIN 317 Investments
 - FIN 318 Security Analysis
 - FIN 320 Intermediate Corporation Finance
 - FIN 420 Advanced Corporation Finance
 - plus —
3. Other required courses (6 credit hours)
 - AC 309 Cost Accounting
 - EC 311 Money and Banking
 - or —
 - EC 305 Macroeconomics
 - plus —
4. Electives (21 credit hours)
 - FIN or AC 3xx-4xx Elective (6 cr.)
 - Non-Business Electives (15 cr.)

Total credit hours required for graduation – 122

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 College.

Courses to be included in computing the 2.0 minimum average in the major are as follows: All FIN courses, AC 201-202, AC 309 and any AC electives.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- † Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- BUSR School of Business Requirement

Freshman Year

Credit Hours

Fall Semester

BUS 101	First Year Seminar (GCR/BUSR)	3
ENGL 132*	English Composition I (GCR)	3
MATH 111*	Analysis for Business and Economics I (GCR/BUSR)	3
	— or —	
MATH 123*	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	
HIST xxx	History Requirement (GCR)	3
MAN 101	Principles of Management (BUSR)	
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PEHR 151*	Personal Health and Wellness (GCR)	1
		<u>16</u>

Spring Semester

ENGL 133†	English Composition II (GCR)	3
MATH 112†	Analysis for Business and Economics II(GCR/BUSR)	
	— or —	
MATH 124†	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
	Non-Business Elective (BUSR)	3
MAN 101*	Principles of Management (BUSR)	
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PSY 101	Introduction to Psychology (BUSR)	
	— or —	
SO 101	Introduction to Sociology (BUSR)	3
PEHR 153-159	Lifetime Activity Series (GCR)	1
		<u>16</u>

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Sophomore Year

Credit Hours

Fall Semester

AC 201*†	Financial Reporting (BUSR)	3
MK 200*†	Principles of Marketing (BUSR)	3
CIS 202*†	Introduction to Information Systems (BUSR)	3
EC 205*	Principles of Economics I (BUSR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

AC 202†	Managerial Accounting (BUSR)	3
QM 201†	Introduction to Statistics (BUSR)	3
FIN 214†	Introduction to Finance (BUSR)	3
EC 206†	Principles of Economics II (BUSR)	3
COMM 201	Principles of Communication (BUSR)	3
		<u>15</u>

Non-credit career planning — Completion of individual development/career plan required for registration for junior year.

Junior Year

Credit Hours

Fall Semester

BUS 301	Integrated Business Operations (BUSR)	3
AC 309	Cost Accounting (MR)	3
FIN 312	Financial Markets and Institutions (MR)	3
EC 311	Money and Banking (MR)	3
	— or —	
EC 305	Macroeconomics (MR)	
Lab Sci	Laboratory Science Requirement (GCR)	3
		<u>15</u>

Spring Semester

LS 301	Legal Aspects of Business (BUSR)	3
QM 310	Quality and Operations Management (MR)	3
CUL xxx	Elements of Culture Requirement	3
FIN 317	Investments (MR)	3
Lab Sci	Laboratory Science Requirement (GCR)	3
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

FIN 318	Security Analysis (MR)	3
FIN 320	Intermediate Corporation Finance (BUSR)	3
FIN/AC 3xx-4xx	Finance or Accounting Elective (MR)	3
	Non-business Elective (GCR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

BUS 450	Business Strategy (BUSR)	3
FIN 420	Advanced Corporation Finance (MR)	3
FIN/AC 3xx-4xx	Finance or Accounting Elective (MR)	3
PH 310	Ethics in the Professions	3
	Non-business Elective (BUSR)	3
		<u>15</u>

GENERAL BUSINESS MAJOR

School of Business

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 Opportunities

General Business majors are prepared to enter the business world in most entry level positions in corporations and agencies in the public sector. Since their background is broad, they are able later to specialize either by entering graduate school or, more typically, by participating in training programs provided by employers.

Faculty

Faculty in this major come from all departments in the School of Business.

Program Objectives

1. Prepare students to assume positions of responsibility in business and other organizations.
2. Provide students with the knowledge and skills necessary to understand and manage organizational goals, and to lead people to work together toward the attainment of those goals.
3. Prepare students to communicate effectively in a global and diverse *environment*.
4. Provide students with skills and knowledge necessary to understand corporate and business finance, budgeting, planning, and financial forecasting.
5. Provide students with an understanding of the organization and culture of businesses and other organizations.

6. Provide students with an understanding of the technology used to develop, maintain, and manage information for decision-making purposes.
7. Provide students with experience in identifying problems, making effective decisions, and managing conflict.
8. Provide students with an understanding of professionalism and the ethical responsibilities of professional managers
9. Understand the various HRM practices used in organizations, the legal issues associated with these practices, and the impact they have on the employment relationship.

Course of Study

1. Core Requirements for All Business Majors (80 credit hours) See p. 47.
— plus —
2. Required Management and Legal Studies courses (9 credit hours)
LS 424 Legal Aspects of Human Resource Management
MAN 308 Employee Relations
MAN 323 Human Resource Management
— plus —
3. Electives (33 credit hours)
BUS 480 Business Internship* (3 cr.)
— or —
Business Elective (3 cr.)
Business Electives (12 cr.)
Non-Business Electives (18 cr.)

Total credit hours required for graduation – 122

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 College.

Courses to be included in computing the 2.0 minimum average in the major are as follows: All MAN and LS courses as well as BUS 450.

* *The General Business major is encouraged to complete an internship in any of the areas represented by the School of Business.*

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- † Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- BUSR School of Business Requirement

Freshman Year Credit Hours

Fall Semester

BUS 101	First Year Seminar (GCR/BUSR)	3
ENGL 132*	English Composition I (GCR)	3
MATH 111*	Analysis for Business and Economics I (GCR/BUSR)	3
	— or —	
MATH 123*	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
HIST xxx	History Requirement (GCR)	3
MAN 101	Principles of Management (BUSR)	3
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PEHR 151*	Personal Health and Wellness (GCR)	1
		<u>16</u>

Spring Semester

ENGL 133†	English Composition II (GCR)	3
MATH 112†	Analysis for Business and Economics II (GCR/BUSR)	3
	— or —	
MATH 124†	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
	Non-Business Elective (BUSR)	3
MAN 101*	Principles of Management (BUSR)	3
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PSY 101	Introduction to Psychology (BUSR)	3
	— or —	
SO 101	Introduction to Sociology (BUSR)	3
PEHR 153-159†	Lifetime Activity Series (GCR)	1
		<u>16</u>

Sophomore Year Credit Hours

Fall Semester

AC 201*†	Financial Reporting (BUSR)	3
MK 200*†	Principles of Marketing (BUSR)	3
CIS 202*†	Introduction to Information Systems (BUSR)	3
EC 205*	Principles of Economics I (BUSR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

AC 202†	Managerial Accounting (BUSR)	3
QM 201†	Introduction to Statistics (BUSR)	3
FIN 214†	Introduction to Finance (BUSR)	3
EC 206†	Principles of Economics II (BUSR)	3
COMM 201†	Principles of Communication (BUSR)	3
		<u>15</u>

Non-credit career planning — Completion of individual development/career plan required for registration for junior year.

Junior Year Credit Hours

Fall Semester

BUS 301	Integrated Business Operations (BUSR)	3
PH 310	Ethics in the Professions (BUSR)	3
	Non-business Elective (BUSR)	3
	Business Elective (MR)	3
Lab Sci	Laboratory Science Requirement (GCR)	3
		<u>15</u>

Spring Semester

LS 301	Legal Aspects of Business (BUSR)	3
QM 310	Quality and Operations Management (BUSR)	3
CUL xxx	Elements of Culture Requirement (GCR)	3
MAN 308	Employee Relations (MR)	3
Lab Science	Laboratory Science Requirement (GCR)	3
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

LS 424	Legal Aspects of Human Resource Management (MR)	3
	Business Elective (MR)	3
	Business Elective (MR)	3
	Non-business Elective (GCR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

BUS 450	Business Strategy (BUSR)	3
MAN 323	Human Resource Management (MR)	3
BUS 480	Business Internship (MR)	
	— or —	
	Business Elective (MR)	3
	Business Elective (MR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

**GENERAL BUSINESS -
BBA ONLINE OPTION FOR
ADULTS****School of Business****General Information**

The Bachelor in Business Administration (BBA) is a part-time degree completion program for adults. 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.

The BBA is a cohort-based, accelerated program. Courses are delivered entirely over the Internet and are offered in a lock-step sequence, over approximately 20 eight-week terms. Students proceed together as a group, taking one course per eight-week term.

Students will normally have earned the first 60 credit hours of the Bachelor of Business Administration (BBA) degree while pursuing an associate's degree or the equivalency at another accredited college or university. The Western New England College Bachelor of Business Administration provides the remaining 60 credit hours needed to qualify for a bachelor's degree.

In order to be considered for admission, students must transfer in at least 54 credit hours. Full-time Western New England College 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

Faculty in this program come from various departments in the School of Business as well as Arts and Sciences.

Program Objectives

1. Prepare students to assume positions of increased responsibility in business, government, and industry.
2. Provide students with the knowledge, ethics, and skills necessary to understand and manage corporate goals, and to lead people to work together toward those goals.
3. Equip students with the skills necessary to be clear and effective communicators.
4. Provide students with the quantitative skills and knowledge necessary to understand corporate and business finance, budgeting, planning, and financial forecasting.
5. Provide students with an understanding of the organization and culture of businesses and organizations.
6. Equip students with an understanding of the technology used to develop, maintain, and manage information for decision-making purposes.
7. Provide students with experience in identifying problems, making effective decisions, and managing conflict.
8. Provide students with an enhanced understanding of professionalism and the ethical responsibilities of professional managers.

Course of Study

For the BBA major it is assumed that students will transfer to Western New England College with an associate's degree or approximately 60 credits. Some students will need to complete specific lower level requirements. The following projected BBA sequence of courses assumes that a student has completed: six credit hours in English composition; three credit hours in mathematics; three credit hours in science; three credit hours in psychology or sociology; three credit hours in history; three credit hours in humanities; 12 credit hours in business courses (three credit hours each in lower level courses in computers, management, and marketing, and an upper level business law course); and approximately 27 credit hours in non-business and open electives.

Core Requirements (72 credit hours)

Business Courses:		36 Credits
CIS 102	Computer Tools for Business	3
MAN 101	Principles of Management	3
AC 201	Financial Reporting	3
MK 200	Principles of Marketing	3
CIS 202	Introduction to Information	3
AC 202	Managerial Accounting	3
FIN 214	Corporation Finance	3
QM 201	Introduction to Business Statistics	3
BUS 301	Integrated Business Operations	3
LS 301	Legal Aspects of Business	3
QM 310	Quality and Operations Management	3
BUS 450	Business Strategy	3

Non-Business Courses:		36 Credits
ENGL 132-133	English Comp. I & II	6
MATH xxx	College-level Math	3
MATH xxx	Business Math	3
	Non-lab Science	3
EC 205-206	Principles of Economics I & II	6
PSY 101	Introduction to Psychology	3
	— or —	
SO 101	Introduction to Sociology	3
HIST xxx	History Requirement	3
COMM 320	Professional Communication	3
PH 310	Ethics in the Professions	3
	— plus —	

Required Management and Legal Studies courses		9 credit hours
LS 424	Legal Aspects of Human Resource Management	
MAN 3xx	Management Elective	
MAN 323	Human Resources Management	
	— plus —	

Electives		39 credit hours
	Business Electives	12
	Non-Business Electives	24
	Open electives	3

Total Credit hours required for graduation—
120

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 College. Courses to be included in computing the 2.0 minimum average in the major are as follows: All MAN and LS courses as well as BUS 450.

Proposed Sequence of Courses

(may be modified based on students' academic qualifications and needs)

Notes:

* Is a prerequisite

† Has a prerequisite

MR Major Requirement

GCR General College Requirement

BUSR School of Business Requirement

Junior Year

Credit Hours

Year 1

COMM 320† Professional Communication 3
Business Elective† (MR) 3

PH 310 Ethics in the Professions (BUSR) 3

EC 205* Principles of Economics I (BUSR) 3

EC 206† Principles of Economics II (BUSR) 3
Management Elective† (MR) 3

Junior-Senior Year

Credit Hours

Year 2

CIS 202 *† Introduction to Information Systems (BUSR) 3

MATH xxx* Business Math (BUSR) 3

QM 201† Introduction to Statistics (BUSR) 3

Business Elective† (MR) 3

AC 201*† Financial Reporting (BUSR) 3

AC 202† Managerial Accounting (BUSR) 3

Senior Year

Credit Hours

Year 3

LS 424 Legal Aspects of Human Resource Management 3

FIN 214† Corporation Finance (BUSR) 3

BUS 301 Integrated Business Operations (BUSR) 3

MAN 323 Human Resource Management (MR) 3

QM 310 Quality and Operations Management (BUSR) 3

BUS 450 Business Strategy (BUSR) 3

Senior Year

Credit Hours

Optional Year 4

Business Elective† (MR) 3

Business Elective† (MR) 3

Or other course(s) as needed

†Other courses may be substituted based on students' needs

HISTORY MAJOR

School of Arts and Sciences

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 program is designed to give students an introduction to world civilization 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.

Faculty

Professors: John Anzalotti, Marc Dawson, Theodore South

Associate Professor: John Seung-Ho Baick

Assistant Professor: Jonathan Beagle

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.

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- To give students the ability to construct and write a coherent, logical, and grammatical argument.
- To develop critical reading skills.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements, p. 39 and 43.

Course of Study

- Required Courses (19 credit hours)
 - HIST 105-106 World Civilization I-II
 - HIST 111 U.S. History to 1877
 - HIST 112 U.S. History, 1878 to Present
 - HIST 490 Junior Seminar in History
 - HIST 492 Senior Seminar
 - or
 - HIST 495-496 Senior Thesis
- 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.
- Eighteen additional credit hours in social sciences including at least three credit hours each of economics, geography, government, psychology, and sociology.

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.

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.

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement

GCR General College Requirement
A&SR School of Arts and Sciences Requirement

Freshman Year

Credit Hours

Fall Semester

HIST 105	World Civilization I (GCR/MR)	3
HIST 111	US History to 1877	3
MATH 1xx*	Mathematics (GCR.)	3
ENGL 132*	English Composition I (GCR.)	3
LA 100	First Year Seminar (GCR.)	2
		<hr/> 14

Spring Semester

HIST 106	World Civilization II (MR)	3
HIST 112	US History 1878 to Present	3
MATH xxx	MATH 1xx **Mathematics (MR)	3
GEN xxx	General Elective	3
ENGL 133**	English Composition II (GCR.)	3
PEHR 151	Personal Health and Wellness (GCR.)	1
		<hr/> 16

Sophomore Year

Credit Hours

Fall Semester

POSC 102	American National Government	3
EC 101	Introduction to Economic Issues	
	— or —	
EC 205	Principles of Economics I (A&SR)	3
LAB xxx	Laboratory Science Requirement (GCR.)	3
CUL 2xx	Cultural Studies Perspective (GCR.)	3
ARI xxx	Literature Requirement (A&SR)	3
PEHR 153-199	Life Activities Series (A&SR)	1
		<hr/> 16

Spring Semester

SO 101	Introduction to Sociology	3
CS 131	Computing for Arts and Sciences (GCR.)	3
PSY 101	Introduction to Psychology (A&SR)	3
LAB xxx	Natural Science Perspective (GCR.)	3
HIST xxx	History Elective (MR)	3
		<hr/> 15

Junior Year

Credit Hours

Fall Semester

PH xxx	Ethical Perspective (GCR.)	3
HIST 3xx	Upper Level History Elective (MR)	3
HIST 3xx	Upper Level History Elective (MR)	3
ARTS xxx	Aesthetic Perspective (GCR.)	3
GEOG 101	Introduction to Geography (A&SR)	3
		<hr/> 15

Spring Semester

HIST 3xx	Upper Level History Elective (MR)	3
HIST 3xx	Upper Level History Elective (MR)	3
ARII xxx	Social Science Perspective (A&SR)	3
GEN xxx	General Elective	3
HIST 490	Junior Seminar in History (MR)	3
		<hr/> 15

Senior Year

Credit Hours

Fall Semester

HIST 3xx	Upper Level History Elective (MR)	3
HIST 3xx	Upper Level History Elective (MR)	3
ARI xxx	Humanities Elective (A&SR)	3
GEN xxx	General Elective (GCR.)	3
GEN xxx	General Elective	3
		<hr/> 15

Spring Semester

HIST 3xx	History Elective (MR)	3
xxx	Integrated Liberal and Professional Perspective (GCR.)	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
HIST 492**	Senior Seminar	4
		<hr/> 16

INDUSTRIAL ENGINEERING MAJOR**School of Engineering****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 solving 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 B.S.I.E. degree is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

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 and manufacturing engineering, operations research, computer science, engineering management, business administration, law, and other fields.

Faculty

Professor: Eric Haffner

Associate Professors: Richard Grabiec,
Thomas Keyser

Assistant Professors: William Brown, Abdul
Kamal

Professor Emeritus: J. Byron Nelson

Mission Statement

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 fast, flexible, focused and friendly. They will use 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.

Objectives

The objectives of the Industrial Engineering program are to:

1. educate student engineers with the combination of broad knowledge and critical thinking, and provide 'real-world' learning experiences beyond the classroom or laboratory;
2. graduate engineers who are individually successful and will be contributors to their profession;
3. graduate highly qualified industrial engineers: individuals with excellent problem-solving, technical, ethical, teamwork, and managerial skills;
4. contribute to the advancement of the industrial engineering profession through student and faculty leadership and enhance the overall reputation of the School of Engineering and Western New England College;

5. provide service to the School of Engineering; including: course offerings at the undergraduate level, instruction of common core School courses and be a productive member of School and College initiatives;

Program outcomes

The outcomes that we strive for our students to possess:

- 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
- an ability to function on multi-disciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- an ability to apply their broad education toward the understanding of the impact of engineering solutions in a global and societal context
- a recognition of the need for, and the ability to engage in life-long learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- an ability to design, develop, implement and improve integrated systems that include people, materials, information, equipment and energy
- an ability to design and improve a safe and productive work environment
- an ability to code and utilize programming languages and software relevant to industrial engineering

Industrial Engineering Course of Study

Notes:

*	Is a prerequisite
**	Has a prerequisite
MR	Major Requirement
GCR	General College Requirement
ER	Engineering Requirement

Freshman Year Credit Hours*Fall Semester*

ENGL 132*	English Composition I (GCR/ER/MR)	3
ENGR 102*	First Year Engineering Seminar (GCR/ER/MR)	1
ENGR 103*	Introduction to Engineering (GCR/ER/MR)	4
MATH 133*	Calculus I (GCR/ER/MR)	4
PHYS 133*	Mechanics (GCR/ER/MR)	4
PEHR 151	Personal Health and Wellness (GCR.)	1
		<u>17</u>

Spring Semester

ENGL 133**	English Composition I (GCR/ER/MR)	3
ENGR 105*	Computer Program Design (GCR/ER/MR)	3
ENGR 110*	Engineering Problem Solving (GCR/ER/MR)	2
MATH 134* **	Calculus II (GCR/ER/MR)	4
PHYS 134* **	Electricity and Magnetism (GCR/ER/MR)	4
PEHR 153-199**	Lifetime Activities Series (GCR.)	1
		<u>17</u>

Sophomore Year Credit Hours*Fall Semester*

CHEM 105*	General Chemistry I (ER/MR)	4
ENGR 206* **	Engineering Mechanics (MR)	3
ENGR 208* **	Foundations of Electrical Engineering (MR)	4
MATH 236* **	Differential Equations (ER/MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
		<u>17</u>

Sophomore YearCredit Hours*Spring Semester*

AC 201*	Financial Reporting (MR)	3
IE 205* **	Modeling of Industrial and Service Systems (MR)	2
ENGR 212* **	Probability and Statistics (ER/MR)	3
MATH 235* **	Calculus III (ER/MR)	3
	Basic Science Elective (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
LBC xxx	Learning Beyond the Classroom (GCR.)	
		<u>17</u>

Junior YearCredit Hours*Fall Semester*

IE 308* **	Work Analysis and Human Factors (MR)	3
IE 312* **	Engineering Economic Analysis (MR)	3
IE 318* **	Industrial Design Lab I (MR)	2
IE 326* **	Production Planning and Control (MR)	3
ME 309* **	Materials Science (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
		<u>17</u>

Spring Semester

IE 314**	Manufacturing Processes (MR)	3
IE 315* **	Quality Control and Engineering Statistics (MR)	3
IE 328* **	Industrial Design Lab II (MR)	2
IE 334**	Computer Simulation and Design (MR)	3
	Technical or Design Elective ² (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
		<u>17</u>

Senior YearCredit Hours*Fall Semester*

IE 410* **	Engineering Project Management (MR)	3
IE 422**	Industrial Safety and Ergonomics (MR)	3
IE 428**	IE Design Laboratory III (MR)	2
IE 439* **	Project Preparation (MR)	1
	Technical or Design Elective ² (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
		<u>15</u>

Spring Semester

IE 420**	Operations Research (MR)	3
IE 440**	Senior Design Projects (MR)	3
	Technical Elective ² (MR)	3
	Design Elective ² (MR)	3
	General Elective (MR)	3
LBC xxx	Learning Beyond the Classroom (GCR.)	

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¹General Education courses must be selected in such a way to insure that all "perspective of understanding" requirements have been satisfied. (See page 40.)

²Technical or design electives are engineering, math, or science courses normally numbered 300 or above and approved by the department chair.

Total credit hours required for graduation — 132.

The 2.0 required 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.

INTEGRATED LIBERAL STUDIES MAJOR

School of Arts and Sciences

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 School 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 College.

Program Objectives

1. To allow student 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 and School Requirements

See Requirements on p. 39.

Course of Study

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 MAJOR

School of Arts and Sciences

General Information

The flexibility of the international studies major allows each student to select one of three options: European area concentration, developing societies concentration, or economics and commerce concentration. The interdisciplinary major program in international studies provides students with the tools necessary to analyze the increasingly complex interrelationships that characterize global society.

Career Opportunities

In the increasingly globalized environment of trans-national corporate enterprise, employment and career opportunities are more likely than ever to be international in scope and character requiring employees who have acquired a familiarity with other cultures as well as their own. Employers actively seek individuals who can demonstrate a breadth of preparation that suggests flexibility and adaptability to a rapidly changing global marketplace.

Faculty

Professors: Emmett C. Barcalow, Marc Dawson, Glen Ebisch, Martha Garabedian, Nancy J. Hoar, K. Edward Jansen, Donald Williams, Vladimir Wozniuk

Associate Professors: John Seung-Ho Baick, Shelly Regenbaum

Assistant Professors: Arthur Schiller Casimir, Carlos Liard-Muriente

Instructor: Frances Abrams

Program Objectives

1. To provide students with analytical tools necessary to understand and explain the increasingly complex inter-relationships that characterizes global society.

2. To provide substantive knowledge by exposure to one of three tracks or options through advanced course study with a focus on either the European area, developing societies, or international economics and commerce.
3. To afford exposure to foreign cultures.
4. To underscore the importance of negotiation skills through participation in the Model U.N. program.
5. To stress critical reading skills.
6. To emphasize the construction and writing of coherent, logical arguments.
7. To acquire basic proficiency in a language other than one's own.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p. 39 and 43.

Course of Study

1. Seven core courses (24 credit hours):
 - INST 101/POSC 101 Introduction to Contemporary Global Issues
 - GEOG 101 Introduction to Geography
 - HIST 106 World Civilization II
 - POSC 203 International Relations
 - SO 310 Introduction to Cultural Anthropology
 - INST 490 Seminar in International Studies
 - Plus one of the following:
 - COMM 205 Mass Communication
 - ENGL 215 World Literature II
 - Plus one of the following:
 - PH 308 Environmental Ethics
 - PH 320 Western Religions
 - PH 321 Eastern Religions
2. An additional 18 credit hours drawn from the international studies curriculum list in economics, English, finance, political science, history, management, marketing, and sociology. By the junior year, students must choose one of three concentration options available within the international studies program: the Economics and Commerce Concentration, the

Developing Area Concentration, or the European Area Concentration. The precise program is designed in close consultation with the advisor.

3. The capstone senior seminar in international studies three credit hours.
4. Eighteen additional credit hours in Social Sciences.
5. Additionally, either the successful completion of foreign language study through one course beyond the intermediate level or a demonstration of comparable proficiency.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year

	Credit Hours
<i>Fall Semester</i>	
INST 101* Introduction to Contemporary Global Issues(MR)	3
MATH 1xx* Mathematics (GCR.)	3
ENGL 132* English Composition I (GCR.)	3
LANG xxx First Semester Foreign Language (MR/A&SR)	3
LA 100 First Year Seminar (GCR.)	2
PEHR 151* Personal Health and Wellness (GCR.)	1
	15

Spring Semester

HIST 106 World Civilization II (GCR/MR)	3
SO 205 Introduction to Cultural Anthropology(A&SR/MR)	3
ENGL 133** English Composition II (GCR.)	3
MATH 1xx** Mathematics 1xx (GCR.)	3
PEHR 153-199 Lifetime Activities Series (GCR.)	1
LANG xxx Second Semester Foreign Language	3
	16

Sophomore Year

Credit Hours

Fall Semester

ENGL 215**	World Literature II (A&SR/MR)	3
EC 205*	Principles of Economics I (MR/A&SR)	3
LANG xxx	Third Semester Foreign Language (MR)	3
LAB xxx	Natural Science Perspective Requirement (GCR.)	3
GEOG 101	Introduction to Geography (A&SR/MR)	3
		<u>15</u>

Spring Semester

PH 110*	Critical Thinking (A&SR)	3
LANG xxx	Fourth Semester Foreign Language (MR)	3
LAB xxx	Natural Science Perspective Requirement (GCR.)	3
EC 206**	Principles of Economics II (MR)	3
POSC 203**	International Relations (MR)	3
		<u>15</u>

Junior Year*Fall Semester***European Area Concentration**

ENGL 310**	Modern Drama (MR)	3
EC 315**	Comparative Economic Systems (MR)	3
LANG xxx	Fifth Semester Foreign Language (MR)	3
CUL 2xx	Elements of Culture – Cultures Requirement (GCR.)	3
CS 131	Computing for Arts and Sciences (GCR.)	3
		<u>15</u>

Developing Societies Concentration

ENGL 253	Spanish American Literature in English Translation (MR)	3
EC 321	Economic Development (MR)	3
LANG xxx	Fifth Semester Foreign Language (MR)	3
CUL 2xx	Elements of Culture –Requirement (GCR.)	3
CS 131	Computing for Arts and Sciences (GCR.)	3
		<u>15</u>

**Economics and Commerce
Concentration**

EC 371	International Monetary Economics (MR)	3
MAN 311	Management of International Operations (MR)	3
PH 308	Environmental Ethics (MR)	3
	Fifth Semester Foreign Language (MR)	3
CUL 2xx	Cultural Perspective (GCR.)	3
		<u>15</u>

Spring Semester

	STUDY ABROAD	16-17
CS 131	Computing for Arts and Sciences (GCR.)	3

Senior Year**European Area Concentration**

INST 480	Internship (MR)	3
HIST 320	The Twentieth Century World (MR)	3
POSC 316 XXX	Politics of Europe (MR) Integrated Liberal and Professional Perspective	3
PH 320	Western Religions	3
		<u>15</u>

Developing Societies Concentration

INST 480	Internship (MR)	3
HIST 361	Africa in the Twentieth Century	3
POSC 310	Politics of Developing Societies (MR)	3
PH 320/321	Western or Eastern Religions	3
GEN xxx	General Elective	3
		<u>15</u>

**Economics and Commerce
Concentration**

INST 480	Internship in International Studies (MR)	3
HIST 341	History of Modern Germany: 1848 to Present (MR)	3
POSC 340	International Law and Organization (MR)	3
EC 321	Economic Development (MR)	3
PH 308	Environmental Ethics	3
		<u>15</u>

Spring Semester

INST 490	Seminar In International Studies (MR)	3
HIST 3xx	History Elective	3
POSC 3xx	Government Elective	3
ARTS xxx	Aesthetic Perspective (GCR.)	3
GEN xxx	General Elective	3
		<u>15</u>

LAW ENFORCEMENT MAJOR

School of Arts and Sciences

No new students will be admitted to this program after February 1, 2004.

(Please note: This program is only offered at Western New England College's off-campus locations. For further information please call 800-446-9632 or 781-933-1595 or, in the Springfield area 413-782-1249)

General Information

The Bachelor of Science in Law Enforcement degree program is intended to broaden the academic training of students who have already completed the associate's degree or its equivalent in criminal justice, law enforcement, or corrections at an accredited college or university. Degree candidates must meet all general requirements of the College and all area requirements of the School of Arts and Sciences.

The first 60 credit hours of a candidate for the degree of Bachelor of Science in Law Enforcement (BSLE) will normally have been earned in the pursuit of an associate's degree in law enforcement at a community college.

In other instances, an equivalent number of credits earned in a four-year curriculum at another institution may be accepted in lieu of an associate's degree. Western New England College provides the remaining 62 credit hours needed to qualify for a bachelor's degree.

In no case may more than a total of 12 credits of CLEP, DANTEs, or related be credited toward the bachelor's degree.

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; and positions as industrial security specialists with major security companies and corporations.

Program Objectives

1. Professional preparation in the career field of criminal justice: to understand the law, areas, science, and obligations of the practitioner.
2. Professional preparation for the specific field of law enforcement: to understand the methods and practice of law enforcement.
3. Professional preparation in the specific field of court operation: to understand their history and operation.
4. Professional preparation in the specific field of corrections: to understand its history, development, and operation.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p. 39 and 43.

Course of Study

1. Major Area: 36 credit hours, 18 of which must be upper level (courses numbered 300 and above). Of these courses, 18 credit hours will ordinarily be transferred from a two-year law enforcement curriculum.
2. Upper-level social/behavioral sciences (courses numbered 300 and above): six credit hours.
3. Electives: 24 credit hours, six of which must be at the upper level.

Suggested Sequence of Courses

For the BSLE major it is assumed that the student will transfer to Western New England College with an associate's degree or 60 credits. Some students will need to complete specific lower level requirements of the School of Arts and Sciences. Usually courses previously taken which do not qualify either as a culture or a social science requirement will qualify as general electives.

The following projected BSLE sequence of courses assumes that a student has completed 18 credit hours of lower level courses in

criminal justice, six credit hours in English composition, six credit hours of mathematics, 15 credit hours in the social sciences (sociology, psychology, history, government, or economics), 12 credit hours of other courses that will count as general electives, and the three-credit computer requirement.

Note: Because of the prerequisite structure of certain courses at Western New England College, the transfer student in the BSLE curriculum will have to take, or receive credit for having taken, the equivalent of the following courses prior to taking certain upper level courses:

ENGL 132	English Composition I	3
ENGL 133	English Composition II	3
CJ 101	Introduction to Criminal Justice	3
CJ 210	Criminology	3
SO 101	Introduction to Sociology	3
	— or —	
PSY 101	Introduction to Psychology	
POSC 102	American National Government	3
CJ 211	Corrections	3
CJ 218	Police and Society	3
CJ 220	Evidence	3
MATH 207	Statistics	3

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

If a student takes a full time schedule, the following sequence is recommended.

Junior Year

	Credit Hours
<i>Fall Semester</i>	
CJ 312**	Criminal Procedure 3
CUL xxx	Elements of Culture – Cultures Requirement 3
SO/PSY 3xx	Requirement 3
ARI xxx	Ethical Perspective 3
LAB xxx	Laboratory Science Requirement 3
	<hr/> 15

Spring Semester

CJ 310**	Criminal Law 3
CJ 3xx	Upper Level Criminal Justice 3
ENGL 3xx	Literature Elective 3
ARI xxx	Literature Requirement 3
GEN xxx	General Elective 3
	<hr/> 15

Senior Year

	Credit Hours
<i>Fall Semester</i>	
CJ 3xx	Upper Level Criminal Justice Elective 3
CJ 340**	Ethical Decision Making 3
ARI xxx	Aesthetic Perspective 3
POSC 325**	Constitutional Law 3
GEN 3xx	General Elective (3xx) 3
	<hr/> 15

Spring Semester

CJ 410	Research Methods in Criminal Justice 3
SO xxx	Social Science Requirement 3
ARTS xxx	Literature 3
LAB xxx	Laboratory Science Requirement 3
GEN xxx	General Elective (3xx) 3
	<hr/> 15

LIBERAL STUDIES MAJOR

School of Arts and Sciences

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.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p. 39 and 43.

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.

Course of Study (60 credit hours)

Freshman English	6 credit hours
Humanities	12 credit hours
Laboratory Science	3 credit hours
Mathematics	3 credit hours
Mathematics or Computer	3 credit hours
Social Sciences	12 credit hours
General Electives	21 credit hours

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.

Candidates for the Bachelor of Arts in Liberal Studies must meet all general requirements of the College and area requirements of the School of Arts and Sciences.

Course of Study (120 credit hours)

Computer	3 hours
Freshman English	6 hours
Humanities	30 hours
	(9 hours at 300-400 level)
Laboratory Science	6 hours
Mathematics	6 hours
Social Sciences	30 hours
	(9 hours at 300-400 level)
General Electives	39 hours
	(12 hours at 300-400 level)

Total credit hours required for graduation – 120

MANAGEMENT MAJOR

School of Business

General Information

A student majoring in management should be prepared to assume a position of increasing responsibility in a rapidly changing global environment. Recognizing the importance of working cooperatively with others, the management major should be able to mobilize the appropriate resources in order to achieve the organization's mission, goals, and objectives. The Management Department emphasizes innovation, creativity, leadership, interpersonal skills, ethical responsibility, and team effectiveness. The Management curriculum develops and reinforces these critical success factors in preparing students for rewarding and challenging professional careers.

Career Opportunities

Management majors assume careers in the private and public sectors. Graduates work in manufacturing, corporate business, banks, small businesses, hotels, restaurants, accounting brokerage firms, government, public administration, and in a wide range of organizations in the global economy. Many graduates of management programs enroll in graduate or law school. Typically graduates enter businesses in entry-level professional positions.

Faculty

Professors: Anthony F. Chelte, Russell A. Fanelli, William P. Ferris, Peter W. Hess, Ned S. Schwartz, Harvey M. Shrage

Associate Professors: Lynn Bowes-Sperry, Janice Jackson, Minoo Tehrani, Sharianne Walker

Assistant Professors: Daniel Covell, Jeanie Forray

Program Objectives

1. Understand the key elements in the process of problem solving and decision-making on strategic and functional levels.
2. Understand the strengths and limitations of the full range of organizational designs as well as the key elements of effective work and job design.
3. Apply theories and concepts of leadership, motivation, and change in developing strategies for improving work performance.
4. Improve communication effectiveness (specifically in the areas of setting goals, providing direction, and providing feedback), identify and cultivate leadership skills, develop competency in facilitating group input and learn to effectively manage organizational and interpersonal conflict.
5. Demonstrate the full range of management competencies in team-based performance situations with an emphasis on leadership and diversity.
6. Understand the various HRM practices used in organizations, the legal issues associated with these practices, and the impact they have on the employment relationship.

Course of Study

1. Core Requirements for All Business Majors (80 credit hours) See p. 47.
— plus —
2. Required Management and Legal Studies courses (18 credit hours)
 - LS 424 Legal Aspects of Human Resource Management
 - MAN 204 Organizational Behavior
 - MAN 308 Employee Relations
 - MAN 315 Organizational Theory
 - MAN 323 Human Resource Management
 - MAN 433 Performance Team Leadership
 - plus —
3. Electives (24 credit hours)
 - MAN 480 Management Internship (3 cr.)
 - or —
 - Business Elective (3 cr.)
 - Business Elective (3 cr.)
 - Non-Business Electives (18 cr.)

Total credit hours required for graduation – 122

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 College.

Courses to be included in computing the 2.0 minimum average in the major are as follows: All MAN and LS courses as well as BUS 450.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- BUSR School of Business Requirement

Freshman Year

Credit Hours

Fall Semester

BUS 101	First Year Seminar (GCR/BUSR)	3
ENGL 132*	English Composition I (GCR.)	3
MATH 111*	Analysis for Business and Economics I(GCR/BUSR)	3
	— or —	
MATH 123*	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
HIST xxx	History Requirement (GCR.)	3
MAN 101	Principles of Management (BUSR)	3
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PEHR 151*	Personal Health and Wellness (GCR.)	1
		<u>16</u>

Spring Semester

ENGL 133**	English Composition II (GCR.)	3
MATH 112**	Analysis for Business and Economics II (GCR/BUSR)	3
	— or —	
MATH 124**	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
	Non-Business Elective (BUSR)	3
MAN 101*	Principles of Management (BUSR)	3
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PSY 101	Introduction to Psychology (BUSR)	3
	— or —	

SO 101	Introduction to Sociology (BUSR)	3
PEHR 153-159**	Lifetime Activity Series (GCR.)	1
		<u>16</u>

Sophomore Year

Credit Hours

Fall Semester

AC 201* **	Financial Reporting (BUSR)	3
MK 200* **	Principles of Marketing (BUSR)	3
CIS 202* **	Introduction to Information Systems (BUSR)	3
EC 205*	Principles of Economics I (BUSR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

AC 202**	Managerial Accounting (BUSR)	3
QM 201**	Introduction to Statistics (BUSR)	3
FIN 214**	Introduction to Finance (BUSR)	3
EC 206**	Principles of Economics II (BUSR)	3
COMM 201**	Principles of Communication (BUSR)	3
		<u>15</u>

Non-credit career planning — Completion of individual development/career plan required for registration for junior year.

Junior Year

Credit Hours

Fall Semester

BUS 301	Integrated Business Operations (BUSR)	3
PH 310	Ethics in the Professions (BUSR)	3
	Non-business Elective (BUSR)	3
MAN 204	Organizational Behavior	3
Lab Science	Laboratory Science Requirement (GCR.)	3
		<u>15</u>

Spring Semester

LS 301	Legal Aspects of Business (BUSR)	3
QM 310	Quality and Operations Management (BUSR)	3
CUL xxx	Elements of Culture Requirement (GCR.)	3
MAN 308	Employee Relations	3
Lab Science	Laboratory Science Requirement (GCR.)	3
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

LS 424	Legal Aspects of Human Resource Management (MR)	3
MAN 315	Organizational Theory (MR)	3
	Business Elective (MR)	3
	Non-business Elective (GCR.)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

BUS 450	Business Strategy (BUSR)	3
MAN 323	Human Resource Management (MR)	3
MAN 433	Performance Team Leadership (MR)	3
MAN 480	Management Internship (MR)	3
	— or —	
	Business Elective (MR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

MARKETING MAJOR**School of Business****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 judgement, effective analytical techniques, and professional communication skills. The marketing program strives to provide students with abilities in each of these areas.

Students contemplating the marketing major should be aware that the faculty seeks to achieve a balance of academic knowledge and practical accomplishment. For example, students receive many assignments designed to improve their understanding in the areas of personal communication, written communication, meeting deadlines, and the like. Many of these assignments are performed in full view of their classmates and are subjectively evaluated and graded by the professors. Thus, the student must either have or develop the willingness to have their work scrutinized and constructively criticized by their peers and others. While professors use normally accepted teaching techniques such as lectures, videos, objective tests, etc., where appropriate, they also use less common techniques such as coaching and probing discussion in the classroom. Their primary focus is to have students learn and apply concepts to practical marketing situations and have students demonstrate their competence by the successful performance of specific assignments in a timely manner.

Career Opportunities

Many interesting and exciting job opportunities exist for marketing graduates including product/brand management, sales, advertising, sales promotion, public relations, customer service, direct marketing, marketing research, retailing, wholesaling, relationship marketing, and consulting.

Faculty

Associate Professors: Paul Costanzo,
Elizabeth Elam, Harlan Spotts

Assistant Professor: Janelle Goodnight

Professional Educator: James McKeon

Program Objectives

1. Understand the interactions required for the effective design and execution of marketing plans.
2. Demonstrate skills in quantitative and qualitative research techniques as they apply to marketing problems.
3. Produce effectively written marketing plans, research reports, and sales correspondence.
4. Apply marketing theories and concepts to the analysis and design of solutions for marketing-related business challenges.

Course of Study

1. Core Requirements for All Business Majors (80 credit hours) See p.47.
—plus—
2. Required Marketing courses (18 credit hours)
MK 301 Buyer Behavior
MK 318 Marketing Research
Any two of the following three courses:
MK 317 Promotional Strategy
MK 320 Price and Product Strategy
MK 323 Distribution Strategy and
MK 421 Marketing Management
MK 440 Marketing Seminar
—plus—
3. Other required courses (3 credit hours)
COMM 340 Business Communication
—plus—
4. Electives (21 credit hours)
MK 3xx-4xx (3 cr.)
MK 480 Marketing Internship (3 cr.)
— or — Business Elective (3 cr.)
Non-Business Electives (15 cr.)
Total credit hours required for graduation – 122

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 College.

Courses to be included in computing the 2.0 minimum average in the major are as follows: All MK courses and BUS 450.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- BUSR School of Business Requirement

Freshman Year

Credit Hours

Fall Semester

BUS 101	First Year Seminar (GCR/BUSR)	3
ENGL 132*	English Composition I (GCR.)	3
MATH 111*	Analysis for Business and Economics I (GCR/BUSR)	
	— or —	
MATH 123*	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
HIST xxx	History Requirement (GCR.)	3
MAN 101	Principles of Management (BUSR)	
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PEHR 151*	Personal Health and Wellness (GCR.)	1
		16

Spring Semester

ENGL 133**	English Composition II (GCR.)	3
MATH 112**	Analysis for Business and Economics II (GCR/BUSR)	
	— or —	
MATH 124**	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
	Non-Business Elective (BUSR)	3
MAN 101*	Principles of Management (BUSR)	
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PSY 101	Introduction to Psychology (BUSR)	
	— or —	

SO 101	Introduction to Sociology (BUSR)	3
PEHR 153-159**	Lifetime Activity Series (GCR.)	1
		<u>16</u>

Sophomore Year Credit Hours

<i>Fall Semester</i>		
AC 201* **	Financial Reporting (BUSR)	3
MK 200* **	Principles of Marketing (BUSR)	3
CIS 202* **	Introduction to Information Systems (BUSR)	3
EC 205*	Principles of Economics I (BUSR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

AC 202**	Managerial Accounting (BUSR)	3
QM 201**	Introduction to Statistics (BUSR)	3
FIN 214**	Introduction to Finance (BUSR)	3
EC 206**	Principles of Economics II (BUSR)	3
COMM 201**	Principles of Communication (BUSR)	3
		<u>15</u>

Non-credit career planning — Completion of individual development/career plan required for registration for junior year.

Junior Year Credit Hours

Fall Semester

BUS 301**	Integrated Business Operations (BUSR)	3
PH 310**	Ethics in the Professions (BUSR)	3
COMM 340**	Business Communication (MR)	3
MK 301**	Buyer Behavior (MR)	3
Lab Science	Laboratory Science Requirement (GCR.)	3
		<u>15</u>

Spring Semester

LS 301*	Legal Aspects of Business (BUSR)	3
QM 310**	Quality and Operations Management (BUSR)	3
CUL xxx	Elements of Culture Requirement (GCR.)	3
MK 318**	Marketing Research (MR)	3
Lab Science	Laboratory Science Requirement (GCR.)	3
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

MK 317**	Promotional Strategy (MR)	
	— or —	
MK 320**	Price and Product Strategy (MR)	
	— or —	
MK 323**	Distribution Strategy (MR)	3
MK 421**	Marketing Management (MR)	3
MK 480**	Marketing Internship (MR)	
	— or —	
	Business Elective (MR)	3
	Non-business Elective (GCR.)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

Spring Semester

BUS 450**	Business Strategy (BUSR)	3
MK 317**	Promotional Strategy (MR)	
	— or —	
MK 320**	Price and Product Strategy (MR)	
	— or —	
MK 323**	Distribution Strategy (MR)	3
MK 440**	Marketing Seminar (MR)	3
MK 3xx-4xx	Marketing Elective (MR)	3
	Non-business Elective (BUSR)	3
		<u>15</u>

MARKETING COMMUNICATION/ ADVERTISING MAJOR

School of Business

General Information

New technology has enabled marketers to communicate in more effective ways. Such vehicles of 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 communication can be effectively used in executing and enhancing marketing strategies. The marketing communication/advertising major studies how marketers utilize and implement communication concepts when delivering the marketing message.

Students contemplating the marketing communication/ advertising major should be aware that the faculty seeks to achieve a balance of academic knowledge and practical accomplishment. For example, students receive many assignments designed to improve their understanding in the areas of personal communication, written communication, meeting deadlines, and the like. Many of these assignments are performed in full view of their classmates and are subjectively evaluated and graded by the professors. Thus, students must either have or develop the willingness to have their work scrutinized and constructively criticized by their peers and others. While professors use normally accepted teaching techniques such as lectures, videos, objective tests, etc., where appropriate, they also use less common techniques such as coaching and probing discussion in the classroom. Their primary focus is to have students learn and apply concepts to practical marketing communication/advertising situations and to have students demonstrate their competence by the successful performance of specific assignments in a timely manner.

Career Opportunities

Many interesting and exciting job opportunities exist for marketing communication/advertising graduates including product/brand management, sales, advertising, sales promotion, public relations, direct marketing, retailing, relationship marketing, and consulting.

Faculty

Associate Professors: Paul Costanzo,
Elizabeth Elam, Harlan Spotts

Assistant Professor: Janelle Goodnight

Professional Educator: James McKeon

Program Objectives

1. Demonstrate creativity in producing advertising and promotional outputs.
2. Understand the impact of communication as it relates to marketing programs.
3. Develop and produce promotional materials using desktop publishing.
4. Demonstrate skills in one-to-one negotiations.

Course of Study

1. Core Requirements for All Business Majors (80 credit hours) See p. 47.
—plus—
2. Required Marketing courses (18 credit hours)
MK 301 Buyer Behavior
MK 317 Promotional Strategy
MK 340 Promotions Design and Application
MK 422 Campaign Planning and Management
MK 440 Marketing Seminar
MK 480 Marketing Internship
—plus—
3. Other required courses (9 credit hours)
COMM 340 Business Communication
COMM 348 Intercultural Communication
COMM 322 Media Planning and Public Relations
—plus—
4. Electives (15 credit hours)

MK 3xx-4xx (3 cr.)
 Business Elective (3 cr.)
 Non-Business Electives (9 cr.)

Note: COMM 205 is strongly recommended as a non-business elective.

Total credit hours required for graduation – 122

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 College.

Courses to be included in computing the 2.0 minimum average in the major are as follows: All MK courses and BUS 450.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- BUSR School of Business Requirement

Freshman Year

	Credit Hours
<i>Fall Semester</i>	
BUS 101 First Year Seminar (GCR/BUSR)	3
ENGL 132* English Composition I (GCR.)	3
MATH 111* Analysis for Business and Economics I (GCR/BUSR) — or —	
MATH 123* Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
HIST xxx History Requirement (GCR.)	3
MAN 101 Principles of Management (BUSR) — or —	
CIS 102 * Computer Tools for Business (BUSR)	3
PEHR 151* Personal Health and Wellness (GCR.)	1
	16

Spring Semester

ENGL 133** English Composition II (GCR.)	3
MATH 112** Analysis for Business and Economics II (GCR/BUSR) — or —	3
MATH 124** Calculus I for Management, Life and Social Sciences (GCR/BUSR) Non-Business Elective (BUSR)	3
MAN 101* Principles of Management (BUSR) — or —	
CIS 102 * Computer Tools for Business (BUSR)	3
PSY 101 Introduction to Psychology (BUSR) — or —	
SO 101 Introduction to Sociology (BUSR)	3
PEHR 153-159** Lifetime Activity Series (GCR.)	1
	16

Sophomore Year

	Credit Hours
<i>Fall Semester</i>	
AC 201* ** Financial Reporting (BUSR)	3
MK 200* ** Principles of Marketing (BUSR)	3
CIS 202* ** Introduction to Information Systems (BUSR)	3
EC 205* Principles of Economics I (BUSR) Non-business Elective (BUSR)	3
	15
<i>Spring Semester</i>	
AC 202** Managerial Accounting (BUSR)	3
QM 201** Introduction to Statistics (BUSR)	3
FIN 214** Introduction to Finance (BUSR)	3
EC 206** Principles of Economics II (BUSR)	3
COMM 201** Principles of Communication (BUSR)	3
	15

Non-credit career planning — Completion of individual development/career plan required for registration for junior year.

Junior Year Credit Hours*Fall Semester*

BUS 301**	Integrated Business Operations (BUSR)	3
MK 317	Promotional Strategy	3
COMM 340**	Business Communication (MR)	3
MK 301**	Buyer Behavior (MR)	3
Lab Sci	Laboratory Science Requirement (GCR.)	3
		15

Spring Semester

LS 301*	Legal Aspects of Business (BUSR)	3
QM 310**	Quality and Operations Management (BUSR)	3
CUL xxx	Elements of Culture Requirement (GCR.)	3
MK 340	Promotion Design and Application	3
Lab Sci	Laboratory Science Requirement (GCR.)	3
		15

Senior Year Credit Hours*Fall Semester*

PH 310	Ethics in the Professions	3
MK 422**	Campaign Planning and Management (MR)	3
	Business Elective (MR)	3
COMM 348**	Intercultural Communication (MR)	3
	Non-business Elective (GCR.)	3
		15

Spring Semester

BUS 450**	Business Strategy (BUSR)	3
MK 3xx-4xx	Marketing Elective	3
MK 440**	Marketing Seminar (MR)	3
MK 480**	Marketing Internship (MR)	3
COMM 322**	Media Planning and Public Relations (MR)	3
		15

MATHEMATICAL SCIENCES MAJOR**School of Arts and Sciences****General Information**

The primary goals of the mathematical sciences major are to offer general training in mathematical reasoning and to develop mastery of mathematical tools needed for a life-long 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: calculus, linear and modern algebra, and real and complex analysis. It also introduces students to some of the current areas of importance in applied mathematics: differential equations, probability, statistics, numerical analysis, discrete mathematics, mathematical programming, and mathematical modeling.

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 or applied mathematics. Sufficient electives allow a student to add a concentration in actuarial science, econometrics, operations research, or statistics.

Leading to a Bachelor of Arts degree, the program has 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, operations research, computer programming, statistics, systems analysis, software engineering, and teaching. Others have received fellowships to pursue graduate study in mathematics or related areas.

Faculty

Professors: Saeed Ghahramani, Ann Kizanis, Dennis Luciano, Richard Pelosi, Leh-Sheng Tang

Associate Professors: Mikhail Chkhenkeli, Alan Gorfin, Lorna Hanes, Lisa Hansen

Assistant Professors: Jennifer Beineke, Enam Hoq, David Mazur

Professional Educator: John Willemain

Director of the Math Center: Josephine Rodriguez

Program Objectives

The Mathematical Sciences program is structured and taught with a vision of the “ideal” mathematics graduate of the early 2000’s and beyond. Emphases are:

1. To learn mathematical ideas:

Become independent learners, capable of doing and learning mathematics on their own.

Develop their own processes, concepts, and techniques for solving problems.

Exercise mathematical reasoning through recognizing patterns, making and refining conjectures and definitions, and constructing logical arguments, both formal and heuristic, to justify results.

2. To connect mathematical ideas:

Develop an understanding of the interrelationships within mathematics and an appreciation of its unity.

Explore the connections that exist between mathematics and other disciplines.

Apply mathematics learned in one context to the solution of problems in other contexts.

3. To communicate mathematical ideas:

Develop skills in both written and oral communication of mathematical concepts and technical information.

Learn to communicate effectively at various levels of formality with people who have differing levels of mathematical insight.

Understand and appreciate the power of mathematical language and symbolism in the development of mathematical concepts.

4. To build mathematical models:

Work with a given model.

Recognize constraints inherent in a given model.

Construct models to analyze real-world settings and use symbols and reasoning in analysis.

Convert among representations (graphical, numerical, symbolic, and verbal) that reflect quantitative constraints in a given setting.

5. To use technology:

Use calculators and computers as tools to represent mathematical ideas and construct different representations of mathematical concepts.

Use calculators and computers to engender a broad array of mathematical modes of thinking through use of powerful computing tools (including function graphers, curve fitters, and symbolic manipulators).

Use calculators and computers to develop and use alternate strategies for solving problems.

6. To develop perspectives:

Experience exploration of the dynamic nature of mathematics and its increasingly significant role in social, cultural, and economic development.

Appreciate the contributions made by various cultures to the growth and development of mathematical ideas.

Investigate the contributions made by individuals, both male and female, and from a variety of cultures, in the development of ancient, modern, and current mathematical topics.

Gain an understanding of the historical development of major mathematical concepts.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p.39 and 43.

Course of Study

1. Required mathematics and other courses (54 credit hours):

CS 181-182	Computer Science I-II
MATH 133-134	Calculus I & II
MATH 235	Calculus III
MATH 236	Differential Equations
MATH 261-262	Discrete Structures I & II
MATH 272	Probability
MATH 306	Linear Algebra
MATH 418	Introduction to Modern Algebra
MATH 420	Mathematical Modeling
MATH 421	Real Analysis
PH 204	Symbolic Logic
PHYS 133	Mechanics
PHYS 134	Electricity and Magnetism

2. Six additional credit hours in upper-level mathematics courses (MATH 300-400).

Students who have not completed secondary school physics may elect to enroll in PHYS 131-132 Elements of Mechanics I-II in lieu of PHYS 133.

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

Suggested Sequence of Courses

Notes:

*	Is a prerequisite
**	Has a prerequisite
MR	Major Requirement
GCR	General College Requirement
A&SR	School of Arts and Sciences Requirement

Freshman Year

Credit Hours

Fall Semester

CS 181*	Computer Science I (MR/GCR.)	4
ENGL 132*	Composition I (GCR.)	3
MATH 133*	Calculus I (GCR/MR)	4
LA 100	First Year Seminar (GCR.)	2
HIST xxx	Historical Perspective (GCR.)	3
PEHR 151	Personal Health and Wellness (GCR.)	1
		<hr/> 17

Spring Semester

CS 182**	Computer Science II (MR)	4
ENGL 133**	Composition II (GCR.)	3
MATH 134**	Calculus II (GCR/MR)	4
PH 204*	Symbolic Logic (A&SR/MR)	3
EC/POSC xxx	Behavioral Science Perspective (GCR.)	
		<hr/> 17

Sophomore Year

Credit Hours

Fall Semester

MATH 235**	Calculus III (MR)	3
MATH 261*	Discrete Structures I (MR)	3
PHYS 133*	Mechanics (GCR/MR)	4
ENGL xxx	Literature Requirement (A&SR)	3
PSY/SO xxx	Behavioral Science Perspective (A&SR)	3
		<hr/> 16

Spring Semester

MATH 262**	Discrete Structures II (MR)	3
MATH 272**	Probability (MR)	3
	— or —	
MATH 306**	Linear Algebra (MR)	
PHYS 134**	Electricity and Magnetism (GCR/MR)	4
PEHR 153-199	Lifetime Activities Series (GCR.)	1
ARTS xxx	Aesthetic Perspective (GCR.)	3
XXX	Integrated Liberal and Professional Perspective (GCR.)	3
		<hr/> 17

Junior Year

Credit Hours

Fall Semester

MATH 236**	Differential Equations (MR)	3
MATH xxx	Mathematics Elective (MR)	3
CUL xxx	Cultural Studies Perspective (GCR.)	3
GEN xxx	General Electives	3
XXX	PSY/SO/EC/POSC/HIST/CJ/ED (A&SR)	3
		<u>15</u>

Spring Semester

MATH 421**	Real Analysis (MR)	
	— or —	
MATH 418**	Modern Algebra (MR)	3
MATH 272**	Probability (MR)	
	— or —	
MATH 306**	Linear Algebra (MR)	3
GEN xxx	General Electives	6
PH xxx	Ethical Perspective (GCR.)	3
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

GEN xxx	General Elective (GCR.)	9
MATH xxx	Mathematics Electives (MR) (Upper Level)	6
		<u>15</u>

Spring Semester

MATH 418**	Modern Algebra (MR)	
	— or —	
MATH 421**	Real Analysis (MR)	3
MATH 420**	Mathematical Modeling (MR)	3
GEN xxx	General Electives	4
		<u>10</u>

MATH 272 must be taken in the second semester of either the sophomore or junior year.

Actuarial Science

For students interested in a career in actuarial science, the mathematical sciences curriculum offers specific preparation for the initial examination required to become a Fellow of the Actuarial Society of America. The applicable courses are as follows:

MATH 133-134-235 Calculus I-II-III

MATH 272 Probability

Teacher of Secondary School Mathematics

For students accepted into the secondary education program with a major in mathematics, it is strongly recommended that the following electives be taken:

MATH 371 Modern Aspects of Geometry

MATH 377 Elementary Number Theory

MATH 373 or ENGR 212 or MATH 120 Statistics

MECHANICAL ENGINEERING MAJOR

School of Engineering

General Information

Mechanical engineering is one of the broadest and most diverse of the engineering disciplines that affect 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, and consumer products. Mechanical engineers contribute on interdisciplinary teams to work in emerging areas such as advanced manufacturing processes, mechatronics, and nanotechnology. 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 and turbomachinery design. Mechanical design electives include courses in stress analysis and computer-aided design. The course work 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 the manufacturing concentration that is a blend of mechanical and industrial engineering. The program leading to the B.S.M.E. degree is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Career Opportunities

Mechanical engineers are broadly educated to work as designers of machines and devices that convert heat into other useful forms of energy. Mechanical engineers are employed in all types of industry and government. They work in research, product development, product design, manufacturing, consulting, and sales. Many of our graduates are employed at Allston Power, Hamilton Sundstrand, Pratt and Whitney, United Technologies Research Center, General Dynamics, Boeing, Lockheed-Martin, Otis, Carrier, Hasbro-Bradley, General Motors, Electric Boat, Andersen Consulting, General Electric, Smith and Wesson, American Saw, Northeast Utilities, Gerber Scientific Research, Spalding Sports Worldwide, Sikorsky, and Westinghouse. Mechanical engineering graduates have also become physicians and patent attorneys. Additionally, mechanical engineers occupy executive positions in many large corporations.

Manufacturing Concentration

In your junior year, you may choose to remain in the general mechanical engineering course of study or specialize with a concentration in manufacturing.

Manufacturing is the creation of useful products by various mechanical and thermal processes. Recent dramatic developments in computer hardware and software have transformed it into an exciting multidisciplinary field into one of the most computer intensive areas of modern engineering practice.

The concentration is designed to satisfy a growing demand for engineers with knowledge of robotics, interactive computer graphics, and computer-aided design and manufacturing.

The concentration is designed to satisfy a growing demand for engineers with knowledge of robotics, interactive computer graphics, and computer-aided design and manufacturing. This concentration is offered to provide a mechanical engineering graduate with special preparation in the area of manufacturing.

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. Topics for a majority are supplied by industry. 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 free electives provide the opportunity for specialization within a chosen field. The student's departmental faculty advisor must approve selection of electives from engineering, mathematics, science, or business. Undergraduate engineering students may take 500-level engineering courses for which they have satisfied the prerequisite requirements.

Program Objectives

- Graduates of the Mechanical Engineering Program will demonstrate the technical competencies necessary for the responsible practice of contemporary mechanical engineering.
- Graduates of the Mechanical Engineering program will successfully participate on teams and in leadership positions, and display effective written and oral communication skills.
- Graduates of the Mechanical Engineering program will have an understanding of the professional and ethical responsibilities of a mechanical engineer, and the impact of engineering solutions on individuals, society and the environment.

In support of these objectives, each graduate will have the ability to mathematically model, analyze and design thermal, fluid, mechanical or manufacturing systems; use

computer tools to aid in analysis, simulation and design of these systems; use laboratory equipment and instrumentation to obtain measurements, to conduct standardized and compliance tests, and to assess performance; and, apply the knowledge and skills acquired to a variety of professional mechanical engineering positions in both the private and public sectors in product design, development, manufacturing, sales, research and consulting.

Faculty

Professors: Said Dini, Mohammad Khosrowjerdi, Carl Rathmann

Associate Professors: Richard Mindek, Mary Vollaro

Assistant Professors: Bart Lipkens, Glenn Vallee

Professor Emeriti: Robert Azar, Wellen Davison, Alan Karplus, Walter Presz, Henry Sundberg, Richard Veronesi

Common Core

Notes:

*	Is a prerequisite
**	Has a prerequisite
MR	Major Requirement
GCR	General College Requirement
ER	Engineering Requirement

Freshman Year

	Credit Hours
<i>Fall Semester</i>	
ENGL 132*	English Composition I (GCR/ER/MR) 3
ENGR 102*	First Year Engineering Seminar (GCR/ER/MR) 1
ENGR 103*	Introduction to Engineering (GCR/ER/MR) 4
MATH 133*	Calculus I (GCR/ER/MR) 4
PHYS 133*	Mechanics (GCR/ER/MR) 4
PEHR 151	Personal Health and Wellness (GCR.) 1
	17

Spring Semester

ENGL 133**	English Composition II (GCR/ER/MR) 3
ENGR 105*	Computer Program Design (GCR/ER/MR) 3
ENGR 110*	Engineering Problem Solving (GCR/ER/MR) 2
MATH 134* **	Calculus II (GCR/ER/MR) 4
PHYS 134* **	Electricity and Magnetism (GCR/ER/MR) 4
PEHR 153-199	Lifetime Activities Series (GCR.) 1
	17

Sophomore Year

Fall Semester

	Credit Hours
CHEM 105* General Chemistry I (ER/MR)	4
ENGR 208** Foundations of Electrical Engineering (MR)	4
MATH 236** Differential Equations (ER/MR)	3
ME 106* Statics (MR)	3
General Education Requirement ¹ (GCR/ER/MR)	3
	17

Spring Semester

ENGR 212** Probability and Statistics (ER/MR)	3
MATH 235** Calculus III (ER/MR)	3
ME 203** Dynamics (MR)	3
ME 205** Measurement Computing (MR)	2
ME 208** Mechanics of Materials (MR)	3
General Education Requirement ¹ (GCR/ER/MR)	3
LBC XXX Learning Beyond the Classroom (GCR.)	3
	17

Mechanical Concentration Course of Study

Junior Year

Fall Semester

	Credit Hours
MATH 350***Engineering Analysis I (MR)	3
ME 303** Thermodynamics I (MR)	3
ME 309** Materials Science (MR)	3
ME 312** Kinematics and Dynamics of Machinery (MR)	3
ME 313** ME Laboratory I (MR)	2
General Education Requirement ¹ (GCR/ER/MR)	3
	17

Spring Semester

ME 304** Thermodynamics II (MR)	3
ME 314** ME Laboratory II (MR)	2
ME 316** Fluid Mechanics (MR)	3
ME 320** Mechanical Vibrations (MR)	3
Engineering/Science Elective ² (MR)	3
General Education Requirement ¹ (GCR/ER/MR)	3
	17

Senior Year

Fall Semester

	Credit Hours
ME 417* ** Heat Transfer (MR)	3
ME 425** Design of Machine Elements (MR)	3
ME 435** ME Laboratory III (MR)	2
ME 439* ** Professional Awareness (MR)	1
Design Elective ³ (MR)	3
General Education Requirement ¹ (GCR/ER/MR)	3
	15

Spring Semester

IE 312** Engineering Economic Analysis (MR)	3
ME 440** Senior Design Projects (MR)	3
General Elective (MR)	3
Design Elective ³ (MR)	3
Engineering Elective ⁴ (MR)	3
LBC XXX Learning Beyond the Classroom(LBC)	3
	15

1 General Education courses must be selected in such a way to insure that all "perspectives of understanding" requirements have been satisfied. (See p. 40.)

2 An engineering, math, or science course numbered 300 or above selected from a list published by the Mechanical Engineering Department and approved by the faculty advisor.

3 Design electives are selected from a list published in each semester's course schedule.

4 An engineering course numbered 300 or above approved by the faculty advisor.

Total credit hours required for graduation – 132.

The 2.0 required grade point average in the major is based upon all ME courses pursued in the student's degree program.

Manufacturing Concentration Course of Study

Notes:

*	Is a prerequisite
**	Has a prerequisite
MR	Major Requirement
GCR	General College Requirement
ER	Engineering Requirement

Junior Year Credit Hours

Fall Semester

MATH 350* **	Engineering Analysis I (MR)	3
ME 303* **	Thermodynamics I (MR)	3
ME 309* **	Materials Science (MR)	3
ME 312* **	Kinematics and Dynamics of Machinery (MR)	3
ME 313* **	ME Laboratory I (MR)	2
	General Education Requirement ¹ (GCR/ER/MR)	3
		<u>17</u>

Spring Semester

IE 312**	Engineering Economic Analysis (MR)	3
IE 314* **	Manufacturing Processes (MR)	3
IE 315**	Quality Control and Engineering Statistics (MR)	3
ME 314* **	ME Laboratory II (MR)	2
ME 316* **	Fluid Mechanics (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
		<u>17</u>

Senior Year Credit Hours

Fall Semester

IE 410* **	Engineering Project Management (MR)	3
ME 417* **	Heat Transfer (MR)	3
ME 425**	Design of Machine Elements (MR)	3
ME 435**	ME Laboratory III (MR)	2
ME 439* **	Professional Awareness (MR)	1
	Manufacturing Design Elective ² (MR)	3
		<u>15</u>

Spring Semester

ME 440**	Senior Design Projects ³ (MR)	3
	Manufacturing Design Elective ² (MR)	3
	General Elective (MR)	3
	Engineering Elective ⁴ (MR)	3
	General Education Requirement ¹ (GCR/ER/MR)	3
LBC XXX	Learning Beyond the Classroom (GCR.)	
		<u>15</u>

1 General Education courses must be selected in such a way to insure that all "perspectives of understanding" requirements have been satisfied. (See p. 40.)

2 Select two design electives from the following list: IE 424 Computer Integrated Manufacturing, IE 415 Design for Manufacture, ME 542 Computer-aided Engineering, ME 543 Introduction to Computer-aided Manufacturing, ME 544 Computer Applications in Mechanical Engineering.

3 Select a senior design project topic that contains a manufacturing related component approved by the Department of Mechanical Engineering.

4 Select one engineering elective from the following list: IE 308 Work Analysis and Human Factors, IE 326 Production Planning and Control, IE 414 Manufacturing Engineering, IE 422 Industrial Safety and Ergonomics, ME 320 Mechanical Vibrations.

Total credit hours required for graduation – 132.

The 2.0 required grade point average in the major is based on all ME and IE courses pursued in the student's degree program.

PHILOSOPHY MAJOR

School of Arts and Sciences

General Information

Philosophers engage in critical, rigorous, disciplined reflection about ourselves, the world around us, the good life, and our relations with others. They try to answer such questions as, Does God exist? Do we have nonphysical souls or minds? Do we have free will? What do we know about ourselves and the world, and how do we know it? What do we owe others? What is the best life for a human being? What moral rights do people have? What is the best form of government?

According to the American Philosophical Association's statement on the Philosophy major, the study of philosophy "enhances analytical, critical, and interpretive capacities that are applicable to any subject-matter, and in any human context. It cultivates the capacities and appetite for self-expression and reflection, for exchange and debate of ideas, for life-long learning, and for dealing with problems for which there are no easy answers. It also helps to prepare one for the tasks of citizenship."

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 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.

FACULTY

Professors: Emmett Barcalow, Glen Ebisch, Burton Porter

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 knowledge of the religions of the world.
- To provide students with the intellectual skills that will enable them to apply philosophical theories to real world problems in personal and family life, at work, and with democratic citizenship.
- To deepen students' understanding of and respect for different religious and ethical views and traditions.
- To encourage students to carefully evaluate 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.

Course of Study

Required Courses

PH 103	Introduction to Philosophy
PH 110	Critical Thinking or
PH 204	Symbolic Logic
PH 208	Ethics
PH 303	Social & Political Philosophy
PH 320	Western Religions
PH 321	Eastern Religions

Plus two from the following:

PH 350	Greek & Roman Philosophy (new course)
PH 352	Modern Philosophy (new course)
PH 353	Twentieth Century Philosophy (new course)

Plus two Philosophy courses at the 200 or 300 level

MATH 207 Introductory Statistics for A&S

Suggested Sequence of Courses

*	Is a prerequisite
†	Has a prerequisite
MR	Major Requirement
GCR	General College Requirement
A&SR	School of Arts and Sciences Requirement

Freshman Year

Credit Hours

Fall Semester

ENGL 132	English Composition I (GCR)	3
LA 100	First Year Seminar (GCR)	2
MATH 1xx	Mathematics (GCR)	3
PH 103	Introduction to Philosophy (MR)	3
CS 131	Computing for the Arts and Sciences (GCR)	3
PEHR 151	Personal Health and Wellness (GCR)	1
		<u>15</u>

Spring Semester

ENGL 133	English Composition II (GCR)	3
MATH 207	Introductory Statistics for the Arts & Sciences (MR)	3
PH 110	Critical Thinking (MR)	3
HIST xxx	Historical Perspective (GCR)	3
PEHR 153-199	Lifetime Activities Series (GCR)	1
GEN XXX	General Elective	3
Total		<u>16</u>

Sophomore Year

Credit Hours

Fall Semester

GEN XXX	General Electives	3
PH 208	Ethics (MR and GCR Ethical Perspective)	3
LAB xxx	Laboratory Science Requirement (GCR)	3
XXX	Behavioral Science Perspective	3
CUL 2xx	Cultural Studies Perspective (GCR)	3
		<u>15</u>

Spring Semester

ENGL xxx	Literature Requirement (A&SR)	3
LAB xxx	Laboratory Science Requirement (GCR)	3
PH 303	Social & Political Philosophy (MR)	3
ARTS xxx	Aesthetic Perspective (GCR)	3
GEN xxx	General Electives	3
		<u>15</u>

Junior Year

Credit Hours

Fall Semester

PH 320	Western Religions (MR)	3
PH 3XX	Philosophy Elective	3
XXX	Integrated Liberal & Professional Perspective (GCR)	3
GEN xxx	General Electives	6
		<u>15</u>

Spring Semester

PH 321	Eastern Religions (MR)	3
PH 3XX	Philosophy Elective	3
GEN xxx	General Electives	9
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

PH 350	Greek & Roman Philosophy or	
PH 352	Modern Philosophy or	
PH 353	Twentieth Century Philosophy	3
GEN XXX	General Electives	12
		<u>15</u>

Spring Semester

PH 350	Greek & Roman Philosophy or	
PH 352	Modern Philosophy or	
PH 353	Twentieth Century Philosophy	3
PH 480	Internship (MR)	3
GEN xxx	General Electives	9
		<u>15</u>

POLITICAL SCIENCE MAJOR

(Formerly Government)

School of Arts and Sciences

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 in many parts of the country. Others enter government service or pursue careers in diverse areas ranging from education to business.

Faculty

Professors: Donald Williams, Vladimir Wozniuk

Associate Professor: William Mandel

Assistant Professor: Peter Fairman

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 and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p. 39 and 43.

Course of Study

1. Required Political Science courses (24 credit hours)
 - POSC 101 Introduction to Contemporary Global Issues
 - POSC 102 American National Government
 - POSC 201 Comparative Politics
 - POSC 203 International Relations
 - POSC 207 Western Political Thought
 - POSC 205 Public Administration
 - or
 - POSC 210 State Politics in America
 - or
 - POSC 218 Public Policy in America
 - POSC 490 Seminar in Government
 - GEOG 101 Introduction to Geography
2. Twenty-one additional credit hours of political science including 15 additional credit hours of upper-level courses (POSC 300-400). The 25 upper-level credit hours must include three credit hours each of comparative government, international relations, and American government.
3. Eighteen credit hours in social sciences including at least three credit hours each of economics, geography, history, psychology, and sociology.
4. 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.

Suggested Sequence of Courses

The schedule of courses below is a sample sequence for a Political Science major. Many students become government majors in their sophomore year and fulfill the major requirements without academic sacrifice.

Notes:

- * Is a prerequisite
- † Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year Credit Hours

Fall Semester

HIST xxx	History Requirement (GCR.)	3
POSC 102*	American National Government (MR/A&SR)	3
MATH 1xx *	Mathematics Requirement (GCR.)	3
ENGL 132*	English Composition I (GCR.)	3
LA 100	First Year Seminar (GCR.)	2
		14

Spring Semester

POSC 101	Introduction to Contemporary Global Issues (MR)	3
SO 101	Introduction to Sociology (A&SR)	3
MATH 1xx†	Mathematics (GCR.)	3
GEN xxx	General Elective	3
PEHR 151	Personal Health and Wellness (GCR.)	1
ENGL 133†	English Composition II (GCR.)	3
		16

Sophomore Year Credit Hours

Fall Semester

POSC 201†	Comparative Politics (MR)	3
POSC 203†	International Relations (MR)	3
EC 101	Introduction to Economic Issues — or —	
EC 205	Principles of Economics I (A&SR)	3
LAB xxx	Natural Science Perspective (GCR.)	3
PEHR 153-159	Lifetime Activities Series (GCR.)	1
ARI xxx†	Literature Requirement (A&SR)	3
		16

Spring Semester

POSC 207†	Western Political Thought (MR)	3
CS 131	Computing for Arts and Sciences (GCR.)	3
PSY 101	Introduction to Psychology (A&SR)	3
LAB xxx	Natural Science Perspective (GCR.)	3
POSC 2-3xx†	Political Science Elective (MR)	3
GEN xxx	General Elective	1
		16

Junior Year Credit Hours

Fall Semester

PH xxx	Ethical Perspective Requirement (GCR.)	3
GEN xxx	General Elective	3
POSC 2-3xx†	Political Science Elective (MR)	3
ARTS xxx	Aesthetic Perspective (GCR.)	3
GEOG 101	Introduction to Geography (A&SR/MR)	3
	or	
GEOG 110	Geography of the United States and Canada (A&SR/MR)	3
		15

Spring Semester

POSC 3xx†	Upper Level Political Science Elective (MR)	3
POSC 3xx†	Upper Level Political Science Elective (MR)	3
ARI xxx	Humanities Elective (A&SR)	3
ARII xxx	Social Science Elective (MR)	3
CUL 2xx	Elements of Culture – Cultures Requirement (GCR.)	3
		15

Senior Year Credit Hours

Fall Semester

POSC 3xx†	Upper Level Elective (MR)	3
POSC 3xx†	Upper Level Elective (MR)	3
GEN xxx	General Elective (GCR.)	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		15

Spring Semester

POSC 490†	Seminar in Political Science (MR)	3
XXX	Integrated Liberal and Professional Requirement	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		15

POLITICAL STUDIES MAJOR

School of Arts and Sciences

General Information

An interdisciplinary program of study that enables those with an interest in government to broaden their learning through a systematic exploration of the historical underpinnings of politics. This interdisciplinary concentration will be certified by the state of Massachusetts, and is therefore recommended to those students seeking to obtain a secondary education teaching certificate with a concentration in social studies.

Faculty

Professors: John Anzalotti, Marc Dawson, Theodore South, Donald Williams, Vladimir Wozniuk

Associate Professors: John Seung-Ho Baick, William Mandel

Assistant Professor: Peter Fairman

College-wide Requirements 19 credit hours

ENGL I-II	English Composition I-II requirement
HUM XXX	Cultures course
CS 131	Computer requirement
LA 100	Freshmen Seminar
PEHR XXX	Health and physical education requirement
XXX	Multiple Perspectives Requirement

A/S Area I Requirement 12 credit hours

LIT XXX	Literature requirement
PH XXX	Philosophy requirement
ARTS XXX	Elements of Culture in Arts
AR I	Area I requirement

A/S Area II Requirement 9 credit hours

EC 101/205	Economics requirement
PSY 101	Introduction to Psychology
SO 101	Introduction to Sociology

A/S Science and Math 12 credit hours

LAB XXX	Lab science requirement
LAB XXX	Lab science requirement
MATH XXX	Math requirement
MATH XXX	Math requirement

Required Courses for Major 30 credit hours

GEOG 101	Introduction to Geography
POSC 102	Introduction to American Government
POSC 203	International Relations
POSC 207	Western Political Thought
POSC 210	State and Local Politics
HIST 105	World Civilization I
HIST 106	World Civilization II
HIST 111	U.S. History to 1877
HIST 112	U.S. History, 1877 to Present
EC XXX	any additional course in economics

Additional Required Hours of Government Courses 15 credit hours

POSC 3XX	American politics
POSC 3XX	Comparative politics
POSC 3XX	International relations
POSC 3-4XX	Upper-level Government
POSC 3-4XX	Upper-level Government

General Electives

Education Block 22 credit hours*

PSY 304	Educational Psychology	3
ED 301	Principles and Problems of Education	3
ED 401		1
ED 403	Methods of Teaching	3
ED 409, 410	Practicum in Teaching	12

Additional Electives 3 credit hours

Total Course Credit Hours: 122

PRE-PHARMACY

Western New England College School of Arts and Sciences with Massachusetts College of Pharmacy and Health Sciences (MCPHS)

The Pre-pharmacy program offered by the School of Arts and Sciences provides guaranteed transfer to the Massachusetts College of Pharmacy and Health Sciences for qualified students. Successful completion of the five- or six-year program results in the degree of Doctor of Pharmacy conferred by the Massachusetts College of Pharmacy and Health Sciences, which is accredited by the New England Association of Schools and Colleges and the American Council on Pharmaceutical Education.

The first two years, the Pre-pharmacy Program, are provided by Western New England College. The Professional years are offered by the Massachusetts College of Pharmacy and Health Sciences at campuses in Boston and Worcester. No transfer students will be admitted to the Pre-pharmacy Program at Western New England College.

If students complete the Pre-pharmacy Program at Western New England College with a cumulative grade point average of 2.8 or higher, they will automatically be admitted to the MCPHS Pharmacy Program. Needing to repeat key courses could impact negatively on being able to continue at MCP. Transfer to a specific campus will depend on space availability in either Boston or Worcester and will be determined by the MCPHS Admissions Committee. Grades below C are not transferable. The academic policies of Western New England College apply to the Pre-pharmacy Program; the Pharmacy Program is subject to the academic policies of MCPHS. Students admitted in majors other than Pre-pharmacy should be advised that it might not be possible to transfer into this program after enrolling at the College because the number of places available is strictly limited. Pre-pharmacy students enrolling in more than 17 credit hours of Western New England College courses pay the Western New England College per-semester-hour rate for every hour beyond 17. Pre-pharmacy students on academic probation may not enroll in more than 17 credit hours of course work per semester.

Program Summary

First Year Credit Hours

<i>First Semester</i>		
BIO 107	General Biology I	3
BIO 117	General Biology I Laboratory	1
CHEM 105	General Chemistry I	4
ENGL 132	English Composition I	3
MATH 123	Calculus for Management, Life, and Social Sciences I	3
PSY 101	Introduction to Psychology	3
		<hr/> 17

<i>Second Semester</i>		
BIO 108	General Biology II	3
BIO 118	General Biology II Laboratory	1
CHEM 106	General Chemistry II	4
ENGL 133	Freshman English	3
MATH 124	Calculus for Management, Life, and Social Sciences II	3
HIST 106	World Civilization II — or —	
HIST 112	U.S. History 1877-Present — or —	
POSC 102	American National Government	3
		<hr/> 17

Second Year Credit Hours

<i>First Semester</i>		
CHEM 209	Organic Chemistry I	3
CHEM 219	Organic Chemistry Laboratory I	1
PHYS 123	Physics for Pharmacy	4
EC 101	Introduction to Economics	3
	Humanities Elective *	3
	Social Science Elective*	3
		<hr/> 17

<i>Second Semester</i>		
CHEM 210	Organic Chemistry II	3
CHEM 220	Organic Chemistry Laboratory II	1
MATH 120	Statistics for Arts & Sciences	3
BIO 303	Microbiology	3
BIO 313	Microbiology Laboratory	1
	Behavioral Science Elective*	3
SO 101	Intro. to Sociology	3
		<hr/> 17

Elective Distribution Requirements

A minimum of three electives (9 credit hours) must be taken in the liberal arts during the Pre-pharmacy years as follows:

Distribution (9 cr.):

HUM (one humanities course)

SSC (one social science course)

BEH (one behavioral science course)

General Electives (9 cr.) MCPHS Elective Courses

Behavioral Sciences: One course (three credit hours) beyond the introductory level must be taken in psychology or sociology. Generally, courses in these areas numbered 200 or higher in the Western New England College Catalog.

Humanities: One course (three credit hours) beyond the introductory level must be taken in at least one of the following subjects: art history or appreciation, classics, cultures, linguistics, literature (American, British, or comparative), music history or appreciation, philosophy, or religion. In addition, foreign language courses beyond the intermediate level fulfill this requirement.

Social Sciences: One course (three credit hours) beyond the introductory level must be taken in one of the following subjects: American studies, anthropology, history, or political science.

PRE-PHYSICIAN ASSISTANT

**Western New England College
School of Arts and Sciences**

PHYSICIAN ASSISTANT

**Western New England College
School of Arts and Sciences**

The Program

Western New England College and the Massachusetts College of Pharmacy and Health Sciences (MCPHS) have joined together to offer the Physician Assistant Studies Program. Successful completion of the six-year program results in the Master's Degree in Physician Assistant Studies conferred by the Massachusetts College of Pharmacy and Health Sciences which is accredited by the New England Association of Colleges and Schools. This program has been fully accredited by the Accreditation Review Commission on Education for the Physician Assistant.

The first two years of the program (pre-physician assistant phase) are offered on the Western New England campus in Springfield, MA. The final four years (physician assistant phase) are conducted on the MCPHS campus in Boston. During the sixth and final year of the program students complete nine clinical clerkships at off-campus sites in either Boston or other settings in Massachusetts. If students complete the pre-professional phase of the Physician Assistant Studies Program with a minimum of 30 hours in residence and a cumulative grade point average of 2.80 or higher, they are automatically admitted to the professional phase of the program offered on the MCPHS campus in Boston. Needing to repeat key courses could impact negatively on being able to continue at MCP. Grades below C are not transferable. The academic policies of Western New England College apply to the pre-professional phase of the program. The professional phase of the program is subject to the academic policies of MCPHS.

Physician Assistant Profession

Physician Assistants (PAs) are skilled members of the health care team qualified by academic and clinical experience to provide a broad range of health care services in practice with a licensed physician. The clinical services provided by PAs include performing interviews and physical examinations, identifying problems in need of evaluation and management, screening results of laboratory diagnostic studies, selecting and implementing treatment plans, counseling patients regarding illness and health risk behaviors, monitoring responses to physician-directed programs of therapy, and facilitating access to appropriate health care resources. These services may be provided to individuals of any age in those various settings considered part of the physician's practice.

Curriculum

Pre-Professional Phase at Western New England College

First Year Credit Hours

First Semester

BIO 107	General Biology	3
BIO 117	General Biology I Laboratory	1
CHEM 105	Concepts of Chemistry	4
ENGL 132	English Composition I	3
MATH 123	Calculus I for Management, Life, and Social Sciences	3
PSY 101	Introduction Psychology	3
		<u>17</u>

Second Semester

BIO 108	General Biology II	3
BIO 118	General Biology II Laboratory	1
CHEM 106	Concepts of Chemistry II	4
ENGL 133	English Composition II	3
MATH 124	Calculus II for Management, Life, and Social Sciences	3
POSC 102	American National Government	3
		<u>17</u>

Second Year

Credit Hours

First Semester

CHEM 209	Organic Chemistry I	3
CHEM 219	Organic Chemistry Laboratory I	1
PSY 306	Abnormal Psychology	3
MATH 120	Statistics for Arts and Sciences	3
CS 131	Computers for Arts and Sciences	3
	Humanities Elective	3
		<u>16</u>

Second Semester

CHEM 210	Organic Chemistry II	3
CHEM 220	Organic Chemistry Laboratory I	3
PHYS 123	Physics	4
SO 310	Cultural Anthropology	3
	Liberal Arts Elective	3
	Social Science Elective	3
		<u>17</u>

The curriculum for years three through six of the Physician Assistant Studies Program is outlined in the most current MCPHS catalogue.

Humanities: One course (three credit hours) beyond the introductory level must be taken in at least one of the following subjects: art history or appreciation, classics, cultures, linguistics, literature (American, British, or comparative), music history or appreciation, philosophy, or religion. In addition, foreign language courses beyond the intermediate level fulfill this requirement.

Social Sciences: One course (three credit hours) beyond the introductory level must be taken in one of the following subjects: American studies, anthropology, history, or political science.

Liberal Arts: One additional course (three credit hours) beyond the introductory level must be taken in the behavioral sciences, cultures, or the social sciences listed above. In addition, courses in foreign languages (introductory and intermediate levels), speech communication, journalism, and writing fulfill this requirement.

PSYCHOLOGY MAJOR

School of Arts and Sciences

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 to meet individual career objectives. The Psychology Department offers students the opportunity to receive either the B.A. or the B.S. degree. The B.S. degree includes all of the requirements of the B.A. degree, along with a total of 18 credits in any combination of science courses, as well as two upper level research courses in Psychology. Students may also pursue teacher certification at the elementary or secondary level by participating in the Ed Block (see p. 35-38), or receive training in special education by participating in the New England Center for Children program (see p. 32).

Career Opportunities

Students are prepared to enter the world of work in counseling, personnel administration, human service agencies, special education, elementary, or secondary school teaching; to continue their studies at the graduate level; or to enter related fields such as medicine, law, criminal justice, and social work.

Faculty

Professors: Kathleen Dillon, Dennis Kolodziejcki

Associate Professors: Christopher Hakala, Sheralee Tershner

Assistant Professor: Dongxiao Qin

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 tracing 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 and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p. 39 and 43.

Course of Study for B.A.

- Required courses (24 credit hours):
 PSY 101 Introduction to Psychology
 PSY 207 Statistics for the Social Sciences
 PSY 211 Developmental Psychology
 PSY 306 Abnormal Psychology
 PSY 309 Research Methods
 PSY 312 Physiological Psychology
 PSY 313 Learning
 PSY 420 History of Psychology
- Nine additional credit hours required in upper-level psychology (PSY 300-400) courses. Note that for the B.S. degree six of these credit hours may include the required upper level research courses in psychology.
- Twelve additional credit hours in Social/Behavioral Perspective including three credit hours each of history, economics, government, and SO 314 or SO 311 or an approved equivalent.

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.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year Credit Hours

Fall Semester

PSY 101*	Introduction to Psychology (MR)	3
ENGL 132	Composition I (GCR.)	3
LA 100	First Year Seminar (GCR.)	2
HIST 111/112	Historical Perspective (GCR.)	3
MATH xxx	Mathematics Requirement (GCR.)	3
PEHR 151	Personal Health and Wellness	1
		15

Spring Semester

PSY 211* **	Developmental Psychology (MR)	3
ENGL 133**	Composition II (GCR.)	3
CS 131	Computing for the Arts and Sciences (GCR/MR)	3
POSC 102	American National Government (A&SR/MR)	3
MATH xxx	Mathematics Requirement (GCR.)	3
PEHR 153-199	Lifetime Activities Series	1
		16

Sophomore Year Credit Hours

Fall Semester

PSY 207* **	Statistics for the Social Sciences (MR)	3
PSY 313* **	Learning (MR)	3
PH xxx	Ethical Perspective (GCR.)	3
EC xxx	Social Behavioral Perspective (A&SR/MR)	3
BIO 101	Basic Biology: Organisms	
— or —		
BIO 103	Life Sciences I (required of candidates for elementary education certification) Laboratory Science Requirement (GCR.)	3
		15

130 Undergraduate Academic Programs

Spring Semester

PSY 309 * **	Research Methods (MR)	3
PSY 312 * **	Physiological Psychology ¹ (MR)	3
ENGL xxx	Literature Requirement (A&SR)	3
GEN xxx	General Elective	3
LAB xxx	Laboratory Science Requirement	3
		<u>15</u>

¹ Note that college BIO is a prerequisite for PSY 312
Physiological Psychology

Junior Year²

Credit Hours

Fall Semester

PSY 306	Abnormal Psychology (MR)	3
PSY 3xx/4xx	Psychology Required Elective (MR)	3
ARTS xxx	Aesthetic Perspective (GCR.)	3
SO 314	American Culture and the Black Experience -or-	
SO 311	Minority Groups or an Approved Equivalent (MR)	3
XXX	Integrated Liberal and Professional Perspective (GCR.)	3
		<u>15</u>

Spring Semester

PSY 420	History of Psychology (MR)	3
PSY 3xx/4xx	Psychology Required Elective (MR)	3
PSY 3xx/4xx	Psychology Required Elective (MR)	3
XXX	Humanities Elective (A&SR)	3
CUL xxx	Cultural Perspectives (GCR.)	3
GEN xxx	General Elective	1
		<u>16</u>

² Students should consider enrolling in PSY 480
Internship in Psychology during this year and their sen-
ior year. Please see the staff in the Career Center for a
listing of Internship sites.

Senior Year

Credit Hours

Fall Semester

GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		<u>15</u>

Spring Semester

GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
GEN xxx	General Elective	3
		<u>15</u>

³ Students intending to Study Abroad, or intending to
become certified as teachers of behavioral science at
the secondary level, or intending to be certified in ele-
mentary education, or intending to enroll in the New
England Center for Children program, may need to take
all of their major requirements by the end of their jun-
ior year so that one semester of their senior year would
be free to go abroad, or to take the Ed Block, or partici-
pate in the NECC program. Ed Block students must also
take PSY 304 and ED 301 prior to their senior year. In
addition, these students should refer to the elementary
and secondary education program requirements that
list the necessary prerequisites for the Ed Block includ-
ing the specific math, history, government and other
requirements necessary for teacher certification in
Massachusetts.

SOCIAL WORK MAJOR

School of Arts and Sciences

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 helping society to be more responsive to human need; to developing mutually beneficial relationships between people and their environments; and to empowering people to recognize and mobilize their strengths.

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 College 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 Department 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.

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, adults, and families at the individual, family group, and community levels in agencies that provide health care, 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.

Faculty

Professor: George Caulton

Associate Professors: Jeff Schrenzel, Sara Weinberger

Program Objectives

1. To acquire the knowledge, values, and skills to engage in entry level generalist social work practice in a variety of settings with diverse populations using micro, mezzo, and macro levels of intervention.
2. To possess the knowledge, values, skills, self-awareness, maturity, and academic competencies needed to engage and succeed in graduate social work education.
3. To have a respect for and appreciation of human diversity within a pluralistic society.
4. To respect and appreciate the value and dignity of all people and to use approaches that enhance client self-worth and dignity.

5. To incorporate both personally and professionally the promotion of social justice by advocating for the rights of all human beings and working to change systems that contribute to people's oppression.
6. To possess competent verbal and written communication skills that enable effective communication in multi-cultural and multi-disciplinary environments.
7. To be able to engage in all elements of the problem-solving process in social work practice from a bio-psycho-social perspective and in partnership with clients.
8. To bring a spirit of scientific inquiry to social work practice, recognizing the dual role of the social worker as practitioner and researcher
9. To engage in professional decision-making from a knowledge base incorporating social work values and ethics.
10. To commit to career-long professional growth and development through affiliation with professional groups, professional continuing education, and other forms of ongoing professional development.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p. 39 and 43.

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 a minimum grade point average of 2.2 and a grade of "C" or better in any social work course taken. (Except for transfer students who have not taken these courses.)

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, a letter of reference, and a degree audit form.
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.

Required Courses

SW 100	Introduction to Social Work
SW 216	Human Behavior and the Social Environment
SW 301	Social Work Interventive Methods I (The Helping Process)
SW 302	Social Work Interventive Methods II (Social Work Interviewing Skills)
SW 303	Social Work Interventive Methods III (Social Work Practice with Communities and Organizations)
SW 304	Social Work Interventive Methods IV (Social Work Practice with Families and Groups)
SW 313	Social Welfare and Social Policy
SW 314	Field Instruction in Macro Practice
SW 319	Social Work Research
SW 320	The Dynamics of Oppression and Empowerment
SW 409-412	Field Instruction in Social Work I-IV
SW 414	Field Instruction Seminar I
SW 415	Field Instruction Seminar II
POSC 102	American National Government (counts as college Social and Behavioral Perspective)
SO 101	Introduction to Sociology (counts as college Social and Behavioral Perspective)
SO 311	Sociology of Minority Groups
PSY 101	Introduction to Psychology (counts as college Social and Behavioral Perspective)

PSY 211	Developmental Psychology or another human development course as approved by BSW Department Chair
EC 106	The Economics of Poverty and Discrimination
BIO 101	Basic Biology: Organisms (counts as college Natural Science Perspective)
Lab Science	(counts as college Natural Science Perspective)
MATH 120	Math Statistics (counts as one of two required math courses)
PH 210	Ethics for Social Work (counts as college Ethical Perspective)
ENGL 336	Ethnic American Literature or a literature course about an oppressed group approved by BSW Department Chair (counts as college literature requirement)
SPAN 140	Spanish for Social Services

Note: Requirements for the major satisfy the student's Area I and II requirements (81 credit hours).

Total credit hours required for graduation – 122

The 2.2 required grade point average in the major is based on all SW courses pursued as part of the student's degree program.

Suggested Sequence of Courses

#	Must be taken in sequence
*	Is a prerequisite
**	Has a prerequisite
MR	Major Requirement
GCR	General College Requirement
A&SR	School of Arts and Sciences Requirement

Freshman Year		Credit Hours
<i>Fall Semester</i>		
LA 100	First Year Seminar (GCR.)	2
MATH 105*	Contemporary Mathematics I (GCR.)	3
ENGL 132*	English Composition I (GCR.)	3
SW 100*	Introduction to Social Work (GCR/MR)	3
PSY 101	Introduction to Psychology (A&SR/GCR/MR)	3
HIST xxx	Historical Perspective (GCR.)	3
		<u>17</u>

<i>Spring Semester</i>		
ENGL 133**	English Composition II (GCR.)	3
POSC 102*	American National Government (A&SR/MR)	3
CS 131	Computing for the Arts and Sciences (GCR.)	3
SO 101	Introduction to Sociology (A&SR/MR)	3
PEHR 151*	Personal Health and Wellness (GCR.)	1
GEN xxx	General Elective	3
		<u>16</u>

Sophomore Year		Credit Hours
<i>Fall Semester</i>		
SW 216* **	Human Behavior and the Social Environment (MR)	3
MATH 120* **	Introductory Statistics for the Arts and Sciences (GCR/MR)	3
PEHR 153-199**	Lifetime Activities Series (GCR.)	1
PSY 211	Developmental Psychology (MR)	3
XXX	Integrated Liberal and Professional Perspective (GCR.)	3
BIO 101	Introduction to Biology (GCR/MR)	3
		<u>16</u>

<i>Spring Semester</i>		
PH 210	Ethics for Social Workers (A&SR/GCR/MR)	3
EC 106*	The Economics of Poverty and Discrimination (MR)	3
ARTS xxx	Aesthetic Perspective (GCR.)	3
SPAN 140	Spanish for Social Services	3
BIO 102	Natural Science Perspective (GCR/MR)	3
		<u>15</u>

Junior Year		Credit Hours
<i>Fall Semester</i>		
SW 301#* **	Social Work Interventive Methods I (MR)	3
SW 319**	Social Work Research (MR)	3
SO 311#*	Sociology of Minority Groups (MR)	3
GEN xxx	General Elective	3
CUL 2xx	Cultural Studies Perspective (GCR.)	3
		<u>15</u>

Spring Semester

SW 302#**	Social Work Interventive Methods II (MR)	3
SW 313#**	Social Welfare and Social Policy (MR)	3
SW 320#**	Dynamics of Oppression and Empowerment (MR)	3
SW 303**	Social Work Interventive Methods III (MR)	3
SW 314**	Field Instruction in Macro Practice	3
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

SW 304#**	Social Work Interventive Methods IV (MR)	3
SW 409#**	Field Instruction in Social Work IA (MR)	3
SW 410#**	Field Instruction in Social IB (MR)	3
SW 414#**	Seminar in Field Instruction I (MR)	2
GEN xxx	General Elective (GCR.)	3
		<u>14</u>

Spring Semester

GEN xxx	General Electives (MR)	6
SW 411#**	Field Instruction in Social Work IIA (MR)	3
SW 412#**	Field Instruction in Social Work IIB (MR)	3
SW 415#**	Seminar in Field Instruction II (MR)	1
ENGL 336	Ethnic American Literature (A&SR/MR)	3
		<u>16</u>

SOCIOLOGY MAJOR**School of Arts and Sciences****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.

Career Opportunities

The sociology major provides an excellent background for careers in teaching, career counseling, personnel management, insurance, school administration, health administration, state police, and corrections.

Faculty

Professor: Richard Luxton

Associate Professor: Raymond Zucco

Assistant Professor: Michaela Simpson

Program Objectives

1. To understand the social forces that shape individual lives.
2. To understand the processes of social development and social structure.
3. To understand the methods and theories of social research.
4. To understand the value of comparative social analysis.
5. To understand human interaction, people in groups, and modes of social organization.
6. To understand contemporary social issues.

General and School Requirements

See General College Requirements and School of Arts and Sciences Requirements on p. 39 and 43.

Course of Study

1. Required sociology and psychology (21 credit hours)
 - SO 101 Introduction to Sociology
 - SO 203 Social Problems
 - PSY 207 Introduction to Statistics for the Social Sciences
 - SO 310 Cultural Anthropology in the 21 Century
 - SO 311 Sociology of Minority Groups
 - SO 322 Sociological Theory and Methods
 - SO 323 Seminar in Theory and Methods
 - SO 324 Comparative and Historical Sociology
 - SO 341 The Sociology of Work
 - SO 410 Social Change
 - SO 413 Social Inequality & Justice
2. Three (3) additional credit hours selected from upper-level courses in sociology (300-400).
3. Twelve (12) additional general elective credits at the 300-400 level.
4. Twelve additional credit hours in Area II to consist of three credit hours each of economics, government, history, and psychology. (Also satisfies the Area II requirement.)

The 2.0 required grade point average in the major will be based upon PSY 207 and all SO courses pursued as a part of the student's degree program.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- A&SR School of Arts and Sciences Requirement

Freshman Year		Credit Hours
<i>Fall Semester</i>		
SO 101*	Introduction to Sociology (MR)	3
ENGL 132*	Composition I (GCR.)	3
HIST xxx	History Requirement (GCR/MR)	3
CS 131	Computing for the Arts and Sciences (GCR.)	3
LA 100	First Year Seminar (GCR.)	2
MATH 105*	Contemporary Mathematics I (GCR.)	3
		17

<i>Spring Semester</i>		
ARTS xxx	Elements of Culture — Arts Requirement (A &SR)	3
PH xxx	Ethical Perspective (A &SR)	3
ENGL 133**	English Composition II (GCR.)	3
PSY xxx	Behavioral Science Perspective (A &SR/MR)	3
MATH 106**	Contemporary Mathematics II (GCR.)	3
PEHR 151	Personal Health and Wellness (GCR.)	1
		16

Sophomore Year		Credit Hours
<i>Fall Semester</i>		
SO 203	Social Problems	3
EC xxx	Behavioral Science Perspective (A&SR/MR)	3
CUL 2xx**	Elements of Culture — Cultures Requirement (GCR.)	3
PEHR 155-199	Lifetime Activities Series (GCR.)	1
ENGL xxx	Literature Requirement (A &SR)	3
LAB xxx	Laboratory Science Requirement (GCR.)	3
		16

<i>Spring Semester</i>		
SO 310	Cultural Anthropology in the 21st Century (MR)	3
PSY 207*	Statistics for the Social Services (MR)	3
ENGL xxx	Literature Requirement (A&SR)	3
POSC xxx	Government Requirement (A&SR/MR)	3
LAB xxx	Laboratory Science Requirement (GCR.)	3
		15

Junior Year Credit Hours*Fall Semester*

SO 311**	Sociology of Minority Groups (MR)	3
SO 324**	Comparative and Historical Sociology (A &SR)	3
GEN xxx	General Elective	8-9
		14-15

Spring Semester

SO 322	Sociological Theory and Method 1 (MR)	3
SO 3xx-4xx	Sociology Elective (MR)	3
GEN xxx	General Electives	8-9
		14-15

Senior Year Credit Hours*Fall Semester*

SO 323**	Seminar in Theory and Methods (MR)	3
SO 410**	Social Change (MR)	3
GEN 3xx-4xx	General Electives (MR)	9
		15

Spring Semester

SO 341**	The Sociology of Work (MR)	3
SO 413**	Social Inequality and Justice (MR)	3
GEN xxx	General Electives (GCR.)	3
GEN 3xx-4xx	General Electives (MR)	6
		15

Note:

1 Students must take PSY 207 prior to their senior year and must take SO 322 Sociological Theory and Methods in the spring of their junior year.

SPORT MANAGEMENT MAJOR**School of Business****General Information**

A student majoring in sport management should be prepared to assume a position of responsibility within a sports-oriented organization. The sport management major should be able to mobilize the resources available to that organization in order to meet the mission, goals, and objectives of both the organization and its stakeholders.

The Management Department emphasizes innovation, creativity, leadership, customer focus, and the importance of quality in providing goods and services to customers. The sport management major engages in a course of academic study that introduces and reinforces these critical success factors to adequately prepare them for a rewarding career in sport-related organizations. Sport management majors are actively involved in beyond the classroom learning projects with sport organizations and industry practitioners.

Career Opportunities

The sport management major is prepared to assume positions of responsibility in the private and public sectors. Graduates work in the following settings: professional sports, sport facility management, collegiate sports, recreation, sports clubs, sports journalism, sport marketing, entrepreneurship, and the sporting goods industry.

Faculty

Professors: Anthony F. Chelte, Russell Fanelli, William Ferris, Peter Hess, Ned Schwartz, Harvey Shrage

Associate Professors: Lynn Bowes-Sperry, Janice Jackson, Minoos Tehrani, Sharienne Walker

Assistant Professors: Daniel Covell, Jeanie Forray

Program Objectives

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.
8. Understand the key elements of ethical behavior in sport organizations including consideration of both personal and professional ethical systems in sport organization management.
9. Develop the ability to apply theoretical concepts of sport management in a practical setting through supervised field experience.

General and School Requirements

See General College Requirements and School of Business Requirements, p. 39 and 47.

Practicum, Internship, and Advanced Field Experience Options

Students majoring in sport management are afforded three different kinds of opportunities to apply their classroom learning to field experiences.

Sport management majors may complete a three-credit Practicum in Sport Management which provides students with the opportunity to plan, organize, and lead various elements of sport-related programming which may include intercollegiate athletics, intramurals, recreation and health and wellness. Practicum 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 College athletic department staff.

Sport management majors who meet the College's academic requirements for internships (grade point average of 2.5 or above overall and in the major) are eligible for the three-credit Internship in Sport Management which places students in regional sport-related organizations.

Sport management majors with a grade point average of 3.0 and above are eligible to apply for the Advanced Field Experience (MAN 460-461) program. This program places students in semester-long, full-time intern positions within a sport organization. In place of the six 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.

Electives

Electives supplement the sport management student's business program. Cultures, social science, sports journalism and sport psychology, for example, may be selected from the list of courses approved by the School of Business. Special care is given to ensure that the elective selections complement the sport management student's course of study leading to a successful career in sport-related industries.

Course of Study

1. Core Requirements for All Business Majors (80 credit hours) See p.47.
—plus—
2. Required Management, Marketing and Legal Studies Courses (18 credit hours)
 - MAN 250 Structure of Sport Industry
 - MAN 323 Human Resource Management
 - MAN 355 Sport Facility Planning and Management (3 cr.)
 - LS 360 Legal Studies for Sport Management
 - MAN 366 Sport Marketing (3 cr.)
 - LS 424 Legal Studies for Human Resource Management (3 cr.)
 - MAN 465 Seminar in Sport Management (3 cr.)
 - plus—
3. Other required courses (6 credit hours)
 - EC 340 The Economics of Sports
 - CL 390 Sports in Society*
 - plus—
4. Electives (18 credit hours)
 - MAN 480 Internship (3 cr.)
 - or —
 - Business Elective (3 cr.)
 - Business Elective (3 cr.)
 - Non-Business Electives (12 cr.)

*Course requirement filled with approved School of Arts and Sciences sport-related course offering, such as Sports Psychology, Sport History or Sports Journalism, for example.

Total credit hours required for graduation – 122

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 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 College.

Courses to be included in computing the 2.0 minimum average in the major are as follows:

All MAN and LS courses MAN 366, EC 340, CL 390 and BUS 450.

Suggested Sequence of Courses

Notes:

- * Is a prerequisite
- ** Has a prerequisite
- MR Major Requirement
- GCR General College Requirement
- BUSR School of Business Requirement

Freshman Year

Credit Hours

Fall Semester

BUS 101	First Year Seminar (GCR/BUSR)	3
ENGL 132*	English Composition I (GCR.)	3
MATH 111*	Analysis for Business and Economics I (GCR/BUSR)	3
	— or —	
MATH 123*	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	
HIST xxx	History Requirement (GCR.)	3
MAN 101	Principles of Management (BUSR)	
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PEHR 151*	Personal Health and Wellness (GCR.)	1
		<hr style="width: 100%; border: 0.5px solid black;"/>
		16

Spring Semester

ENGL 133**	English Composition II(GCR.)	3
MATH 112**	Analysis for Business and Economics II (GCR/BUSR)	
	— or —	
MATH 124**	Calculus I for Management, Life and Social Sciences (GCR/BUSR)	3
	Non-Business Elective (BUSR)	3
MAN 101*	Principles of Management (BUSR)	
	— or —	
CIS 102 *	Computer Tools for Business (BUSR)	3
PSY 101	Introduction to Psychology (BUSR)	
	— or —	
SO 101	Introduction to Sociology (BUSR)	3
PEHR 153-159**	Lifetime Activity Series (GCR.)	1
		<hr style="width: 100%; border: 0.5px solid black;"/>
		16

Sophomore Year Credit Hours*Fall Semester*

AC 201* **	Financial Reporting (BUSR)	3
MK 200* **	Principles of Marketing (BUSR)	3
CIS 202* **	Introduction to Information Systems (BUSR)	3
EC 205*	Principles of Economics I (BUSR)	3
MAN 250	Structure of Sport Industry (MR)	3
		<u>15</u>

Spring Semester

AC 202**	Managerial Accounting (BUSR)	3
QM 201**	Introduction to Statistics (BUSR)	3
FIN 214**	Introduction to Finance (BUSR)	3
EC 206**	Principles of Economics II (BUSR)	3
COMM 201**	Principles of Communication (BUSR)	3
		<u>15</u>

Non-credit career planning – Completion of individual development/career plan required for registration for Junior year.

Junior Year Credit Hours*Fall Semester*

BUS 301	Integrated Business Operations (BUSR)	3
PH 310	Ethics in the Professions (BUSR)	3
EC 340	The Economics of Sports (MR)	3
MAN 355	Sport Facility Planning and Management (MR)	3
Lab Science	Laboratory Science Requirement (GCR.)	3
		<u>15</u>

Spring Semester

LS 360	Legal Studies for Sport Management (MR)	3
QM 310	Quality and Operations Management (BUSR)	3
CUL xxx	Elements of Culture Requirement (GCR.)	3
MAN 366	Sport Marketing (MR)	3
MAN 323	Human Resource Management	3
		<u>15</u>

Senior Year

Credit Hours

Fall Semester

LS 424	Legal Studies for Human Resource Management	3
Lab Science	Laboratory Science Requirement (GCR.)	3
Business Elective	Business Elective	3
	— or —	
MAN 480		
CL 390	Sports in Society	3
NBEL	Non business Elective (GCR.)	3
		<u>15</u>

Spring Semester

BUS 450	Business Strategy (BUSR)	3
MAN 465	Seminar in Sport Management (MR)	3
Business Elective	Business Elective (MR)	3
NBEL	Non-business Elective (BUSR)	3
NBEL	Non-business Elective (BUSR)	3
		<u>15</u>



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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 School of Business for the following minors — business and management studies — and the office of the dean of the School of Arts and Sciences for all others.

When students elect a minor, they should inform their dean. The requirements in effect at that time are those that should be fulfilled. If a student wishes to fulfill requirements of an earlier date (for example, of the catalogue he or she entered under), the agreement of the department chair must be obtained.

The minors are described below.

African-American Studies Minor

The minor requirement is 18 credit hours, as follows:

EC 106	Economics of Poverty and Discrimination — or —
EC 316	American Economic History
ENGL 313	African-American Literature I
ENGL 318	African-American Literature II
HIST 3xx	African-American History*
SO 314	American Culture and the Black Experience

**If HIST 3XX African American History is not offered in the time that a student is at Western New England College that student may take HIST 354 Civil War and Reconstruction instead.*

And one course from the following:

ENGL 341	Caribbean Writers
ENGL 345	Major African American Authors
ENGL 343	Literature of African and African Diaspora
COMM 326	Race, Gender and Ethnicity in Media
CUL 310	Comparative Race Relations: U.S. and South Africa
HIST 326	Sugar, Slaves, and Cloth: The Rise of Atlantic Society, 1500-1900

HIST 354	Civil War and Reconstruction
HIST 360	History of Precolonial Africa

Biology Minor

The minor requirement is 19 credit hours, as follows:

BIO 107-108	General Biology I-II
BIO 117-118	General Biology I-II laboratory
BIO 201	Plant Biology
BIO 210	Vertebrate Physiology
BIO 220	Vertebrate Physiology Laboratory
BIO 213	Ecology

Business Minor

The minor requirement is 18 credit hours, as follows:

AC 201	Financial Reporting
AC 202	Managerial Accounting
CIS 202	Introduction to Information Systems
FIN 214	Introduction to Finance
MAN 101	Principles of Management
MK 200	Principles of Marketing

The business minor is not available to students whose major is within the School of Business.

Chemistry Minor

The minor requirement is 20 credit hours, as follows:

CHEM 105-106	General Chemistry I-II
CHEM 211	Analytical Methods
CHEM 221	Analytical Methods Laboratory
CHEM 209-210	Organic Chemistry I-II — and —
CHEM 219-220	Organic Chemistry Laboratory I-II*
	— or —
CHEM 317-318	Physical Chemistry I-II — and —
CHEM 327-328	Physical Chemistry Laboratory I-II*

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.

**These courses have prerequisites.*

Communication Minor

The minor requirement is 18 credit hours, as follows:

COMM 201	Principles of Communication
COMM 202	Introduction to Public Speaking
COMM 320	Professional Communication
COMM 340	Business Communication
	— or —
ENGL 344	Expository Writing
Plus two of the following:	
COMM 218	Introduction to Journalism
COMM 321	Nonverbal Communication
COMM 340	Business Communication
ENGL 311	The English Language
COMM 348	Intercultural Communication

Computer Science Minor

The minor requirement is 20 credit hours, as follows:

CS 181	Computer Science I
CS 182	Computer Science II
CS 283	Data Structures I
MATH 261	Discrete Structures I
CPE 271	Digital Design
Plus one 300 to 400 level CS course.	

Criminal Justice Minor

The minor requirement is 18 credit hours, as follows:

CJ 101	Introduction to Criminal Justice
CJ 218	Introduction to Law Enforcement
CJ 210	Criminology
CJ 211	Corrections
CJ 310	Criminal Law
CJ 312	Criminal Procedure

A student must take CJ 101 and CJ 210 (in any order) prior to taking the remaining courses.

Economics Minor

The minor requirement is 18 credit hours, as follows:

EC 205	Principles of Economics I
	— or —
EC 101	Introduction to Economic Issues
EC 206	Principles of Economics II
	— or —
EC 208	Principles of Applied Microeconomics
EC 305	Macroeconomics
EC 306	Microeconomics

Plus 6 additional credits at 300 level or higher

Education Minor

The minor requirement is 18 credit hours, as follows.

PSY 101	Introduction to Psychology
PSY 211	Developmental Psychology
PSY 304	Educational Psychology
PSY 317	Psychology of the Exceptional Person

Plus any of the two following education or psychology courses:

ED 301	Principles and Problems of Education
ED 302	History of American Education
ED 306	Multimedia Presentations
ED 333	Independent Study in Education
ED 350	Teaching of Elementary Reading and Language Arts
ED 375	Elementary Curriculum and Methods
PSY 307	Use of Psychological Tests
PSY 313	Learning

English Minor

The minor requirement is 18 credit hours, as follows:

ENGL 231	British Literature I
	— or —
ENGL 232	British Literature II
ENGL 251	American Literature I
	— or —
ENGL 252	American Literature II
ENGL 314	Shakespeare: The Plays and Poems
	— or —
ENGL 315	Shakespeare: The Tragedies
	— or —

ENGL 316 Shakespeare:
The Comedies and Histories

Plus nine additional credit hours at the 300 or 400 level.

Fine Arts Minor

The minor requirement is 18 credit hours consisting of any ART, FILM, or MUS courses.

History Minor

Two of the following courses:

HIST 105 World Civilization I
HIST 106 World Civilization II
HIST 111 United States History to 1877
HIST 112 United States History,
1878 to the Present

Nine credit hours of 300 or 400 level history courses.

Plus three additional credit hours of history.

Within these course requirements, a student must take at least three credit hours each in non-Western, European, and American history.

International Business Minor

The International Business Minor is an interdisciplinary program designed to assist students develop appropriate skills and knowledge to prepare their entry into careers related to International Business.

The International Business Minor requires the completion of 15 credit hours of designated course work.

Required Courses (9 credit hours)

MK 411 Multinational Marketing
FIN 322 International Finance
MAN 311 International Management

These courses may be applied to completion of course work for a major in business or completion of business elective courses based on relevant department requirements as described in the Western New England College Catalogue.

Elective Credits (6 credits hours) from the following courses:

EC 371 International Monetary
Economics
EC 372 International Trade
POSC 203 International Relations
POSC 340 International Law &
Organizations

These courses may be applied to fulfill non-business elective requirements as described in the Western New England College Catalogue. Participation in an International Exchange through Western New England College Programs and taking language courses are highly recommended.

Some of the above courses can be taken at the foreign exchange university partner while participating in the exchange program.

Students must meet prerequisites required for the above courses.

International Studies Minor

The minor requirement consists of seven courses (21 credit hours), as follows:

INST 101/POSC 101 Introduction to
Contemporary
Global Issues
POSC 203 International Relations
plus either:
HIST 106 World Civilization II
— or —
SO 310 Cultural Anthropology in the
21st Century
plus one of the following:
COMM 205 Mass Communication
ENGL 215 World Literature II
PH 308 Environmental Ethics
PH 320 Western Religions
PH 321 Eastern Religions

Plus any three courses from the international studies curriculum list at the 300-level or above, one of which must be in the Department of Economics.

Latin American Studies Minor

The minor requirement is 18 credit hours, as follows:

SPAN 101 and SPAN 102
— or —
SPAN 203 and SPAN 204
CUL 250 Latin American Civilization
ENGL 253 Love, Death, and Power in
Twentieth Century Spanish
American Literature
HIST 326 Sugar, Slaves, and Cloth
SO 311 Sociology of Minority Groups
— or —
SO 325 Introduction to the Mayan
World

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.

Management Studies Minor

The minor requires the following:

Required courses (12 credit hours):

MAN 101 Principles of Management
 MAN 204 Organizational Behavior
 MAN 315 Organizational Theory
 BUS 450 Business Strategy

Elective Courses (six credit hours):

MAN 3xx-4xx Management Elective
 MAN 3xx-4xx Management Elective

The management studies minor is not open to management and sport management majors.

Mathematics Minor

The minor requirement is 18 or 20 credit hours, as follows:

MATH 123-124 Calculus for Management, Life,
 and Social Sciences I & II
 — or —

MATH 133-134 Calculus I-II

MATH 261 Discrete Structures I

Three additional courses numbered 262 or above, at least one of which must be:

MATH 418 Introduction to Modern
 Algebra
 — or —

MATH 421 Real Analysis
 — or —

MATH 412 Topology

Media Minor

The minor requirement is 18 credit hours, as follows:

COMM 205 Mass Communication
 COMM 218 Introduction to Journalism
 COMM xxx Broadcast Journalism I: Radio
 COMM xxx Broadcast Journalism II:
 Television

COMM xxx Television Production

And one course from the following:

COMM 342 Theatre Practicum
 FILM 203 The Art of Film
 COMM 322 Media Planning and Public
 Relations

Philosophy Minor

The minor requirement is 18 credit hours consisting of any six philosophy courses.

Political Science Minor

The minor requirement is 18 credit hours as follows:

POSC 102 American National
 Government

Plus 15 credit hours of 200, 300, or 400 level political science courses.

Within these course requirements, a student must take at least three credit hours in American politics, international relations, comparative government, and political thought.

Psychology Minor

The minor requirement is PSY 101 plus 15 additional credit hours in psychology. Note: internships, independent study, and undergraduate research may not be used to fulfill these requirements.

Public Administration Minor

The minor requirement is 18 credit hours selected from the courses listed below:

Required courses (nine hours):

POSC 102 American National
 Government
 POSC 205 Public Administration
 POSC 338 Public Management in Local
 Government

Plus any three of the following (nine hours):

POSC 210 State and Local Government
 POSC 320 The U.S. Congress & Presidency
 POSC 325 Constitutional Law
 POSC 336 Public Policy in America
 POSC 340 International Law and
 Organizations
 POSC 350 American Foreign Policy
 EC 351 Economics and Government
 EC 355 Public Finance
 EC 361 Urban Economics
 SO 302 Industrial and Post Industrial
 Society
 SO 305 Sociology of Urban Life

Social Work Minor

The minor requirement is 18 credit hours, as follows:

SW 100	Introduction to Social Work
SW 216	Human Behavior and the Social Environment
SW 301	Social Work Interventive Methods I
SW 320	The Dynamics of Oppression and Empowerment

Plus six additional credit hours in social work.

Social Work Minor for Criminal Justice Majors

The minor requires the following courses:

SW 101	Introduction to Social Work
SW 204	Social Work and Criminal Justice
SW 216	Human Behavior in the Social Environment
SW 301	Social Work Interventive Methods I
SW 302	Social Work Interventive Methods II (Interviewing Skills)
SW 320	The Dynamics of Oppression and Empowerment

Sociology Minor

The minor requirement is 21 credit hours, as follows:

SO 101	Introduction to Sociology
SO 203	Social Problems
SO 305	The Sociology of Urban Life
SO 308	Sociology of the Family
SO 311	Sociology of Minority Groups
SO 341	The Sociology of Work

Plus any three-credit sociology course at the 300-level or above.

Spanish Minor

The minor requirement is 18 credit hours selected from the courses below:

Required four courses (twelve hours):

SPAN 203	Intermediate Spanish I
SPAN 204	Intermediate Spanish II
SPAN 305	Advanced Conversational Spanish I
SPAN 306	Advanced Conversational Spanish II
	— Plus a choice of EITHER —
ENGL 253	Love, Death, and Power in Twentieth Century Spanish American Literature
	— and —
CUL 250	Latin America
	— or —
SPAN 101	Elementary Spanish I
	— or —
SPAN 130	Spanish for Criminal Justice
	— or —
SPAN 140	Spanish for Social Services
SPAN 102	Elementary Spanish II

Women's Studies Minor

The minor requirement is 18 credit hours, chosen from the following:

EC 392	Women in the Economy
PSY 305	Psychology of Women
SW 383	Women's Issues
ENGL 358	Women in Literature
ART 39x	Women and the Arts

Independent Study*

Internship in a Setting Servicing Women*

Or any other course whose primary content is focused on women*

**Permission for such course is required by the Chair of the Social Work Department.*

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 College 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.

Certificate requirements are as follows:

- CHEM 209-210 Organic Chemistry I-II
- CHEM 219-220 Organic Chemistry Laboratory I-II
- CHEM 211 Analytical Methods
- CHEM 221 Analytical Methods Laboratory
- CHEM 312 Instrumental Analysis
- CHEM 322 Instrumental Analysis Laboratory
- CHEM 314 Biochemistry
- CHEM 324 Biochemistry Laboratory

Certificate Program in Communication

Recognizing that communication is a skill much needed today, the College offers a program that strengthens understanding, writing, and speaking. Completion of the program requires 18 credit hours (plus any prerequisites).

- COMM 201 Principles of Communication
- COMM 202 Public Speaking
- COMM 320 Professional Communication
- COMM 340 Business Communication
- plus two COMM courses at the 300 level

On-line Certificate Program in Community Corrections

This twelve credit program is designed to prepare correctional personnel to respond to the growing utilization of community corrections programs by state governments which now must find more cost effective and rational alternatives to incarceration. On line courses present an understanding of the newest innovations in community programs and the growing employment opportunities available.

Certificate requirements are as follows:

- CJ 391 Alternative Sentencing
- CJ 320 Probation and Parole
- CJ 211 Corrections
- CJ 343 Domestic Violence
- CJ 398 Treating the Offending in the Community
- CJ 212 Police, Courts and Corrections

Certificate Program in Computer Information Systems

Students have an opportunity to undertake a traditional major plus a professional program focusing on information systems.

In this program the graduate has the depth of preparation in a major that permits further education plus a career-oriented concentration in information systems that can lead to useful employment. This program may be completed in the normal 122-hour degree plan. Students interested in this program should consult the dean of the School of Business.

In addition to serving traditional undergraduate students, this program is intended for students who have at least an associate's degree or advanced undergraduate training, but who want to retrain for a new career or who need familiarity with computing to advance in their present jobs. The certificate program consists of six courses (19 credit hours) as specified below. No prior experience is needed.

CIS 102	Computer Tools for Business
CIS 202	Introduction to Information Systems
CIS 210	Foundations of Web Technologies
CIS 300	Object-Oriented Programming
CIS 321	Database Management Systems
CIS 305	Object-Oriented Language II
— or —	
CIS 413	Data Communications Systems and Networks

Requirements for admission are the completion of 60 credit hours with a grade point average of at least 2.0 from an accredited two-year or four-year college or university. Western New England College students thus cannot be admitted to the program until their junior year. However, they may take courses that count toward the certificate in prior years. Students majoring in computer information systems, computer science, and computer engineering are not eligible for the certificate program. Only courses completed within three and one-half years of completion of the program may be counted toward the certificate. At most two courses may be transferred into the program and those must be the equivalent of CIS 102 and/or CIS 202 only. No transfer credit will be granted for any other course towards this certificate.



UNDERGRADUATE COURSE DESCRIPTIONS

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. For further information about an academic area, consult the dean of the school listed in parentheses.

Courses in the 500- and 600-level series are customarily restricted to graduate students; exceptions will be noted in the section entitled "Graduate Courses." Undergraduate engineering students may take 500-level engineering courses for which they have satisfied the prerequisites.

AC ACCOUNTING (School of Business)

AC 201 Financial Reporting

Prerequisite: MATH 115, 111, or 123. 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.

3 cr.

AC 202 Managerial Accounting

Prerequisite: AC 201. This course provides an introduction to managerial accounting, with an emphasis on the planning, control, and decision-making functions of management. Specific topics examined include cost behavior, product costing, cost-volume-profit analysis, budgeting, and identification of relevant costs for decision making.

3 cr.

AC 305 Financial Reporting II

Prerequisite: Math 111, 112; AC 201, and CIS 202 or concurrent. 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 output includes an understanding of the flow of information through the accounting cycle,

cash, receivables, inventories, plant and equipment, intangible assets, and current liabilities.

3 cr.

AC 306 Financial Reporting III

Prerequisite: AC 305. This is the second in a three-course sequence offering an in-depth examination of the financial reporting process. Key outcomes include an understanding of long-term liabilities, owners' equity, reporting errors, the statement of cash flows and earnings per share.

3 cr.

AC 309 Cost Accounting

Prerequisite: MATH 116, 112, or 124, AC 202. This course offers an in-depth examination of the basic principles of cost accounting with an emphasis on the impact of these principles in profit determination, managerial control, and decision making. Key outcomes include the ability to budget, perform cost-volume profit analysis, perform product and service costing, and to use of standard cost systems.

3 cr.

AC 330 Accounting Information Systems

Prerequisite: AC 305 or permission of the instructor. This is a course 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.

3 cr.

AC 333 Independent Study in Accounting

See "Independent Study" on p. 31.

1-3 cr.

AC 390 Special Topics in Accounting

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.

1-3 cr.

AC 407 Financial Reporting IV

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. Topics covered include inter-cor-

porate investments, business combinations, Key outcomes include the ability to report consolidations, inter-company transfer of assets, foreign currency transactions, and translation of foreign entity financial statements.

3 cr.

AC 410 Cost-Based Decision Making

Prerequisite: AC 309. This is an advanced managerial accounting course that emphasizes the use of quantitative methods in the planning, control, and use of costing information in accounting applications. Key outcomes include the ability to apply cost allocation models for planning and control, and capital budgeting to real life situations. Students will learn to explain their decisions through written and oral communication. This course is applicable to students seeking careers in management accounting.

3 cr.

AC 413 Fundamental Concepts of Taxation

Prerequisite: AC 202. This course reviews the legislative origins and underlying philosophy of the development of taxing structures. Key outcomes include the ability to apply to use current structures is the assessment of potential tax liability of individuals, partnerships, and corporations are made. The student will also develop the ability to research answers to tax questions.

3 cr.

AC 419 Auditing and Assurance Services

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.

3 cr.

AC 480-481 Internship in Accounting

See "internships" on p. 32.

3 cr.

ART ART

(School of Arts and Sciences)

(All ART courses satisfy aesthetic perspective requirement)

ART 101 Art Appreciation

This course is an introductory study of selected examples from the arts of painting, sculpture, and architecture in various cultures -primitive, Western and Oriental, ancient, and modern. Special attention is given to the purposes and functions of art for the individual and for society and to ways of understanding artistic creativity.

3 cr.

ART 105 Elementary Drawing: Line, Design, Color

This course is an introduction to the use of pencil, charcoal, Conte crayon, and pastels. Projects include work in perspective, still life, figure drawing, and portraiture. Offered every semester.

3 cr.

ART 110 Figure Drawing and Portraiture

Concentrating on the human form, this course includes techniques and exercises designed to impart and improve drawing skills. Offered once a year.

3 cr.

ART 115 Watercolor Painting

This course is an approach to watercolor using transparent and opaque techniques. Basics such as stretching paper and laying a graded wash are explored. Subjects range from studio still life to location landscapes. Offered once a year.

3 cr.

ART 201 Ancient and Medieval Art

This is an overview of the origins of art and its evolution from cave paintings in France and Spain to the stained glass windows and sculptures of the great cathedrals of Europe. Art of the ancient Egyptians, Greeks, Etruscans, and Romans as well as that of the medieval Vikings and Christians is studied to enhance understanding of the ideas and images that form part of the artistic heritage of Western Civilization. Offered in alternate years.

3 cr.

ART 202 From The Renaissance to Impressionism

This is an overview of the art and artists of the four great ages of art: Renaissance, Baroque, Enlightenment, and Modern. From Michelangelo to Monet, the course emphasizes how great artists of Europe and America produced distinctive expressions of themselves and their ages.

3 cr.

ART 204 From Pyramids and Castles to Cathedrals and Skyscrapers

This course uses a slide presentation introducing students to significant buildings of Europe and America from ancient times to the present. Offered in alternate years.

3 cr.

ART 210 20th Century Art

This course is a survey of important European and American art movements, exploring the individual achievements of major artists such as Picasso, Dali, O'Keeffe, and Moore. Offered in alternate years.

3 cr.

ART 290 and 390 Special Topics in Art

Topics in art that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

ART 310 Medieval Architecture and Society

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 what they can tell us about the people that created them. This course is equivalent to HIST 310.

3 cr.

AS AEROSPACE STUDIES**(Air Force ROTC/School of Business)****AS 111 Air Force Today I**

Military professionalism, officership, followership, customs and courtesies, organization and mission of the U. S. Air Force and its major commands in relation to role of U.S. strategic and tactical forces.

1 cr.

AS 112 Air Force Today II

Continuation of AS 111. Depicts the requirements for leadership in the Air Force: communication skills, interpersonal relationships, team building, and managing in a diverse workforce. Provides an understanding of what a student can expect from the Air Force.

1 cr.

AS 223 Air Force Way

Principal persons, events, and concepts contributing to emergence of American military aviation as separate arm. Period covered is from first manned balloon flights to end of World War II.

1 cr.

AS 224 Air Force Way II

Continuation of AS 223. Covers period from World War II to the present. U.S. Air Force as a primary element of national security.

1 cr.

AS 335 Air Force: Leadership and Management I

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.

3 cr.

AS 336 Air Force: Leadership and Management II

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.

3 cr.

AS 441 National Security Policy I

Formulation and implementation of national security policy, issues of national strategy, and international and regional security issues. Focus on role of the armed forces in the national security process.

3 cr.

AS 442 National Security Policy II

Military officers in U.S. society, military-civilian relations, contemporary societal issues in the armed forces; supervision, discipline, and military justice; other pre-commissioning topics.

3 cr.

BIO BIOLOGY**(School of Arts and Sciences)****BIO 101 Basic Biology: Organisms**

This is an introduction to the biology of organisms and their component parts. Intended primarily for non-majors, the emphasis is on the structure and function of human cells and organs. Two class hours, three-hour lab.

3 cr. Laboratory fee \$50.

BIO 102 Basic Biology: Populations

Prerequisite: BIO 101. This is an introduction to the interactions of organisms. Intended primarily for non-majors, the emphasis is on inheritance, evolution, and ecology. Two class hours, three-hour lab.

3 cr. Laboratory fee \$50.

BIO 103 Life Sciences I

This course is an introduction to cells, plant biology and human anatomy and physiology. It is intended for elementary education majors. Two class hours, three-hour lab.

3 cr. Laboratory fee \$50.

BIO 104 Life Sciences II

Prerequisite: BIO 103. This course is an introduction to human reproduction development and inheritance, evolution behavior and ecology. This course is intended for elementary education majors. Two class hours, three-hour lab.

3 cr. Laboratory fee \$50.

BIO 107 General Biology I

Prerequisite: One unit of secondary school chemistry or CHEM 102; 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.

3 cr.

BIO 108 General Biology II

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 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.

3 cr.

BIO 117 General Biology**Laboratory I**

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. Three-hour lab.

1 cr. Laboratory fee \$50.

BIO 118 General Biology**Laboratory II**

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. Three-hour lab.

1 cr. Laboratory fee \$50.

BIO 190 Special Topics in Biology

Topics in biology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

BIO 201 Plant Biology**(Formerly BIO 301)**

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. Three class hours, three-hour lab.

4 cr. Laboratory fee \$50.

BIO 210 Vertebrate Physiology

Prerequisite: BIO 108. Corequisite: BIO 220. This course is a study of the structural and functional mechanisms that underlie the life processes and organ systems in vertebrates. Offered in alternate years.

3 cr.

BIO 213 Ecology

Prerequisite: BIO 108 and BIO 201. 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.

3 cr.

BIO 220 Vertebrate Physiology Laboratory

Prerequisite: BIO 108. Corequisite: BIO 210. This course consists of laboratory exercises in vertebrate physiology. Emphasis is placed on data manipulation and problem solving. Three-hour lab. Offered in alternate years.

1 cr. Laboratory fee \$50.

BIO 290 Special Topics in Biology

Topics in biology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

1-3 cr.

BIO 303 Microbiology

Prerequisite: BIO 108; corequisite: BIO 313. This is an introduction to bacteria and viruses.

3 cr.

BIO 304 Histology

Prerequisite: BIO 108. This is a microscopic study of tissues. The course discusses their origin, structure, and relationships to organs. There is an introduction to histological techniques. Three class hours, three-hour lab. Offered every three years.

4 cr. Laboratory fee \$50.

BIO 306 Genetics

Prerequisite: BIO 108, CHEM 209 or concurrently. A study of classical organismal heredity and its molecular basis. Topics will include Mendelian principles, gene structure and function, and changes in genetic material. Offered in alternate years. Three class hours, three-hour lab.

4 cr. Laboratory fee \$50.

BIO 308 Comparative Vertebrate Anatomy

Prerequisite: BIO 210, 220. This course is an evolutionary approach to the study of vertebrate structure. Offered every three years. Three class hours, three-hour lab.

4 cr. Laboratory fee \$50.

BIO 310 Cell Biology

Prerequisite: BIO 108; CHEM 209 or concurrently. 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. Three class hours, three-hour lab. Offered in alternate years.

4 cr. Laboratory fee \$50.

BIO 312 Developmental Biology

Prerequisite: BIO 108; CHEM 106 or concurrently. 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. Three class hours, three-hour lab. Offered every three years.

4 cr. Laboratory fee \$50.

BIO 313 Microbiology Laboratory

Prerequisite: BIO 108, BIO 303, or concurrently. This is an introduction to techniques for working with bacteria and viruses including isolation, identification, and enumeration of bacteria. Three-hour lab.

1 cr. Laboratory fee \$50.

BIO 333-334 Independent Study in Biology

See "Independent Study" on p. 31.

1-3 cr. Laboratory fee may be required.

BIO 390 Special Topics in Biology

Prerequisite: BIO 108 and permission of the instructor. 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.

1-3 cr. Laboratory fee may be required.

BIO 440 Undergraduate Research

Prerequisite: Senior standing.

1-3 cr. Laboratory fee may be required.

BIO 455 Evolution

Prerequisite: BIO 213 and BIO 306 or permission of the instructor. 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. Offered in alternate years.

3 cr.

BIO 480 Internship in Biology

See "Internships" on p. 32.

3 cr.

BME BIOMEDICAL ENGINEERING

(School of Engineering)

BME 201 Foundations of Biomedical Engineering

Prerequisite: ENGR 110, MATH 133, PHYS 134, Corequisites: MATH 134, CHEM 105. This sophomore level course introduces the students to fundamental concepts in the field of biomedical engineering including mathematical modeling of biological and physiological systems, measurements made from living systems, and modern diagnostic and therapeutic devices that require knowledge at interface of engineering and medicine. Topics covered include basic cell structure and metabolism, biological diffusion and transport processes, and an introduction to the major physiological systems.

3 cr.

BME 202 Biomedical Systems

Prerequisites: ENGR 206, ENGR 208, MATH 236, BME 201 or permission of the instructor. 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 and step response, system stability, and effects of feedback on a system. 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.

3 cr.

BME 301 Engineering Physiology I

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, metabolism, the nervous system, the senses, skeletal muscles, and mass balances. Course objectives are assessed with homework, quizzes, laboratory experiments, and exams.

3 cr.

BME 302 Engineering Physiology II

Prerequisite: BME 301, BME 305. 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 blood dynamics, cardiovascular physiology, respiratory system, renal system, gastrointestinal system, and endocrinology.

3 cr.

BME 305 Biomedical Engineering Laboratory I

Corequisite: BME 301 and BME 331. 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, Electromyography (EMG), Hemorheology, Humans as research subjects, and Animals as research subjects.

1 cr.

BME 306 Biomedical Engineering Laboratory II

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: Electrocardiograms (ECG), enzyme-linked immunosorbent assay (ELISA), Thermodilution, and Ethics in the workplace. Additionally, students will be required to participate in the School of Engineering Interdisciplinary Project.

1 cr.

BME 331 Bioinstrumentation

Prerequisite: BME 202, ENGR 208. This course studies data acquisition techniques as applied to the human body. Topics include measurement, conversion of analog and digital signals, transduction, electrodes, electrocardiograms, electroencephalograms, electromyograms, respiratory measures, and medical imaging. Students design basic biomedical amplifier circuits, understand the terminology associated with instrumentation and measurement, specify off-the-shelf equipment, and study the latest advances in medical instrumentation.

3 cr.

BME 332 Biomedical Imaging

Prerequisite: BME 301, BME 331, or permission of the instructor. This course will study 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.

3 cr.

BME 340 Biomaterials

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.

3 cr.

BME 350 Biothermodynamics

Prerequisite: CHEM 106, MATH 236, BME 301. This is a study of the physical and mathematical concepts of thermodynamics with an emphasis on physiological and biological examples. Students apply the first and second law of thermodynamics to biomedical examples involving gas mixtures, phase and chemical equilibrium, and material balances.

3 cr.

BME 380 Bioengineering Practicum

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.

3 cr.

BME 405 Biomedical Engineering Senior Laboratory

Prerequisites: BME 302, BME 306, 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.

1 cr.

BME 433 Biomedical Signal Processing

Prerequisite: BME 202. This course will introduce the concepts underlying the field of biomedical signal processing. Topics include: the nature of biomedical signals, signal classification, noise, noise reduction, correlation, autocorrelation, filtering, sampling, and nonlinear signal models.

3 cr.

BME 437 Senior Design Projects I

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 present and defend a formal proposal. Students will learn and apply fundamental project management techniques to their projects. They are encouraged to work in multidisciplinary teams on clinically or industrially relevant projects. The students will be responsible for organizing formal design reviews with faculty, clinical or industrial sponsors, and other students. Students are assessed with weekly progress reports, design reviews, a final written report and an oral defense of the proposal. The proposed project will be carried out in BME 440 in the subsequent semester.

3 cr.

BME 440 Senior Design Projects II

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.

4 cr.

BME 451 Biomechanics

Prerequisite: ENGR 206 or ME 203, and MATH 236. This is a study of the human body and materials applied to the human body and their reaction to forces and moments. Topics include statics and dynamics applied to the body, mechanics of deformable bodies, and strength of materials.

3 cr.

BME 452 Biofluid Mechanics

Prerequisite: BME 302, ENGR 206 or permission of the instructor. 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.

3 cr.

BME 460 Cell and Tissue Engineering

Prerequisite: 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.

3 cr.

BME 480 Internship in Biomedical Engineering

See "Internships" on p. 32.

3 cr.

BME 490 Special Topics in Bioengineering

This is a study of an advanced topic in bioengineering of special interest to engineering majors, but not offered on a regular basis.

3 cr.

BUS BUSINESS

(School of Business)

BUS 101 First Year Business Seminar

This is a course designed specifically for new college students in the School 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.

3 cr.

BUS 290: Special Topics in Business

Topics in business that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

BUS 301 Integrated Business Operations

Prerequisites: AC 202, CIS 202, FIN 214, QM 201, MAN 101, MK 200. Must be taken prior to BUS 450 and not concurrently with BUS 450. The course provides the intermediate integrative framework between BUS 101 and BUS 450 for the continuous development of analytical and decision-making skills in the business environment. The student builds upon the introduction to each of the functional areas of a business by learning the methods for assessment across functional areas and integrating the impact of decision-making throughout the organization. Established learning outcomes include applying the functional components of a business plan, managing among all of the functional areas, managing corporate governance and the roles of all stakeholders, applying financial and qualitative analyses and supporting an entrepreneurial culture.

3 cr. Laboratory fee \$50.

BUS 310: International Practicum (Formerly BUS 300)

Prerequisite: Junior standing. International Practicum involves trips of 1-2 week 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 have impact on successful management of organizations in 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.

1 cr.

BUS 311 International Practicum Seminar

Prerequisite: Concurrent enrollment in BUS 310. This course serves as a complement to BUS 310 and may be taken only during the semester the student is enrolled in the corresponding BUS 310 travel/study course. The seminar is designed to provide students with an enhanced context and framework for their International Practicum study/travel

experience. The course involves research and discussion of the contemporary business environment in the country they will be visiting, including current political, social, cultural, and economic issues facing businesses in that area.

2 cr.

BUS 450 Business Strategy

Prerequisite: Completion of Business Core and graduating Senior Standing. Not to be taken concurrently with BUS 301. 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 firms' chosen strategies; and the application of strategic management theories.

3 cr.

CHEM CHEMISTRY

(School of Arts and Sciences)

CHEM 101 Modern Chemistry I

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. Two class hours, three-hour lab.

3 cr. *Laboratory fee \$50.*

CHEM 102 Modern Chemistry II

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.

3 cr. *Laboratory fee \$50.*

CHEM 105 General Chemistry I

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 explored: stoichiometry, atomic and molecular structure, states of matter, and properties of solutions. Three class hours, three-hour lab.

4 cr. *Laboratory fee \$50.*

CHEM 106 General Chemistry II

Prerequisite: CHEM 105. An extension of CHEM 105, this course illustrates and amplifies the principles developed previously. New material includes the descriptive chemistry of the elements, chemical equilibria, energetics and rates of reaction, electrochemistry, nuclear chemistry, and an introduction to organic and polymer chemistry. The laboratory illustrates these topics and provides the student with experience in the separation and identification of inorganic species in solution. Three class hours, three-hour lab.

4 cr. *Laboratory fee \$50.*

CHEM 190 Special Topics in Chemistry

Topics in chemistry that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

CHEM 209 Organic Chemistry I

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 reactivity of the simpler structural classes. Nomenclature, stereochemistry, and selected reaction mechanism are studied.

3 cr.

CHEM 210 Organic Chemistry II

Prerequisite: CHEM 209; CHEM 219; CHEM 220 or concurrently. This is a continuation of CHEM 209. The higher functional groups and structural classes are considered. Additional reaction mechanisms, synthesis, and spectroscopic methods are introduced.

3 cr.

CHEM 211 Analytical Methods

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.

3 cr.

CHEM 219 Organic Chemistry Laboratory I

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. Four-hour lab.

1 cr. Laboratory fee \$50.

CHEM 220 Organic Chemistry Laboratory II

Prerequisite: CHEM 210 or concurrently. Laboratory for CHEM 210. This is a continuation of CHEM 219. Emphasis is on the identification of chemical compounds by both chemical and spectroscopic techniques. Four-hour lab.

1 cr. Laboratory fee \$50.

CHEM 221 Analytical Methods Laboratory

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. Four-hour lab.

1 cr. Laboratory fee \$50.

CHEM 240-241 Research Projects in Chemistry

Prerequisites: CHEM 106, sophomore standing, a minimum GPA of 3.00, and permission or 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 course work 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.

1-3 cr.

CHEM 290 Special Topics in Chemistry

Topics in chemistry that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

CHEM 312 Instrumental Analysis

Prerequisite: CHEM 209; CHEM 211; CHEM 219; 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. Offered in alternate years.

3 cr.

CHEM 314 Biochemistry

Prerequisite: CHEM 210 and CHEM 324 or concurrently. 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. Offered in alternate years.

3 cr.

CHEM 317 Physical Chemistry I

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. Offered in alternate years.

3 cr.

CHEM 318 Physical Chemistry II

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. Offered in alternate years.

3 cr.

CHEM 322 Instrumental Analysis Laboratory

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. Four-hour lab. Offered in alternate years.

1 cr. Laboratory fee \$50.

CHEM 324 Biochemistry Laboratory

Prerequisite: CHEM 314 or concurrently. 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. Four-hour lab. Offered in alternate years.

1 cr. Laboratory fee \$50.

CHEM 327 Physical Chemistry Laboratory I

Prerequisite: CHEM 317 or concurrently. Laboratory for CHEM 317. Emphasis is on techniques for the determination of the chemical and physical properties of materials. Four-hour lab. Offered in alternate years.

1 cr. Laboratory fee \$50.

CHEM 328 Physical Chemistry Laboratory II

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. Four-hour lab. Offered in alternate years.

1 cr. Laboratory fee \$50.

CHEM 333-334 Independent Study in Chemistry

See "Independent Study" on p. 31.

1-3 cr. Laboratory fee may be required.

CHEM 340-341 Research Projects in Chemistry

Prerequisites: 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 240-241 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 240-241 and will be introduced to the research literature in chemistry. The project may be either a continuation of an earlier chemistry research project or something completely different.

1-3 cr.

CHEM 390 Special Topics in Chemistry

Topics in chemistry that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

CHEM 421 Inorganic Chemistry

Prerequisite: CHEM 312, CHEM 317, CHEM 322. 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. Offered in alternate years.

3 cr.

CHEM 425 Introduction to Polymer Science and Engineering

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.

3 cr.

CHEM 430 Advanced Topics

Prerequisite: CHEM 317; 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.

1-3 cr. Laboratory fee may be required.

CHEM 440 Undergraduate Research

Prerequisite: Senior standing.

See "Undergraduate Research," p. 32.

1-3 cr. Laboratory fee may be required.

CHEM 480 Internship in Chemistry

See "Internships" on p. 32.

3 cr.

CIS COMPUTER INFORMATION SYSTEMS (School of Business)

CIS 102 Computer Tools for Business

Prerequisite: None. This course has three components. First, it develops a solid understanding of the tools and functions of a modern Operating System with a graphical user interface (GUI). Topics such as file types, navigation and data transfer are addressed. Second, this course focuses on the practical implementation of spreadsheet

models to address business problems. Lastly, this course is a hands-on introduction to database management systems with an emphasis on using and developing database applications in a business context. Topics such as generating data tables, forms, reports and data relationships are addressed.

3 cr. Laboratory fee \$50.

CIS 202 Introduction to Information Systems

Prerequisite: Sophomore standing. This course is an introduction to information systems as a discipline including a survey and overview of what IS includes, the role and function of MIS in the business organization, IS job functions and career paths, and the nature and vocabulary of major information system technologies. A lab, comprising at most one third of the course, will provide students with a business-oriented introduction to modern information systems.

3 cr. Laboratory fee \$50.

CIS 210 Foundations of Web Technologies

Prerequisite: CIS 202, MATH 112. This course is an introduction to network and Internet technologies underlying contemporary business information systems. It explores network operating systems, server software, Internet protocols as well as Web site design, development, and maintenance. This course contributes to fulfilling CIS-major objectives 1, 3, and 4. Specific learning objectives include: (1) Learning how to install a network operating system and basic software for eBusiness application. (2) Understanding requirements and constraints of Web application development. (3) Learning how to build Web pages using HTML/XHTML. (4) Developing skills to enhance Web pages (using CSS, JavaScript, and DHTML). (5) Learning how to apply XML. (6) Learning how to deploy and maintain Web sites for business applications. The objectives are assessed based on projects, tests, and class participation.

3 cr. Laboratory fee \$50.

CIS 300 Foundations of Object-Oriented Programming (Formerly CIS 206)

Prerequisite: CIS 210, Pre- or co-requisite QM 201. This course is an introduction to computer programming for information systems with emphasis on logic and algorithms. Students are taught computer programming, utilizing object-oriented language and rapid application development environment.

Business problem solving and data processing are emphasized. Topics include data types (variables, classes, and arrays), control structures, operations (methods), and modules. The students are required to develop several programming projects that include program design, software development, and user/maintenance documentation. A common object-oriented programming language is utilized. This course contributes to fulfilling CIS-major objectives 1, 3, and (indirectly) 5. Specific learning objectives include: (1) Learn how to solve business problems via computer programming; (2) Gain an understanding of and skills in developing object-oriented computer programs; (3) Better understand the process of software development, including: analysis, design, implementation, and maintenance; (4) Learning how to use highly productive programming tools. (5) Reach an intermediate level of programming skills using Java. (6) Learn how to write programs that utilize file and database sources residing on computer networks. The objectives are assessed based on projects, tests, and class participation.

3 cr. Laboratory fee \$50.

CIS 321 Database Management Systems

Prerequisite: CIS 210. This course is a study of 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 tools. Topics include data modeling and organization, database architecture, SQL, and database connectivity technologies. Design and implementation projects are required. This course contributes to fulfilling CIS-major objectives 1, 4, and 5. Specific learning objectives include: (1) Understanding managerial aspects of data and information; (2) Building and analyzing relational data models with emphasis on data normalization. (3) Using query techniques with focus on SQL; (4) Understanding database architecture and implementations; (5) Maintaining data integrity, security, and privacy; (6) Understanding data exchange, distribution, and independence from applications; (7) Learning about object-oriented database solutions and emerging database technologies; (8) Understanding transactions. The objectives are assessed based on projects, tests, and class participation. This course is equivalent to CS 364.

3 cr. Laboratory fee \$50.

CIS 333-334 Independent Study in Computer Information Systems

See "Independent Study" on p. 31.

1-3 cr. Laboratory fee may be required.

CIS 350 Advanced Web Development with Objects

Prerequisite: CIS 300, CIS 321 or equivalent. This is a computer-programming elective for business information systems with emphasis on the object-oriented methodology. This course focuses on the concepts and implementation of object-oriented programming within a distributed and diversified environment. Web application development will be emphasized. A common object-oriented programming language, supporting multi-tier applications, and Rapid Application Development (RAD) tools will be utilized. UML, XML and SQL will also be explored.

3 cr. Laboratory fee \$50.

CIS 361 Management of Information Systems

Prerequisite: 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.

3 cr.

CIS 390-391 Special Topics in Computer Information Systems

Prerequisite: Junior in CIS 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.

3 cr. Laboratory fee may be required.

CIS 413 Data Communication Systems and Networks

Prerequisite: CIS 210. 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. This course is equivalent to CS 360.

3 cr. Laboratory fee \$50.

CIS 417 Systems Analysis and Design

Pre-corequisite: CIS 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.

3 cr. Laboratory fee \$50.

CIS 419 Decision Support and Expert Systems

Prerequisite: QM 201 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.

3 cr. Laboratory fee \$50.

CIS 422 Advanced Database Management Systems

Prerequisite: CIS 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.

3 cr. Laboratory fee \$50.

CIS 428 Systems Development Project

Prerequisite: CIS 417 and senior standing in CIS. This is an integration of previous course work and an exploration of new issues in CIS. 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.

3 cr. Laboratory fee \$50.

CIS 430 Enterprise Computing

Pre- or corequisite: CIS 300, CIS 413, CIS 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 multi-leveled 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 multi-tier architecture. Highly productive development tools are utilized.

3 cr. Laboratory fee \$50.

CIS 480-481 Internship in Computer Information Systems

See "Internships" on p. 32.
3 cr.

CJ CRIMINAL JUSTICE**(School of Arts and Sciences)****CJ 101 Introduction to Criminal Justice**

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.

3 cr.

CJ 190 Special Topics in Criminal Justice

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.

1-3 cr.

CJ 210 Criminology

Prerequisite: CJ 101; SO 101, or permission of the instructor. 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.

3 cr.

CJ 211 Corrections

Prerequisite: CJ 101; CJ 210; or six credit hours of sociology or psychology. This course is an empirical analysis of the main consid-

erations 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.

3 cr.

CJ 212 Police, Courts and Corrections

This course will provide an overview of the 3 major components of the Criminal Justice System and how they work independently but need to work collectively in the fight against crime and purpose to rehabilitate. This class will focus on the collaboration between these systems as well as some new innovations they are practicing in the field. This course will use examples of the systems working together (i.e. community justice programs, restorative justice and reentry programs).

3 cr.

CJ 214 Drugs, Society, and The Criminal Justice System

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. This course is equivalent to SO 214.

3 cr.

CJ 218 Police and Society

Prerequisite: CJ 101; 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. Offered spring semesters.

3 cr.

CJ 220 Evidence

Prerequisite: CJ major or permission of the instructor. 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 at 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 semesters.

3 cr.

CJ 290 Special Topics in Criminal Justice

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.

1-3 cr.

CJ 310 Criminal Law

Prerequisite: CJ 101; any 200-level CJ. This is a study of the major felonies (murder, rape, robbery, assault, larceny, burglary, and arson), their definitions, and methods of proof. Offered spring semesters.

3 cr.

CJ 311 Criminal Investigation

Prerequisite: CJ 101; any 200-level CJ. 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.

3 cr.

CJ 312 Criminal Procedure

Prerequisite: CJ 101; any 200-level CJ. 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 fall semesters.

3 cr.

CJ 313 Criminal Justice Interviewing and Interrogation

Prerequisite: PSY 101, SO 101, CJ 101 and any 200 level CJ courses, or permission of the instructor. 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.

3 cr.

CJ 314 The Judicial Process

Prerequisite: CJ 101 plus any 200-level CJ course or permission of the department. 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. Offered fall semesters.

3 cr.

CJ 319 Police Administration

Prerequisite: CJ 101, any 200 level course and junior standing. This course examines that specific area of public administration that applies to criminal justice organizations. It is an in-depth study of the development and present structure and processes of law enforcement agencies. Students are introduced to the complexities of administration and control at all levels of command and the means of evaluating organizational effectiveness. Central to the course is an understanding of the specific areas of administration in traditional law enforcement such as collective bargaining, hiring practices, and public accountability and also how successful administrative techniques have facilitated the innovations of the last two decades such as community policing. *This course is normally offered only in the Off-Campus Program.*

3 cr.

CJ 320 Probation and Parole

Prerequisite: CJ 101; any 200-level CJ. 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.

3 cr.

CJ 325 Forensic Science

Prerequisite: CJ 311 and CHEM 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.

3 cr.

CJ 333-334 Independent Study in Criminal Justice

See "Independent Study" on p. 31.
1-3 cr.

CJ 340 Ethical Decision-Making

Prerequisite: CJ 101; 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.
3 cr.

CJ 342 Juvenile Justice

Prerequisite: CJ 101 plus any 200-level CJ course. 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.
3 cr.

CJ 343 Domestic Violence

Prerequisite: PSY 101, SOC 101, CJ 101 or permission of the instructor. 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. This course is equivalent to SO 343.
3 cr.

CJ 344 Police Functions and Community Policing

Prerequisite: CJ 101, any 200 level course, junior standing. This course is designed to provide an in-depth understanding of the new organizational strategy of community policing. It traces the development of the theory of community policing from its beginnings at Michigan State University to its present application in the major urban areas of America. It examines the new underlying assumptions as to the place and function of police in society and how these theories are being realized in daily operations. It investigates new ways of solving community problems and

develops an appreciation of the expanded responsibilities of the community-policing officer. Methods to assist experienced as well as new officers to develop problem-solving based approaches to the deliverance of police services are explored. *This course is normally offered only in the Off-Campus Program.*
3 cr.

CJ 345 Stress Reaction and Management of Police Personnel

Prerequisite: CJ 101, any 200 level course, junior standing. The focus of this course is upon the stress that is inherent in police work, which results not only from the danger involved, but from bureaucratic frustration and public pressure and how police management at each level of command can anticipate, identify, and respond to stress. The course examines in-depth the known effects of traumatic job-related experiences as well as the strains resulting from the ordinary demands of the job both on the street, in the office, and in the family. Students then examine the consequences of stress both on the individual and the organization such as job and unit performance, its effect on appropriate police behavior, police corruption, brutality, inappropriate treatment of the public, and its effect on the various career stages, early and advanced. The course develops stress intervention models tailored to the various command levels. Students are required to examine their own methods of coping with stress and are encouraged to assess its effect on their own career plans. *This course is normally offered only in the Off-Campus Program.*
3 cr.

CJ 346 Supervision of Police Personnel

Prerequisite: CJ 101, any 200 level course, junior standing. This course is an overview of police supervision, particularly as it relates to the first line supervisor and the problems presented by the modern police environment and an increasingly complex legal world. The role of the supervisor is examined with respect to the general problems of personnel selection and development and with respect to the specific problems imposed by state and federal laws such as the Fair Labor Standards Act, the Family Medical Leave Act, Americans with Disabilities Act, and public labor law and collective bargaining as they apply to the daily operations of law enforcement units. The areas of employee discipline,

the requirements of due process, handling of complaints against officers by the public, communication, adequate training, civil liability consideration, and performance appraisals are also covered. *This course is normally offered only in the Off-Campus Program.*

3 cr.

CJ 347 Police Internal Investigation

Prerequisite: CJ 101, any 200 level course, junior standing. This course presents students with the current principles and expertise whereby the police investigate themselves. It provides a thorough understanding of the internal investigative function together with an appreciation of different department methods, policies, present laws, and recommended procedures utilized by present administrations. The course addresses the handling of complaints of police misconduct by the public, discoveries of misconduct, investigation and disposition by administrative action, discipline, dismissal, review board action, civil suit, and criminal prosecution. It examines current strategies in the challenging area of self investigation, the daily operations of the internal affairs unit, the problems of secrecy, security and unit morale, and the crucial issue of public trust. The course begins with a review of the evolution of police professionalism, problems of police corruption, and then considers current response. Students are given a problem of misconduct and are required to design and conduct an internal investigation and present findings in compliance with appropriate legal procedures and administrative requirements. *This course is normally offered only in the Off-Campus Program.*

3 cr.

CJ 349 Multicultural Policing

Prerequisite: CJ 101 or SO 101, junior or senior standing, or permission of the instructor. 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. This course is equivalent to SO 349.

3 cr.

CJ 350 Security Management

Prerequisite: CJ 101, any 200 level course, 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.

3 cr.

CJ 351 Government Industrial Security

Prerequisite: CJ 101, any 200 level course, junior standing. This course examines the Government Industrial Security Program that is administered by the Department of Defense for the protection of classified information and materials. An in-depth study of the program's various subsystems is undertaken with special emphasis placed upon Automated Information System Computer Security and Special Program Operations. This course is tailored for students whose career path is in the federal government and who perceive the need to be familiar with federal security requirements, security clearances, classified material, and working knowledge of the national industrial security program. This course is normally offered only in the Off-Campus Program.

3 cr.

CJ 390-395 Special Topics in Criminal Justice

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.

1-3 cr.

CJ 396 Seminar of Current Issues in Corrections

Prerequisite: CJ 211, 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.

3 cr.

CJ 397 Alternative Sentencing

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.

3 cr.

CJ 398 Treating the Offender in the Community

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.

3 cr.

CJ 405 Organized Crime

Prerequisite: CJ 220, CJ 311 and senior standing or permission of instructor. 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.)

3 cr.

CJ 410 Research Methods in Criminal Justice

Prerequisite: Junior standing and PSY 207 or MATH 207. The aim of this course is to introduce the student to the basic Criminal

Justice research method designed to prepare the student to understand and participate in quantitative and qualitative research. Each student selects a subject area and conducts an appropriate method of research involving interviews, data collection, measuring, sampling, survey construction, and program evaluation. Each research paper must be properly documented and suitable for publication.

3 cr.

CJ 480-481 Internship in Criminal Justice

See "Internships" on p. 32.

3 cr.

CL COLLOQUIA

CL 190 Special Topics

Topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1 cr.

CL 200-201 Colloquium

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.

1-3 cr.

COMM COMMUNICATION (School of Arts & Sciences)

COMM 101 Basic Sign Language

This course is an introduction to American Sign Language, introducing non-signers to the handshape, palm orientation, location, and movement of common signs, as well as the linguistic principles of ASL. Offered every fall semester.

3 cr.

COMM 151-152 Stageless Players

Students participate in the theatre productions of the Stageless Players. May be taken more than once. (151 is Fall and 152 is Spring.)

1 cr.

COMM 190 Special Topics in Communication

Topics in Communication that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

1-3 cr.

**COMM 201 Principles of Communication
(Formerly ENGL 201)**

Prerequisite: Sophomore standing, two courses in English writing with grades of "C" or better. This is an introduction to the fundamental theory of interpersonal communication and public speaking. The course explores effective listening, small group communication, nonverbal communication, and similarities and differences between speaking and writing. Offered every semester.

3 cr.

COMM 202 Public Speaking

Prerequisite: COMM 201. 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. Offered every semester.

3 cr.

COMM 203 Intermediate Sign Language

Prerequisite: COMM 101; Basic Sign Language. This course focuses on developing fluency in contemporary ASL. Offered every spring semester.

3 cr.

**COMM 205 Mass Communication
(Formerly ENGL 205)**

Prerequisite: Sophomore standing, two courses in English writing with grades of "C" or better. This is 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. Offered every semester.

3 cr.

**COMM 218 Journalism I
(Formerly ENGL 218)**

Prerequisite: Sophomore standing, two courses in English writing with grades of "C" or better. This is 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. Offered every semester.

3 cr.

**COMM 290 Special Topics in
Communication**

Prerequisite: Two courses in English writing with grades of "C" or better. Topics in communication that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

**COMM 301 Advanced Public Speaking
(Formerly ENGL 301)**

Prerequisite: COMM 201, COMM 202, two courses in English writing with grades of "C" or better. An advanced public speaking course. Students research and present persuasive speeches and debates, perform ceremonial speaking, and give impromptu and after-dinner talks. Studies of contemporary speakers and their work are included. Offered once a year.

3 cr.

COMM 310 Journalism II

This course focuses on long news and feature writing assignments. Topics include interviews, judging sources, researching a story, scientific reporting, sports reporting, and shield laws and confidentiality.

3 cr.

**COMM 320 Professional Communication
(Formerly ENGL 320)**

Prerequisite: COMM 201 or junior standing, two courses in English writing with grades of "C" or better. This is a study of several types of communication that are common in business and the professions. Topics include professional presentations, techniques of interviewing, questionnaire construction, small group dynamics, symposium planning, and presentation. Offered every semester.

3 cr.

**COMM 321 Nonverbal Communication
(Formerly ENGL 321)**

Prerequisite: COMM 201, two courses in English writing with grades of "C" or better. The course explores all of the channels of nonverbal communication, analyzing individual, cultural, and contextual variables that affect it. Offered in alternate years.

3 cr.

**COMM 322 Media Planning and Public
Relations**

Prerequisite: COMM 201 and 205, two courses in English writing with grades of "C" or better. This is a study of historical and critical views of the practice of public relations; basic public relations writing principles; basic principles of research and analysis for planning appropriate public relations message and media choices; and ethical principles for the development and evaluation of public relations efforts. Students will examine and critique actual public relations activities in a variety of contexts such as employee and membership relations, consumer and community relations, and non-profit organiza-

tions. They will prepare various writing assignments and a hypothetical campaign proposal. Offered once a year.

3 cr.

COMM 326 Race, Gender, and Ethnicity in the Media

Prerequisite: COMM 201, 205, two courses in English writing with grades of “C” or better. The purpose of this course is to examine 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 study and apply the theory of oppression and liberation developed by Paulo Freire and the key concepts of the cultural studies approach to the analysis of mass media. These concepts include ideology, power, identity, semiology, discourse, and narrative. Students investigate such forms of communication as advertising, popular music, popular fiction, television, film, and pornography. Offered in alternate years.

3 cr.

COMM 333-334 Independent Study in Communication

Prerequisite: Junior standing. Two courses in English writing with grades of “C” or better. See “Independent Study” on p.31.

1-3 cr.

COMM 340 Business Communication (Formerly ENGL 340)

Prerequisite: Junior standing, two courses in English writing with grades of “C” or better. The principles of effective professional writing are studied. The course requires extensive practice in planning, organizing, writing, and analyzing letters and short reports as they are used in business and industry. It also emphasizes oral presentations (except for sections taught through the Internet). Offered every semester.

3 cr.

COMM 342 Introduction to Acting (Formerly “Theatre Practicum”)

This is a course in performing drama. Students read and analyze dramatic texts and participate in the various activities of theatre production: designing stage sets and costumes, creating sound effects and lighting, and acting and directing. This course satisfies the literature requirement for Arts and Sciences students. Offered once a year.

3 cr.

COMM 348 Intercultural Communication (Formerly ENGL 348)

Prerequisite: Sophomore standing, COMM 201, two courses in English writing with grades of “C” or better. This course promotes appreciation 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. Offered in alternate years.

3 cr.

COMM 350 Television Production

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This is an introduction to lighting, sound, videotaping, editing, and script development. Offered every semester.

3 cr.

COMM 351 TV Broadcasting

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This is an introduction to writing and presenting TV news stories and commercials. Offered every semester.

3 cr.

COMM 390 Special Topics in Communication

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. Topics offered depend upon student interests as well as particular interests of instructors. This course may be repeated for credit if topic differs.

1-3 cr.

COMM 480-481 Internship in Communication (Formerly ENGL 480-481)

Prerequisite: Junior standing. Two courses in English writing with grades of “C” or better. See “Internships,” on p.32.

1-3 cr.

COMM 490 Seminar in Communication (Formerly ENGL 490)

Prerequisite: Senior standing, two courses in English writing with grades of “C” or better. Designed primarily for English communication majors, this course is dedicated to intensive guided research of current topics in communication studies. Students explore various areas of communications and integrate these areas into a cohesive whole.

3 cr.

CPE COMPUTER ENGINEERING

(School of Engineering)

CPE 271 Digital Design

This is an introductory level course that gives its participants the ability to analyze and design digital circuits. Students learn procedural approaches to designing digital circuits starting from specification of the problem. Students become familiar with the number systems that are used in computers and other digital circuits. They learn to use Boolean algebra and logic gates. Methods of manipulating and simplifying Boolean expressions are learned. Basic combination-logic function models are designed. Students become familiar with arithmetic functional blocks, latches, flip-flops, counters and registers. Sequential circuits are also designed and students are introduced to PLD programming. In addition to the classroom portion of the course, there are several laboratory sessions where students build and test their logic designs.

4 cr.

CPE 305 Object Oriented Design for Engineers

Prerequisite: ENGR 105 or equivalent. This is an introductory course in the design and understanding of abstract data types (ADT). After completing this course, students understand the issues involved with modeling and implementing ADT's with an object based programming (OOP) language, C++. The student will become familiar with lists, queues, stacks, trees as well as techniques for accessing these ADT's. Performance issues associated with manipulation of these ADT's are introduced. In addition, students learn to identify and practice the OOP concepts and techniques, practice the use of C++ classes and class libraries, modify existing C++ classes, develop C++ classes for engineering applications, use the Standard Template Library (STL) and practice the concepts of Object-Oriented Analysis and Design (OOA/OOD) by developing a C++ based project for an engineering application. The methods for assessing student learning in the course are homework assignments, quizzes, exams and a final design project with a formal presentation.

3 cr.

CPE 310 Machine and Assembly Language

Prerequisite: CPE 271, 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 PC's 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, data structures, and program debugging and testing. The methods of assessing student learning in this course are programming assignments, quizzes and tests. Two class hours, two lab hours.

3 cr.

CPE 330 Computer Organization

Prerequisite: CS majors, and 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.

3 cr.

CPE 350 Advanced Programming Languages

Prerequisite: ENGR 105 or equivalent, CPE 310 or equivalent. This is an introductory 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, and error recovery. They learn to write regular expressions and context free grammars. Students also learn 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 understand the operation and messages presented by any modern commercial translator. The methods of assessing student

learning in the course are homework assignments, quizzes, an hour exam and a semester long design project that culminates in a formal presentation.

3 cr.

CPE 360 Microprocessor Systems and Design

Prerequisite: CPE 310. This is an introductory course in the theory and design of modern microprocessor systems. Students become aware of the basic principles of systems design, including hardware, software and systems integration. The Intel 8008 processor and support chips are utilized in the design, fabrication and test of a complete working system. Students design memory mapped systems which include non-volatile (EPROM, FLASH, etc.) and volatile (RAM) memory. In addition, students also design I/O mapped subsystems, supporting both parallel (8825) and serial devices (8251). Students become aware of bus timing and loading considerations. To facilitate student understanding, a semester long, incremental design project is employed. As a result of building their own embedded system, the student will understand the design, construction and test issues presented by any embedded computer system.

3 cr.

CPE 420 Computer Architecture

Prerequisite: CPE 271, CPE 310 or equivalent. 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.

3 cr.

CPE 427 Computer Engineering Laboratory

Prerequisite: EE 322, CPE 360. Corequisites: CPE 420. This course provides hands-on experience in support of CPE 360, Microprocessor System Design and CPE 420,

Computer Architecture. Students work on mini-projects designed to interface peripherals like keypad and displays. They learn to work at the PC bus level and use peripheral support chips such as Intel 8255 and Intel 8254. The experience combines hardware and software design, system integration, and debugging. Assembly and C programming languages are used for software development. Students design digital systems using programmable logic and a suitable compiler language for that and design a part of processor arithmetic unit and associated control unit to reinforce ideas learned in computer architecture course. Three lab hours.

2 cr.

CPE 470 Real-time Embedded Controls

Prerequisite: CPE 427, CPE 420. This is an introductory course in the design and understanding of embedded micro-controllers in a time-critical control application. After completing this course, students understand issues involved with microkernels, concurrent threads, real-time scheduling theory and constraints, both static and dynamic. In addition, students learn the fundamentals of the state space approach to discrete systems modeling, analysis and design. They also gain an understanding of how to solve zero input, zero state and complete responses of a system represented in discrete state space form. 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, quizzes, exams and a final design project with a formal presentation.

3 cr.

CPE 480 Internship in Computer Engineering

See "Internships" on p. 32.

3 cr.

CPE 490 Special Topics in Computer Engineering

This is a study of an advanced topic in engineering of special interest to computer engineering majors, but not offered on a regular basis. The course may be repeated for credit if the topic varies.

3 cr.

CPE 525 Software Engineering

Prerequisite: CPE 350. This is a first year graduate course in software system design funda-

mentals. 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 which culminates in a formal presentation.

3 cr.

CPE 545 Computer Graphics Software

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 writing program as homework, supervised laboratory work, and the quality of the project.

3 cr.

CPE 550 Topics in Compiler Design Theory

Prerequisite: ENGR 105 or equivalent, CPE 310. This is a first year graduate 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 which culminates in a formal presentation.

3 cr.

CPE 560 Microcomputer Hardware Design

Prerequisite: CPE 360 or equivalent. This is an advanced level course in microcomputer hardware design. The course participants survey a wide variety of microprocessors, memory, and peripheral components focusing on learning advantages and disadvantages to enable them in selecting the optimal components for the design task. Students design interface logic that makes all the components work together. In addition to logical design, students analyze timing and electrical loading and ensure that their design will work reliably under the worst conditions. The students design interfaces with parallel and serial input/output ports, programmable counter-timers, and direct memory access controllers, for user input/output systems such as keyboards and displays, communication systems, and mass storage systems. An individual project that involves design of interface for a specific application is required. The assessment of student learning in this course is based on participation in class discussion, tests, and design project.

3 cr.

CPE 562 VHDL: Simulation and Synthesis

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 the their description. Students will also be introduced to synthesis of programmable devices using VHDL. Includes: several simulation exercises, as well as, some synthesis projects.

3 cr.

CPE 570 Operating Systems

Prerequisite: CPE 350 and CPE 420. This is a first year graduate level 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. They also learn the fundamentals of distributed (and network) operating systems. Students 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.

3 cr.

CPE 580 Computer Networks

Prerequisite: ENGR 212 or equivalent. This is a first year graduate 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). They also understand the problems of error detection and recovery. Students learn to use delay models to predict network specific performance measures and understand the limitations of these models. Students also understand the 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.

3 cr.

CPE 590 Special Topics in Computer Engineering

This is a study of an advanced topic in engineering of special interest to computer engineering majors, but not offered on a regular basis. The course may be repeated for credit if the topic varies.

3 cr.

CS COMPUTER SCIENCE

(School of Arts and Sciences)

CS 131 Computing for the Arts and Sciences

This is an introduction to computer systems, primarily from the user's viewpoint. Topics include hardware, software, vocabulary, and applications. Students use software packages on microcomputers and mainframes. The course culminates in a final project utilizing various software packages to research, analyze, and report on a topic of the student's choice. Not open to those who have completed CIS 101. Offered fall and spring.

3 cr.

CS 181 Computer Science I

This course begins the systemic study of software development using an object-oriented language. This course focuses on the basic techniques of programming and the basic concepts of software engineering and data abstraction, preparing students for the deeper study of data structures. The course typically covers the use of objects and classes, defining and implementing classes, conditional execution, iteration, and vectors. Three class hours and 3 lab hours. Offered in the fall semester.

4 cr.

CS 182 Computer Science II

Prerequisite: CS 181 or comparable computing experience and permission of the instructor. This course continues the systemic study of software development using an object-oriented language, and continues the focus on the basic concepts of software engineering and data abstraction, preparing students for the deeper study of data structures. The course typically covers the use of arrays, testing, recursion, examples, inheritance, exceptions, applets, GUIs, and threads. Four class hours. Offered in the spring semester.

4 cr.

CS 190 Special Topics in Computer Science

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.

1 cr.

CS 283 Data Structures I

Prerequisite: CS 182. This course is a study of fundamental data structures, including arrays, linked lists, stacks, queues, and binary search trees. Students study the use of recursion, introduction to space/time analysis of algorithms, debugging tools. Offered in the fall semester.

3 cr.

CS 284 Data Structures II

Prerequisite: CS 283. This course includes sorting algorithms, hash tables, heaps and priority queues, 2-3 trees, B-trees, and Red-Black trees. Class libraries, the use of data structures in applications, and verification of program correctness are studied. Offered in the spring semester.

3 cr.

CS 290 Special Topics in Computer Science

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.

1-3 cr.

CS 330 Web Applications Development

Prerequisite: CS 284. This course covers the design and implementation of client/server and multi-tier applications using tools for web page design and web server configuration, including CGI scripts, Servlets, JSP, XML, and database connectivity. Offered in the fall semester.

3 cr.

CS 333-334 Independent Study in Computer Science

See "Independent Study" on p. 31.

1-3 cr.

CS 340 Computer Graphics: Principles and Applications

Prerequisite: CS 283 or CIS 205 or CPE 205 or the equivalent, 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.

3 cr.

CS 351 Organization of Programming Languages

Prerequisite: CS 283 or CIS 305 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. Offered in the fall semester.

3 cr.

CS 360 Data Communication Systems and Networks

Prerequisite: Junior standing in CS or CIS or permission of instructor. This is a study of the concepts and terminology of data communications, network design, and distributed information systems. Major topics include communication concepts, network architec-

ture, data communications software and hardware, and the impact of communications technology on information systems. This course is equivalent to CIS 413. Offered in the spring semester.

3 cr.

CS 361 Network Administration Lab

Corequisite: CS 360. Students will gain experience with configuring and maintaining a network, and the use of tools to diagnose problems, monitor performance, and audit security. Offered in the spring semester.

2 cr.

CS 364 Database Management Systems

Prerequisite CS 182 or CIS 200. 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. This course is equivalent to CIS 321. Offered in the fall semester.

3 cr.

CS 366 Design and Analysis of Algorithms

Prerequisite: CS 284. 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 runtime 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. Offered in the spring semester. Credit for this course and CPE 450 is not permissible. Offered in the spring semester.

3 cr.

CS 370 Artificial Intelligence and Expert Systems

Prerequisite: Junior standing, and CS 182 or CIS 205 or CPE 205, 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 com-

plete 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.
3 cr.

CS 380 Object-Oriented Programming

Prerequisite: CS 351 or some experience in the C language. Object-oriented programming is a new and important paradigm in programming. The course explores the powerful technique of object-oriented programming, using C++ as a supporting language, and compares C++ with other object-oriented languages including Eiffel and Smalltalk. Problems considered for solution come from a wide range of areas including application systems, databases, and artificial intelligence applications. Offered in alternate fall semesters.

3 cr.

CS 390 Special Topics in Computer Science

Prerequisite: CS 182 and junior standing or permission of the instructor. 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

1-3 cr.

CS 411 Operating Systems

Prerequisite: CS 283 or CIS 305 or CPE 350; or permission of the instructor. 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. Offered in the fall semester.

3 cr.

CS 412 Systems Administration Lab

Corequisite: CS 411. Students will gain experience performing standard system administrative tasks, such as installing system and applications software, installing new hardware, managing user accounts, backing up and restoring files systems, boot-up and shut-down, monitoring performance, and writing utility scripts at to automate procedures. Offered in the fall semester.

2 cr.

CS 480 Internship in Computer Science

See "Internships," on p. 32.

1-3 cr.

CS 490 Software Engineering

Prerequisite: CS 283 or CIS 305 or CPE 350 or equivalent, and junior or senior standing, or permission of instructor. This is a software engineering course studying principles, methods, and ethical aspects of software engineering and featuring a large-scale software engineering project. Offered in the spring semester.

3 cr.

CUL CULTURES PAST AND PRESENT

(School of Arts and Sciences)

(Elements of Culture "C" and "CA" requirements)

CUL 201-390 Cultures Past and Present

Cultures Past and Present is the generic title for a series of cultures courses dealing with cultural comparison.

Prerequisite: Sophomore standing. These courses focus on individuals in relation to all aspects of their total environment including geography, history, art, religion, literature, philosophy, social and economic systems, and political institutions. Strong emphasis is placed on the development of writing skills and logical thinking.

CUL 212 London through the Ages

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. This course is equivalent to HIST 212. Satisfies Elements of Culture requirement "CA."

3 cr.

CUL 235 The United States and International Perspectives

Prerequisite: ENGL 100 or equivalent. Open only to non-native speakers of English. Satisfies Elements of Culture requirement "CA."

3 cr.

CUL 241 Classical Greece

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 archeol-

ogy, considering myths, philosophy, and a way of life incorporating study, athletics, banquets and slavery. Satisfies Elements of Culture requirement "C."

3 cr.

CUL 246 Modern Israel

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."

3 cr.

CUL 247 Renaissance Florence and Revival Dublin

Prerequisite: Sophomore standing. This course surveys and compares the art, music, literature, and history of Florence during the Italian Renaissance and Dublin during the Irish Revival. Satisfies Elements of Culture requirement "CA."

3 cr.

CUL 248 Russia Then and Now

Prerequisite: Sophomore standing. Satisfies Elements of Culture requirement "C."

3 cr.

CUL 250 Latin American Civilization

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."

3 cr.

CUL 251 Justice Then and Now

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. Satisfies Elements of Culture requirement "C."

3 cr.

CUL 260 Japan

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 "C."

3 cr.

CUL 261 Australia and New Zealand

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 goldminers. Satisfies Elements of Culture requirement "CA."

3 cr.

CUL 262 Ancient Rome (Formerly "Rome under Caesar and Augustus")

Prerequisite: Sophomore standing. This course is designed to help us appreciate our classical heritage with respect to art and architecture, leisure and social priorities, musical and literary contributions, morals, manners, prejudices and folklore. Satisfies Elements of Culture requirement "CA."

3 cr.

CUL 263 France and French Caribbean Culture

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."

3 cr.

CUL 265 Weimar Germany

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."

3 cr.

CUL 266 Elizabethan England

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."

3 cr.

CUL 273 East Africa

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 comprises 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."

3 cr.

CUL 290 Special Topics in Cultures

Prerequisite: Sophomore standing. Topics that are not offered on a regular basis are examined. Recent topics have been Canada, Greece & Rome, 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 "CA."

3 cr.

CUL 310 Comparative Race Relations: U.S. and South Africa

Prerequisite: Sophomore standing, any one of the following: HIST 111, 112, 218, 219, 326, 354, 360, 361; SO 314; EC 316; ENGL 336. This course compares the experience of the United States and South Africa from the colonization by Europeans to the Civil Rights successes in the US 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 these individuals' activities constrained. Satisfies Elements of Culture requirement "C."

3 cr.

CUL 333-334 Independent Study in Cultures

Prerequisite: Sophomore standing. See "Independent Study" on p. 31.

CUL 390 Special Topics in Cultures

Prerequisite: Sophomore standing. Satisfies Elements of Culture requirement "C." Topics that are not offered on a regular basis. The course may be repeated for credit if the topic varies.

1-3 cr.

EC ECONOMICS

(School of Arts and Sciences)

EC 101 Introduction to Economic Issues

Not open to students who have completed EC 205. Does not satisfy 205 and 206 requirements in Schools of Business and Engineering. This is an exploratory, relatively nontechnical 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.

3 cr.

EC 105 The Economics of Crime

This course does not satisfy the economics requirement in the Schools 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.

3 cr.

EC 106 The Economics of Poverty and Discrimination

This course does not satisfy the economics requirement in the Schools 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.

3 cr.

EC 190 Special Topics in Economics

Topics in economics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

EC 205 Principles of Economics I

Not open to students who have taken EC 101. This course examines the basic principles of economics applied to current public problems. The focus is on macroeconomics. Topics include national income accounting, unemployment and inflation, money and banking, the issue of government deficits and the national debt, and international trade.

3 cr.

EC 206 Principles of Economics II

Prerequisite: EC 205 or EC 101. Not open to students who have taken EC 208. This course covers basic principles of economics with the focus on microeconomics. Topics include characteristics of the American private enterprise economy: markets, the price system and the allocation of resources; the distribution of income; problems of poverty, monopoly and the environment.

3 cr.

EC 208 Principles of Applied Microeconomics

Prerequisite: EC 205 or EC 101; MATH 133 or MATH 123. Not open to students who have taken EC 206. This is a complete and rigorous introduction to many of the basic principles of microeconomics. The course focuses on those topics of greatest interest and importance to managers. These topics include demand, production, cost, pricing, market structure, and government regulation. Some of the topics included in the course are not found in a more traditional, theory based introductory course. These topics include revenue maximization, break-even analysis, and constrained profit maximization.

3 cr.

EC 290 Special Topics in Economics

Topics in economics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

EC 305 Macroeconomics

Prerequisite: EC 206 or EC 208, and MATH 111 or equivalent. 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.

3 cr.

EC 306 Microeconomics

Prerequisite: EC 206 or EC 208, and MATH 111 or equivalent. 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.

3 cr.

EC 311 Money and Banking

Prerequisite: EC 206 or EC 208, and 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.

3 cr.

EC 316 American Economic History

Prerequisite: EC 205 or EC 101 or EC 106. 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.

3 cr.

EC 321 Economic Development

Prerequisite: EC 205 or EC 101. This is an analysis of the characteristics and causes of underdevelopment in poor nations and of programs designed to stimulate economic growth. Offered in alternate years.

3 cr.

EC 333-334 Independent Study in Economics

See "Independent Study" on p. 31.

1-3 cr.

EC 340 The Economics of Sports

Prerequisite: EC 206 or EC 101 or EC 105 or EC 208. 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.

3 cr.

EC 351 Economics and Government

Prerequisite: EC 206 or EC 208. 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.

3 cr.

EC 355 Public Finance

Prerequisite: EC 206 or EC 208. 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. Offered in alternate years.

3 cr.

EC 361 Urban Economics

Prerequisite: EC 206 or EC 208. This course is a study of the economic aspects of the social and political problems of the modern American city. Offered in alternate years.

3 cr.

EC 371 International Monetary Economics

Prerequisite: EC 101 or EC 205. 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.

3 cr.

EC 372 International Trade

Prerequisite: EC 206 or EC 208. 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. Offered in alternate years.

3 cr.

EC 374 Environmental Economics

Prerequisite: EC 205 or EC 101. 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. Offered in alternate years.
3 cr.

EC 386 Econometrics

Prerequisite: EC 206; MATH 112; QM 201 or MATH 207, 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.
3 cr. Laboratory fee \$25.

EC 390 Special Topics in Economics

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 "Labor Economics," "The Economics of Election Issues," "Women in the Economy," and "Great Ideas in Economics" May be repeated for credit if the topic differs.
1-3 cr.

EC 480-481 Internship in Economics

See "Internships" on p. 32.
1-3 cr.

EC 490 Seminar: Issues in Contemporary Economics

Prerequisite: EC 206 or EC 208 and six additional credit hours of 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.
3 cr.

ED EDUCATION**(School of Arts and Sciences)****ED 190 Special Topics in Education**

Topics in education that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.
1-3 cr.

ED 290 Special Topics in Education

Topics in education that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.
1-3 cr.

ED 301 Principles and Problems of Education

Prerequisite: Sophomore standing. This is an exploration of the issues confronting education at all levels. Topics include the goals of educational systems, school organization and control, moral education, students' and teachers' rights, school law, special education, drugs and substance abuse education, and problems and opportunities associated with diversity. Other topics may include collective bargaining, censorship, cooperative education, equity, sex education, and at-risk youth. Student performance is assessed by exams, written assignments and participation in class. Students intending to enter the Secondary Education Program are required to do appropriate field study.
3 cr.

ED 302 History of American Education

Prerequisite: Sophomore standing. This course is a study of the educational process, both formal and informal, in the United States from the 17th century to the present including coverage of the European antecedents.
3 cr.

ED 306 Multimedia Presentations

Prerequisite: Sophomore standing. This is a workshop course that treats the planning and production of materials of an instructional, informative, or message-bearing nature using various media techniques: television, motion pictures, slides, audiotapes, and computer technology. Many examples of commercial media presentations are analyzed. Presentations are evaluated by the class. The course is not limited to those planning careers in education, but is open to anyone who wishes background for making media presentations. Student performance is assessed by written assignments, exams and in-class presentations.
3 cr.

ED 333-334 Independent Study in Education

See "Independent Study" on p. 31.
1-3 cr.

ED 350 Teaching of Elementary Reading and Language Arts

Prerequisite: Sophomore standing and enrollment in Elementary Education Program, or permission of instructor. This course focuses on the teaching of children's reading, writing, and spelling 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 using 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. Student performance is assessed by exams, written assignments, lesson plan designs, microteaching, and a field work journal. Includes 25 hours of pre-practicum field work at a local elementary school.
3 cr.

ED 375 Elementary Curriculum and Method

Prerequisite: Sophomore standing, and 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. Students complete a pre-practicum fieldwork experience in a local elementary school. Student performance is assessed by exams, written assignments, lesson plan designs, microteaching, and a fieldwork journal.

Includes 25 hours of pre-practicum fieldwork at a local elementary school.
3 cr.

ED 380 Secondary Education Topics

Prerequisite: PSY 304, ED 301; and senior standing and acceptance into the Secondary Education Program. In this course an array of veteran teachers 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. The course is graded pass/fail, based on attendance and classroom participation.
1 cr.

ED 390 Special Topics in Education

Topics in education that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.
1-3 cr.

ED 403 Methods of Teaching in Secondary Schools

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 MA Comprehensive Assessment System 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.
3 cr.

ED 409 Practicum in Secondary Teaching

Prerequisite: ED 301; PSY 304; ED 403. 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 college faculty member, who is the program supervisor. Both will use the Massachusetts Professional Standards in their assessment. Open only to those students in the Secondary Education Program. This course and SW 412 may not both be counted toward the minimum 122 credit hours required for the degree.

9 cr.

ED 410 Secondary Practicum Seminar

Prerequisite: ED 301; PSY 304; ED 403; ED 409. 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, and classroom management and assessment. Students demonstrate skills as reflective practitioners of the teaching process. They are assessed by weekly classroom participation and a teaching journal that is handed in at the end of the semester.

3 cr.

ED 425 Elementary Education Topics

Prerequisite: Senior standing, acceptance in the Elementary Education Program, ED 301, PSY 211, PSY 304, ED 350, ED 375. This is an investigation of instructional strategies for teaching the arts, health, physical education, and technologies for grades 1-6, using the Massachusetts Curriculum Frameworks and Learning Standards. As a result of taking this course, students are able to identify curriculum models and instructional materials for these content areas, and 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 exams, written assignments, lesson plan designs, microteaching, 25 hours of pre-practicum fieldwork at a local elementary school, and a fieldwork journal.

3 cr.

ED 479 Elementary Teaching Practicum

Prerequisite: ED 301, PSY 211, PSY 304, ED 350, ED 375, ED 425 and senior standing, completion of all preliminary elementary education course work. This is a practicum in teaching under the supervision of quali-

fied 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 college faculty member, who is the program supervisor. Both will use the Massachusetts Professional Standards in their assessment. Open only to those students in the Elementary Education Program, 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-practicum fieldwork (student teaching) at a local elementary school.

9 cr.

ED 480 Elementary Practicum Seminar

Prerequisite: ED 301, PSY 211, PSY 304, ED 350, ED 375, ED 425 and senior standing, completion of all preliminary elementary education course work, 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, and classroom management and assessment. They demonstrate skills and reflective practitioners of the teaching process. Student performance is assessed by weekly classroom participation and a teaching journal that is handed in at the end of the practicum. Includes 300 hours of full practicum fieldwork (student teaching) at a local elementary school.

3 cr.

EE ELECTRICAL ENGINEERING

(School of Engineering)

EE 205 Linear Circuits I

Prerequisites: PHYS 134; MATH 134 or concurrently. The course is designed for both EE majors and non-majors. This course is the first of a sequence of two courses designed to give students basic analytical tools used in electrical engineering. Students analyze cir-

cuits containing resistors, op amps, and DC sources using Ohm's law, Kirchoff's laws, and several network theorems including Thevinin's theorem, Norton's theorem, and superposition. Students analyze simple circuits and use computer simulation to analyze more complex circuits. They learn to perform transient analysis of simple RL and RC circuits. Students also learn to accomplish AC steady-state analyses of simple linear circuits. In the laboratory, students become proficient in the use of simple electrical test equipment including digital multimeters and oscilloscopes. The methods of assessing student learning in this course are homework assignments, quizzes, tests, laboratory experiments, and written reports on experiments. Three class hours, three lab/tutorial hours.

4 cr.

EE 206 Linear Circuits II

Prerequisites: EE 205; MATH 236. This course builds on the knowledge gained and analytical skills developed in EE 205. Students learn to perform transient analysis on simple second order circuits. They also 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. 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, tests, laboratory experiments, and short reports on experiments. Three class hours, three lab/tutorial hours.

4 cr.

EE 301 Signals and Systems I

Prerequisites: MATH 236; EE 206 concurrently. 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.

3 cr.

EE 302 Signals and Systems II

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.

3 cr.

EE 303 Electronic Circuits I

Prerequisite: EE 206 or concurrently. This is the first course in modeling of electronic devices and analysis and design of electronic circuits. After successfully completing this course the students are familiar with the electrical characteristics of semiconductor material, know the electrical characteristics of the PN junction diode, know how to analyze single-diode circuits using graphical, numerical, and piecewise linear approximation methods, have an understanding of some of the techniques used in nonlinear analysis, know how to analyze multiple-diode circuits using piecewise linear diode models, know what a Zener diode is, are familiar with the Zener diode regulator cir-

cuit, are familiar with AC to DC converter and waveshaping circuits, know what a FET is and what its major electrical characteristics are, know how to design and analyze DC circuits containing FETs, know how to simulate circuits using FETs, know what a BJT is and what its major electrical characteristics are, know how to design and analyze DC circuits containing BJTs, know how to simulate circuits using BJTs, are familiar with MOS logic design of basic gates, and are familiar with CMOS logic design of basic gates. The methods of assessing student learning in this course are homework assignments, quizzes, design projects, classroom discussions, and a final exam.

3 cr.

EE 312 Semiconductor Devices

Prerequisite: CHEM 105 or equivalent, EE 206 or concurrently. This course introduces students to the physical principles underlying electronic, solid state technology. After completing this course, students understand issues involved in the design, fabrication, limitations and use of various semiconductor devices. The students learn how these devices operate in typical linear and nonlinear -circuit applications. The material in this course complements the electronics sequence of courses and draws illustrative examples of electronic circuit applications from other courses. The methods for assessing student learning in the course are homework assignments, quizzes, exams and a final design project with a formal presentation.

3 cr.

EE 314 Fields and Waves

Prerequisite: MATH 350 or concurrently. 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 student have a basic understanding of the mathematical tools used in modeling static or dynamic electromagnetic fields, the behavior of static or dynamic electromagnetic 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. Course material is presented under the assumption that students is familiar with the atomic theory of matter, the basic con-

cepts of vectors, and has a working knowledge of the fundamental principles of integral and differential calculus. To help students visualize and explore field phenomena and to improve mathematical skills in describing such phenomena, a graphics/mathematics software package such as MATHCAD is used. The methods of assessing student learning are weekly homework and quizzes plus several projects and a final comprehensive exam.

3 cr.

EE 319 Electrical Engineering Laboratory I

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. Three laboratory hours.

2 cr.

EE 320 Electronic Circuits II

Prerequisite: EE 303 and EE 301. This is a second course in modeling of electronic devices and analysis and design of electronic circuits. After successfully completing this course, students are familiar with the terminology, performance measures, and modeling schemes of amplifiers; are familiar with the terminology, performance measures and modeling schemes of the practical operational amplifier; know the small-signal modeling schemes (all three topologies) for transistors; know the single-stage amplifier types and their design applications (inverters, drivers, etc.); know how to design multistage transistor amplifiers (with emphasis on inter-stage coupling and loading problems); know what the hybrid-pi model of a transistor is and how to use it; know how to analyze amplifiers in the frequency domain; are familiar with the analysis and design of amplifiers with feedback; are familiar with oscillator performance criteria and circuit applications; and have an increased ability to analyze linear and nonlinear circuits. The

methods of assessing student learning in this course are homework assignments, quizzes, design projects, classroom discussions, and a final exam.

3 cr.

EE 322 Electrical Engineering Laboratory II

Prerequisite: EE 320 or concurrently. This course is the second of a sequence of three courses. The course builds on the skills developed in EE 319 and material learned in junior level courses. In this course students design and build electronic circuits with more than one device, determine parameters of device models, and use those for analysis and design of electronic circuits. The results of the laboratory work are reported to generate an engineering report. The assessment in this course is based on the quality of the work done in the laboratory and the report. Three laboratory hours.

2 cr.

EE 422 Control Systems

Prerequisite: MATH 350; EE 301 or ME 320. 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.

3 cr.

EE 423 Electronic Communications I

Prerequisite: EE 302, EE 320, and MATH 350 (or equivalents). This is a senior-level course in electronic (analog and digital) communication fundamentals (nonprobabilistic). 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.

3 cr.

EE 424 Electronic Communications II

Prerequisite: EE 423 (or equivalent). This is a senior-level, second-semester course in electronic (analog and digital) communication fundamentals (probabilistic). After successfully completing this course, students know how analog and digital signaling methods (PAM, PCM, AM, PM, and FM) are affected by noise; know how to model, analyze, and design a basic communication link in the presence of noise; know how to model, analyze, and design signals that minimize noise effects in the various signaling methods (including a revisit of the theories on information measure, signal types and their measure, encoding schemes, and Fourier analysis in the presence of noise).

3 cr.

EE 427 Electrical Engineering Laboratory III

Prerequisite: EE 322. 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 a basic fiber optic communication system; design, simulate, and test digital circuits using programmable logic devices; design and test a basic control system; and build and test an amplitude modulator. 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 report. Three laboratory hours.

2 cr.

EE 434 Electrical Power Engineering

Prerequisite: EE 314 and EE 301. This is an introductory level course in electrical energy conversion devices such as generators, motors, and transformers. Students, on successful completion of this course, understand the structure and components of an electrical power system and are able to calculate MMF, flux, and flux density in electromagnetic circuits as used in transformers and rotating electrical machines. Students develop good understanding of the causes of energy losses and are able to calculate these. They learn the need for power trans-

formation; the constructional features of a power transformer; how to use test data for developing circuit model; and how to calculate regulation and efficiency of transformers. They understand principles of energy conversion and are able to calculate force, torque, and mechanical power and its relationship to electrical voltage current and power in generators and motors. Methods of assessment include homework, quizzes, tests, and a short paper on one of the topics related to the course.

3 cr.

EE 437 Design Projects

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.

3 cr.

EE 439 Professional Awareness

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 resume, 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.

1 cr.

EE 440 Senior Design Projects

Prerequisites: EE 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 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.

3 cr.

EE 480 Internship in Electrical Engineering

See "Internships" on p. 32.

3 cr.

EE 490 Special Topics in Electrical Engineering

This is a study of an advanced topic in engineering of special interest to electrical engineering majors, but not offered on a regular basis.

3 cr.

EE 511 Random Signals and Noise

Prerequisite: EE 301; ENGR 212. This is a study of signals, both random and non-random. Topics include spectrum analysis, auto-correlation and cross-correlation functions, network analysis of systems with random signals and noise, applications to reception of radar, and space signals. A design project is required.

3 cr.

EE 520 Image Processing

Prerequisites: EE 301 and programming experience in MATLAB® or C/C++. This is an introductory course in image processing, which extends the theory of signals and systems to two dimensions. Students will study image representation, image sampling, image

transforms (e.g. 2-D FFTs), and histogram modeling, edge detection, shape analysis, texture analysis and recognition, and image enhancement. Lectures are supplemented by laboratory exercises.

3 cr.

EE 523 Communications

Prerequisite: EE 302, EE 320 and MATH 350. This is a graduate level 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, and a final exam.

3 cr.

EE 525 Linear Systems Theory

Prerequisite: MATH 350; 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.

3 cr.

EE 530 VLSI Design

Prerequisite: EE 312 or equivalent and EE 320 or equivalent. This is a graduate level course in

VLSI design fundamentals. After successfully completing this course, students are familiar with two suites of CAD tools (LEDIT, a layer editor, and ICAPS, a circuit simulator) used in VLSI design, are familiar with process technology (MOSIS 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 lay out 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, and a final exam.

3 cr.

EE 532 Introduction to Robotics

Prerequisites: MATH 350 or MATH 306. This is an introductory course in robotic manipulation. It covers: the history and application of robots, spatial descriptions and transformations of objects in three-dimensional space, forward and inverse manipulator kinematics and dynamics, task and trajectory planning. Students will use simulation and off-line programming to enhance their understanding of robotic manipulation.

3 cr.

EE 535 Fuzzy Logic

Prerequisite: Senior or graduate 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.

3 cr.

EE 545 Neural Networks

Prerequisite: Senior or graduate standing. 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 acti-

vation 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.

3 cr.

EE 548 Introduction to Electro-Optics

Prerequisite: MATH 350; 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, photodetectors, 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.

3 cr.

EE 550 Power Transmission

Prerequisite: EE 434 or concurrently. Students learn theoretical foundation for power transmission. They also learn electrical characteristics and analysis of aerial transmission lines, current and voltage relationships, generalized circuit constants, circle diagrams, load flow analysis and fault analysis in symmetrical and unsymmetrical conditions, system stability, and economic operation of systems. They also learn the basis of fault detection mechanism. The methods of assessing

student learning in this course is homework assignments, quizzes, classroom discussions and a final exam.

3 cr.

EE 567 Solid-state Electronic Devices

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.

3 cr.

EE 570 Computer-Controlled Systems

Prerequisite: EE 302 and MATH 350. 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.

3 cr.

EE 580 Signal Processing

Prerequisites: EE 302 and MATH 350 or equivalent. 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, discrete Hilbert transforms, and effects of finite register length. Classroom lectures are supplemented with implementation exercises using MATLAB®.

3 cr.

EE 590 Special Topics in Electrical Engineering

This is a study of an advanced topic in engineering of special interest to electrical engineering majors, but not offered on a regular basis.

3 cr.

ENGL ENGLISH

(School of Arts and Sciences)

Writing Requirements

English 100-level courses are open only to those students who have not completed their general College requirement of two courses in English writing with grades of "C" or better. A \$25 laboratory fee is charged for 100-level English courses.

The number of semesters of 100-level English required of each student depends upon the student's preparation at entrance and subsequent progress in achieving a level of competence adequate for the student's success in college writing assignments. Entering freshmen and transfer students are tested and placed at the level appropriate to their writing skills. Entering transfer students who have credit in freshman English, but who do not demonstrate writing competence, may be required to take further courses in English

writing. The general College requirement of a "C" or better in at least two English writing courses is satisfied by receiving a "C" in ENGL 131, ENGL 132, or ENGL 14x, and in ENGL 133, ENGL 15x, or HON 102. Students who do not receive at least a "C" or better in each of the introductory courses will be required to take further courses in English writing. Students should take these courses in the freshman year.

Most entering freshmen take ENGL 132 English Composition I: College Reading and Writing, a standard course in essay reading and expository writing. A limited number who demonstrate writing competence may, with the approval of the Director of the Writing and Reading Program, take ENGL 14x Tutorial in English Composition concurrently with enrollment in a Cultures Past and Present course. Entering freshmen who demonstrate deficiency in basic writing skills are recommended for ENGL 130-131 or ENGL 132 with a concurrent lab in writing fundamentals, LA 150. Students placed in ENGL 130-131 may have to take additional credits to fulfill graduation requirements in some programs. Students with exceptionally good writing skills may satisfy their general college requirement by taking ENGL 133 and an upper level literature course.

Following successful completion of the introductory course, most students take ENGL 133 English Composition II: Introduction to Literature, an English course that includes a significant writing component. Students demonstrating exceptional ability in ENGL 132 may, with the permission of the Director of the Writing and Reading Program and the approval of the Dean of the School of Arts and Sciences, take an alternative literature elective if provided for in the curriculum of their respective schools. Satisfactory completion of this course fulfills the English writing requirement for these students.

Entering international students or students for whom English is not a first language are placed according to their skill level. Students who are at an intermediate level register for ENGL 100 English as a Second Language. They may be required to complete additional credits of English as a second language if they do not demonstrate competence in understanding and writing English. Students who demonstrate competence are placed in ENGL 132 or ENGL 133 with an accompany-

ing support lab, LA 250 or LA 251. Students with exceptional skill are placed in a standard section of ENGL 132 or ENGL 133.

ENGL 100-101 English As A Second Language I and II

This is designed for international students at an intermediate level in their use of English. The courses introduce students to college level writing while developing their fluency in the use of the basic elements of written English. The work is adapted to individual needs. May be repeated for credit. Credit for ENGL 100 may not be counted toward fulfillment of the freshman English requirement. *3 cr. Laboratory fee \$25.*

ENGL 130 English Composition IA: College Reading and Writing A

This is the first of a two-semester reading and composition sequence designed for students needing a review of English fundamentals. Topics include sentence structure, paragraph organization, fundamentals of grammar, writing papers using sources, the writing of expository essays supporting a thesis, and strategies for 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. Taught concurrently with LA 175. *3 cr. Laboratory fee \$25.*

ENGL 131 English Composition IB: College Reading and Writing B

Prerequisite: ENGL 130 or permission of the instructor. This is a continuation of ENGL 130. Further work is done in sentence and paragraph development, paper construction, grammar, and critical reading. Traditional modes of expository discourse are taught. Taught concurrently with LA 176. Successful completion will satisfy one general college requirement of a "C" in a 100 level English course. *3 cr. Laboratory fee \$25.*

ENGL 132 English Composition I: College Reading and Writing

This is a standard course in the techniques of essay reading and academic writing. The purposes of the course are to develop skill in reading prose non-fiction 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 are discovered to have marked deficiency in grammar, mechanics, and usage take a concurrent lab in writing fundamentals, LA 150, to raise them to a level of competence adequate to complete this course successfully. Not open to students who have completed an ENGL 140-level course. *3 cr. Laboratory fee \$25.*

ENGL 133 English Composition II: Introduction to Literature

Prerequisite: A "C" in ENGL 131, 132 or ENGL 140-level, or the equivalent. This is an introduction to the analytic reading of literature including fiction, drama, and poetry with a strong emphasis on writing. Not open to students who have completed an ENGL 150-level course. Some sections are taught concurrently with LA 151. *3 cr. Laboratory fee \$25.*

ENGL 138 Writers' Workshop

Students who have taken two 100 level English courses and have received less than a "C" in one of them may opt to take an additional course rather than retaking the course. The coursework covers major concepts taught in ENGL 132 and ENGL 133, taught from a different perspective. *3 cr. Laboratory fee \$25.*

ENGL 139 Writing for Special Purposes

Prerequisite: a "C-" in a 100 level ENGL course. 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 College Requirement of a "C" in a 100 level English course. May be taken more than once. *1 cr. Laboratory fee \$25.*

ENGL 140-149 Tutorial in English Composition

Occasionally these courses are offered for freshmen enrolled in Cultures Past and Present during the fall semester. The reading and writing assignments are coordinated with the assignments in the Cultures course. The course covers the emphases of the standard ENGL 132 course. *3 cr. Laboratory fee \$25.*

ENGL 150-159 Readings in Cultures Past and Present

Prerequisite: ENGL 132 or the equivalent. Occasionally these courses are offered for students enrolled in Cultures Past and Present during the spring semester. They provide experience in reading, analyzing, and discussing literature. Texts assigned in Cultures Past and Present, with the addition of substantial readings chosen for this English course, are studied in lectures, class discussions, and writing assignments. The emphases of the standard ENGL 133 course are covered.

3 cr. Laboratory fee \$25.

ENGL 180 Oral Communication for Non-native Speakers.

This course is a one-credit course that will address communication issues that non-native speakers face when speaking English. These issues will be addressed by student-centered activities that enhance pronunciation, grammar, and fluency of the students when they communicate. The course will also focus on developing skills that are essential in an academic environment: listening skills, discussion skills, presentation skills, and intercultural communication skills. In addition, the class will seek to enhance communicative competence with relevant communicative activities such as role play, group problem solving, and discussion of meaningful issues.

1 cr.

ENGL 201 Literacy and Language Skills

Prerequisite: For students recommended by the Western New England College Education Department. The course is a review of the material covered on the Literacy and Communication test administered by the Massachusetts Department of Education as part of the teacher certification process. The course usually meets twice weekly in the seven weeks prior to the spring sitting of the state test. One day is devoted to a review of the Reading Sub-test, one day to the Writing Sub-test.

1 cr.

ENGL 212 Literary Criticism

Prerequisite: Two courses in English writing with grades of "C" or better. This course is a comprehensive study of the major schools of literary criticism in which students write a series of analytical papers applying the approaches of the various schools to literary texts. This work will help the students both to learn more about the critical schools and to

increase their analytical skills. Designed primarily for English majors. This course satisfies the Humanities Literature requirement for Arts and Sciences students.

3 cr.

ENGL 214 World Literature I

Prerequisite: Sophomore standing, two courses in English writing with grades of "C" or better. Students read selections from the time of Homer to approximately 1800. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 215 World Literature II

Prerequisite: Sophomore standing, 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 231 British Literature I

Prerequisite: Sophomore standing, 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 the Area I literature requirement for Arts and Sciences students.

3 cr.

ENGL 232 British Literature II

Prerequisite: Sophomore standing, 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 251 American Literature I

Prerequisite: Sophomore standing, 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 252 American Literature II

Prerequisite: Sophomore standing, two courses in English writing with grades of "C" or better. This is a study of American literature 1860- the present. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 253 Love, Death, and Power in Twentieth Century Spanish American Literature (in English translation)

Prerequisite: Sophomore standing, two courses in English writing with grades of "C" or better. This is a study of twentieth century Spanish American works (in English translation) for the purpose of analyzing the treatment of the themes of love, death, and power. By focusing upon these universal themes, students gain insights into the cultural uniqueness of the Spanish American vision. The works examined represent three different literary genres: short story, poetry, and novel. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 255 Gay and Lesbian Literature

Prerequisites: Sophomore standing, two courses in English writing with grades of "C" or better. This course will explore examples of twentieth century gay and some lesbian literature and how this literature evokes our responses to the humanity of its protagonists. We will focus on issues of divergence as they are fleshed out through literary expression. In our focus on gay-lesbian narratives, we will pay special attention to the depiction of individuals whose daily lives and self-identities are inextricably interwoven into the contexts of their families and society. These narratives convey to the reader the de facto societal and familial definitions of gay-lesbian individuals as divergent and frequently as perversely antagonistic to society's norms. This course satisfies the Humanities literature requirements for Arts and Sciences students.

3 cr.

ENGL 260 Literary Horizons

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.

3 cr.

ENGL 290-299 Special Topics in English

Prerequisite: Two courses in English writing with grades of "C" or better. Topics in English that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies. 3 credit literature courses satisfy the Humanities Literature Requirement for Arts and Sciences students.

1-3 cr.

ENGL 310 Modern Drama

Prerequisite: Sophomore standing, two courses in English writing with grades of "C" or better. This is a study of nineteenth and twentieth century drama including dramatists such as Ibsen, Chekhov, Shaw, Strindberg, Sartre, Beckett, Ionesco, Brecht, Pirandello, Williams, Albee, Garcia Lorca, and Genet. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 311 The English Language

Prerequisite: Junior standing, two courses in English writing with grades of "C" or better. This is an overview of the structure and history of the English language, and of its variation in different speech communities.

3 cr.

ENGL 312 Chaucer and His Age

Prerequisite: Junior standing or permission of instructor, two courses in English writing with grades of "C" or better. 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 fourteenth century, and the oral presentation of Chaucer's verse rather than a linguistic analysis of Middle English. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 313 African-American Literature I

Prerequisite: Sophomore standing, 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 Phyllis Wheatley, Sojourner Truth, Frederick Douglas, Nat

Turner and others. This course satisfies the Humanities Literature for Arts and Sciences students.

3 cr.

ENGL 314 Shakespeare: Plays and Poems

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 315 Shakespeare: The Tragedies

Prerequisite: Sophomore standing, 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 316 Shakespeare: The Comedies and Histories

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This course consists of intensive reading and discussion of Shakespeare’s major comedies and history plays. It satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 318 African-American Literature II

Prerequisite: Sophomore standing, 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, speeches. The cultural context of literary periods will be explored. The course will cover such authors as Booker T. Washington, W.E.B. DuBois, Langston Hughes, Countee Cullen, Gwendolyn Brooks, Zora Neale Hurston, Ralph Ellison, Richard Wright, Maya Angelou, James Baldwin, Toni Morrison, Malcolm X and Martin Luther King, Jr. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 319 Early 17th Century Prose and Poetry

Prerequisite: Junior standing or permission of instructor, two courses in English writing with grades of “C” or better. This is a study of non-dramatic 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 324 Memoirs: Signatures of The Self

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. The course explores the imaginative and diverse expressions of men and women—in the past and in the present—who have used the memoir as a vehicle, not for self-indulgent narratives but for rigorous soul-searching and honest self-examination. Most of the memoirists studied have led exceptional lives of personal or public import, and their narratives often record difficult struggles and triumphs over great odds. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 327 Literature and Culture in England, 1780-1832

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. 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 Edmund Burke, Mary Wollstoncraft, Anna Barbauld, William Wordsworth, Samuel Taylor Coleridge, Jane Austen, John Keats, and Percy Shelly. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 328 Literature and Culture in England, 1832-1890

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This is a continued study of the significant attitudes and problems of the nineteenth 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 the

Humanities literature requirements for Arts and Sciences students.

3 cr.

ENGL 329 Readings in 20th Century British Literature

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. 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 the Area I Literature requirement for Arts and Sciences students.

3 cr.

ENGL 333-334 Independent Study in English

Prerequisite: Two courses in English writing with grades of “C” or better. See “Independent Study” on p. 31.

1-3 cr.

ENGL 335 Images of Business in Literature

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This is a study of selections from British and American literature (principally short stories and plays) to understand the views that literature offers of men and women in the world of work; ways that business influences our lives, liberties, and pursuits of happiness; and the ethical issues of individual, social, and corporate responsibilities. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 336 Ethnic American Literature

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This is a critical study of the literature from American under-represented writers: Black, Native, Hispanic, Asian, and Jewish Americans. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 337 Creative Writing

Prerequisite: Sophomore standing, 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. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 339 Children’s Literature

Prerequisite: Two courses in English writing with grades of “C” or better, 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 341 Caribbean Writers

Prerequisites: Two courses in English writing with grades of “C” or better. Sophomore standing. 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 the Humanities literature requirement.

3 cr.

ENGL 343 Literature of Africa and the African Diaspora

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 344 Expository Writing

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This is a course designed for students who wish to improve their ability to write clearly and accurately. Emphasis is on a vari-

ety of techniques for effective writing. The course is open to students from all majors. May be repeated once for credit.

3 cr.

ENGL 345 Major African-American Writers

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This course will concentrate on African-American writers as Richard Wright, Ralph Ellison, Toni Morrison, Toni Cade 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 353 Twentieth Century Poetry

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 355 The Development of The Novel

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This course is a critical examination of the novel as an art form, from its origins to the twentieth century. Emphasis is on major writers of the nineteenth and twentieth 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.

3 cr.

ENGL 357 Twentieth Century American Literature

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. This is a critical survey of twentieth century American fiction, poetry, and drama. Emphasis is on major writers such as Pound, Eliot, Frost, Stevens, Roethke, Lowell, Fitzgerald, Hemingway, Steinbeck, Faulkner, Cather, Morrison, and Miller. This course satisfies the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 358 Women in Literature

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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 390, 399 Special Topics in English

Prerequisite: Sophomore standing, two courses in English writing with grades of “C” or better. Topics offered depend upon student interests as well as particular interests of instructors. This course may be repeated for credit if topic differs. 3 credit literature courses satisfy the Humanities literature requirement for Arts and Sciences students.

1-3 cr.

ENGL 410 English Seminar

Prerequisite: Senior standing, 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.

3 cr.

ENGL 411 Major Authors

Prerequisite: Two courses in English writing with grades of “C” or better. 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 the Humanities literature requirement for Arts and Sciences students.

3 cr.

ENGL 480-481 Internship in English

Prerequisite: Two courses in English writing with grades of “C” or better. See “Internships,” on p. 32.

1-3 cr.

ENGR ENGINEERING

(School of Engineering)

ENGR 102 First Year Engineering Seminar

Prerequisite: Freshman status in engineering. This is a course designed to introduce first-year engineering students both to the engineering profession and to the practice of engineering. It enables students to further develop academic and life management skills and to learn how to use College resources. Students will be assessed through performance on homework, written reports, and by participation in course activities.

1 cr.

ENGR 103 Introduction to Engineering

Prerequisite: Freshman status in engineering and basic level computer literacy. This course is designed to introduce first-year engineering students both 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, team work, oral presentation skills, and effective writing. Student are assessed through performance on projects, exams, quizzes, homework, written reports, and oral presentations.

4 cr.

ENGR 105 Computer Program Design (Formerly "Computer Aided Algorithm Design")

Prerequisite: Freshman status in engineering. This is an introductory course in the design of software solutions to engineering and scientific problems using the C programming language. 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 in a structured programming language. Students learn a variety of software design techniques including divide and conquer, top down design, and bottom up design. They develop skills in logic, algorithm design, 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, short and long term programming, assignments, and exams.

3 cr.

ENGR 110 Engineering Problem Solving

Prerequisite: Freshman status in engineering and basic level computer literacy. This course presents methods of solving engineering problems using computer tools. These tools include, but are not limited to, spreadsheets and mathematical packages used by practicing engineers. The focus of the course is on problem-solving methods (from problem identification to modeling to finding a solution) in a 'hands-on' environment.

2 cr.

ENGR 206 Engineering Mechanics

Prerequisites: PHYS 133; MATH 134 or concurrently. This entry-level course is offered to engineering students outside the mechanical engineering discipline and is designed to teach problem solving techniques 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. Students will have the ability to draw free body diagrams and apply the principles of static equilibrium both to particles and bodies, and to analyze problems involving friction. Students will determine the centroids of lines, areas and volumes using calculus and composite section methods. Additionally, students will learn particle kinematics; 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. The methods of evaluating students include homework assignments, quizzes, examinations, and a final exam. This course may not be taken for credit by Mechanical Engineering majors.

3 cr.

ENGR 208 Foundations of Electrical Engineering

Prerequisite: PHYS 134. Corequisite: Math 134. Students will learn to analyze DC circuits using sources and resistors. Students

will also learn to analyze and design op amp circuits used in instrumentation applications. Students will learn the basics of piecewise linear analysis by studying diode circuits, including rectifiers. Students will be able to mathematically describe AC steady state signals, and will be able to analyze AC circuits containing resistors, capacitors, and inductors. Students will understand the concepts of basic motors. Students will learn to analyze and test Combinational Logic Circuits. This course cannot be taken for credit by Electrical Engineering majors. Three class hours, three lab/tutorial hours.

4 cr.

ENGR 212 Probability and Statistics

Prerequisite: MATH 134; ENGR 110. 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.

3 cr.

ENGR 333 Independent Study in Engineering

See "Independent Study" on p. 31.

1-3 cr. per semester

ENGR 480-481 Internship in Engineering

See "Internships" on p. 32.

3 cr.

ENVS ENVIRONMENTAL SCIENCE

(School of Arts and Sciences)

ENVS 290 Special Topics in Environmental Science

Topics in environmental science that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

ENVS 300 Legal Aspects of the Environment

Prerequisite: Junior standing and ENVS 200. The purpose of the course is to educate students in the laws for the protection of environmental quality. They learn to understand the role of the Environmental Protection Agency as well as relevant environmental laws including the National Environmental

Policy Act, Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act, and Wildlife Law. The difficulties of controlling environmental quality through the legal system are discussed. Offered in alternate years.

3 cr.

ENVS 301 Waste Management

Prerequisite: Junior standing and ENVS 200. 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.

3 cr.

ENVS 302 Toxicology

Prerequisite: Junior standing; ENVS 200; BIO 107-108; CHEM 210-220 or permission. This course provides understanding of the effects of chemical and physical agents, including environmental contaminants, on living systems. By combining the basic elements of biology, chemistry, and molecular biology, the relationships between chemicals and disease states are identified. Students learn risk assessment, the methods for determination of harmful effects, and safe handling/storage/disposal of chemicals. Offered in alternate years.

3 cr.

ENVS 333 Independent Study in Environmental Science

Prerequisite: Junior standing and ENVS 200. See "Independent Study" on p. 31.

1-3 cr.

ENVS 390 Special Topics in Environmental Science

Prerequisite: Junior standing and ENVS 200. This is a study of an advanced topic in environmental science.

3 cr.

ENVS 480 Internship in Environmental Science

See "Internships" on p. 32.

3 cr.

FILM

(School of Arts and Sciences)

(All FILM courses satisfy Aesthetic Perspective Requirements)

FILM 203 The Art of Film (Formerly ART 203)

Prerequisite: Sophomore standing, two courses in English writing with grades of "C" or better. Cinematography as a world-wide cultural movement of the twentieth century is studied. Works from different countries are studied to illustrate the historical development of the art of the film.

3 cr.

FILM 290 Special Topics in Film

Topics in film that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

FILM 301 Criminals, Cops, and Private Eyes

Prerequisite: Sophomore standing. Chronological and analytical viewing of the recurring themes and motifs that define a film genre and reflect America's evolving moral and psychic fascination with crime from 1930 to the present day.

3 cr.

FILM 302 The Haunted Screen

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.

3 cr.

FILM 310 Mass Media in Film

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.

3 cr.

FILM 320 Introduction to Cinema Production

Prerequisites: 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.

3 cr.

FILM 321 Introduction to Screenwriting

Prerequisites: Two English writing courses with a grade of "C" or higher. An introduction to writing for the screen. Topics include 3-act structure characterization, dialogue, theme, and pitching.

3 cr.

FILM 390 Special Topics in Film

Topics in film that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

FIN FINANCE

(School of Business)

FIN 214 Introduction to Finance

Prerequisite: MATH 111, 112 or 115, 116, or 123, 124. 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.

3 cr.

FIN 312 Financial Markets and Institutions

Prerequisite: FIN 214, EC 205 and 206. 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.

3 cr.

FIN 317 Investments

Prerequisite: FIN 312. 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 measure and manage risk and return as it applies to equity securities and their derivatives through modern portfolio diversification techniques.

3 cr.

FIN 318 Security Analysis

Prerequisite: FIN 317. 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.

3 cr.

FIN 320 Intermediate Corporation Finance

Prerequisite: FIN 214. This course provides the student with an understanding of finance theory and a working knowledge of the 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.

3 cr.

FIN 322 International Finance

Prerequisite: FIN 214, EC 205, EC 206. This is a study of the international dimensions of financial management. Key outcomes a knowledge of include 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.

3 cr.

FIN 333 Independent Study in Finance

See "Independent Study" on p. 31.

3 cr.

FIN 340 Introduction to Financial Planning

Prerequisites: EC 205, AC 201, QM 201, FIN 214. Financial planning requires integrating different kinds of financial information and understanding the consequences of these decisions. Key outcomes of this course are an ability to identify and integrate the principles and techniques of budgeting and accounting, insurance, investments, loans, estate planning and related topics as they would be approached by a CFP (Certified Financial Planner).

3 cr.

FIN 390 Special Topics in Finance

This is a study of advanced topics in finance of special interest to finance majors but not offered on a regular basis.

1-3 cr.

FIN 420 Advanced Corporation Finance

Prerequisite: 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.

3 cr.

FIN 480-481 Internship in Finance

See "Internships" on page 32.

3 cr.

FR FRENCH

(School of Arts and Sciences)

FR 101 Elementary French I

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.

3 cr.

FR 102 Elementary French II

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.

3 cr.

FR 190 Special Topics in French

Topics in French that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

FR 203 Intermediate French I

Prerequisite: FR 102 or the equivalent. This is a continuation of French in Action. Digital audio program on CD-ROM used. Offered every fall.

3 cr.

FR 204 Intermediate French II

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.

3 cr.

FR 290 Special Topics in French

Topics in French that are not offered on a regular basis are studied. The course may be repeated for credit if the topic varies.

1-3 cr.

FR 333-334 Independent Study in French
See "Independent Study" on p. 31.

1-3 cr.

FR 390 Special Topics in French

Topics in French that are not offered on a regular basis are studied. The course may be repeated for credit if the topic varies.

1-3 cr.

GEOG GEOGRAPHY

(School of Arts and Sciences)

GEOG 101 World Geography

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.

3 cr.

GEOG 110 Geography of United States and Canada

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.

3 cr.

GEOLOGEOLOGY

(School of Arts and Sciences)

GEOLOG 101 Physical Geology

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.

3 cr. Laboratory fee \$50.

GEOLOG 102 Historical Geology

Prerequisite: GEOLOG 101. This is a study of the origin and development of the Earth through the processes that have been at work upon its surface and its interior. Included are inter-

pretation of the rock record and trends of development as revealed by fossils. Two class hours, three-hour lab or field trip.

3 cr. Laboratory fee \$50.

GEOLOG 190 Special Topics in Geology

1-4 cr.

HIST HISTORY

(School of Arts and Sciences)

HIST 105 World Civilization I

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.

3 cr.

HIST 106 World Civilization II

This course is a survey of world history from 1500 to the present. Major themes explored include the rise to dominance of Western society, colonialism, industrialism, decline of colonial empires, and the rise of new states in the Third World.

3 cr.

HIST 111 United States History to 1877

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.

3 cr.

HIST 112 United States History, 1878 to the Present

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.

3 cr.

HIST 190 Special Topics in History

Topics in history that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

HIST 212 London through the ages

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. (This course is cross listed as CUL 212.)

3 cr.

HIST 290 Special Topics in History

Topics in history that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

HIST 307 Romans and Barbarians: Late Antiquity and the Early Middle Ages, AD 285-843

Prerequisite: Sophomore standing. This is a survey of culture and society from the Golden Age of Rome through the Germanic invasions to the Carolingian Renaissance, with an emphasis on the interpretation of surviving evidence (archeology, literature, laws, etc.)

3 cr.

HIST 309 Knights, Monks, and Peasants: The High Middle Ages, AD 843-1348

Prerequisite: Sophomore standing. This is a survey of medieval culture and society in which students examine a wide variety of surviving evidence (poetry, architecture, memoirs, etc.) with the goal of better understanding how medieval people lived, worked, and thought.

3 cr.

HIST 312 Merchants and Princes: The Late Middle Ages and Renaissance, AD 1350-1650

Prerequisite: Sophomore standing. This is a survey of the transition from medieval to early modern society that began with the Black Death and culminated in the Italian Renaissance. We will study a wide range of surviving sources (paintings, literature, diaries, etc.) in order to better understand the culture and society of the crucial period.

3 cr.

HIST 320 The Twentieth Century World

Prerequisite: Sophomore 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.

3 cr.

HIST 326 Sugar, Slaves, and Cloth: The Rise of Atlantic Society: 1500-1900

Prerequisite: Sophomore standing. This is an exploration of the rise of the plantation complex in the Americas. The course discusses the growing social, economic, and political connections among Africa, the Americas, and Europe.

3 cr.

HIST 332 The History of Russia

Prerequisite: Sophomore standing. This course consists of brief reviews of the earliest Indo-European settlements followed by study through the Kievan 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.

3 cr.

HIST 333-334 Independent Study in History

See "Independent Study" on p. 31.

1-3 cr.

HIST 341 History of Modern Germany: 1848 to the Present

Prerequisite: Sophomore standing. This is a systematic examination of constitutional, economic, social, cultural, and political issues at work as Germany moved from a collection of monarchies to empire, to republic, to dictatorship, and back to republic again. German contributions to music, literature, art, and philosophy are examined in their social and political contexts.

3 cr.

HIST 345 World War II

Prerequisite: Sophomore standing. This is an approach to this world conflict from the perspective of total war and its impact on modern history. Topics include the politics and diplomacy leading to the war, the military conflict, and the human and material costs.

3 cr.

HIST 348 Women and Gender in Europe Since 1700

Prerequisite: Sophomore standing. This course examines the history of women in Europe from the eighteenth century to the immediate post-World War Two 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.

3 cr.

HIST 351 The American Revolution 1765-1789

Prerequisite: Sophomore 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.

3 cr.

HIST 354 Civil War and Reconstruction

Prerequisite: Sophomore standing. 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.
3 cr.

HIST 357 New York City

Prerequisite: Sophomore standing. This course examines 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 twenty-first century. The story of how the city came to occupy this position is central to the history of America and the modern world. 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.
3 cr.

HIST 358 History of The United States Since 1945

Prerequisite: Sophomore 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.
3 cr.

HIST 359 The United States in Vietnam

Prerequisite: Sophomore standing. 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.
3 cr.

HIST 360 The History of Precolonial Africa

Prerequisite: Sophomore standing. 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 transatlantic slave trade, and the prelude to colonialism.
3 cr.

HIST 361 Africa in the Twentieth Century

Prerequisite: Sophomore standing. This is an examination of the origins of colonialism and the conquest in Africa. The development of the colonial society and economy is explored on a regional basis. The course ends with the rise of new independent African states.
3 cr.

HIST 365 The Rise of Islam and the Caliphates: 500-1500

Prerequisite: Sophomore 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.
3 cr.

HIST 375 History of Modern East Asia

Prerequisite: Sophomore 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.
3 cr.

HIST 380 The Development of Modern Medicine

Prerequisite: Sophomore standing. This course traces the late 18th century to the present in three inter-related themes: the intellectual history of our current system of medicine, the social history of the medical profession, and changing patterns of health and disease.
3 cr.

HIST 390-394 Special Topics in History

Prerequisite: Sophomore standing. Topics of this course vary from year to year depending on faculty and student interests. This course may be repeated if topic differs.
3 cr.

HIST 480-481 Internship in History

See “Internships,” on p. 32.
1-3 cr.

HIST 490 Junior Seminar in History: Evidence, Analysis, and Meaning: An Introduction to Historical Methods

Prerequisite: Nine credit hours of history and junior standing or permission of the instructor. This seminar introduces the methodological, theoretical, and practical questions involved in the writing of history. Readings will explore several “big questions” of history as expressed in the work of some of the most creative practitioners (past and present) of the discipline.

3 cr.

HIST 492: Senior Seminar in History

Prerequisite: HIST 490. A study of past and present methods of historiography and writing on an in-depth topic of a particular phase of history in which students undertake research on a related topic of their choice. This course may be repeated if the topic differs, but also serves as the capstone course for most history majors.

4 cr.

HIST 495-496 Senior Thesis

Prerequisite: Fifteen credit hours of history, senior standing, and permission of instructor. This two-course sequence represents the capstone course of the history major. Senior students select a topic in the first semester and carry out supervised research. In the second semester, students write up their projects under a faculty member's direction and defend the final project before the history faculty.

2 cr. each

HON HONORS

HON 102 Cities and Societies

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. It is crucial to keep in mind that no city or civilization has a single, monolithic culture, but is instead a composite of different 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 college history requirement.

3 cr.

HON 103 Ideas and Cultures

Prerequisites: Acceptance into the Honors Program; a “C” in ENGL 132 or equivalent. This course examines selected literary and philosophic texts from various periods of Western history. The emphasis is less on the historical context than on the literary and philosophic dimensions of the works, introducing the students to various views of human nature with their psychological, moral, and political implications. The course also satisfies the requirement of a second semester of college writing, substituting for ENGL 133, English Composition: Introduction to Literature. As such, it includes fiction, drama, and poetry with a strong emphasis on writing.

3 cr.

HON 120 What is Mathematics? An Invitation to Effective Thinking

Prerequisite: Acceptance into the Honors Program. Most people do not have an accurate picture of mathematics. For many mathematics is the torture of tests, homework, and problems, problems, problems. Well, toss that notion into the trash! In this course you will discover what mathematics really is and you will hopefully become a fan. Even more important, you will experience intriguing lessons for thinking that can change your life. Along this journey not only will you have fun, but you will also satisfy half of the college's core requirement in mathematics.

3 cr.

HON 133 Love, Blood, and Power: Literature of the English Renaissance

Prerequisites: Acceptance into the Honors Program; a “C” in ENGL 132 or equivalent. This course takes students beyond the plays of Shakespeare to explore the great achievements in prose and in dramatic, lyric, and narrative poetry of the English Renaissance. Readings also include non-literary works that provide cultural and historical contexts for the literature read. The course also satisfies the second semester writing requirement, substituting for ENGL 133 (English Composition II: Introduction to Literature). As such, it includes fiction, drama, and poetry with a strong emphasis on writing.

3 cr.

HON 201 Technology and Society

Prerequisite: Acceptance into the Honors Program. 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. This course satisfies the general college wide history requirement. (Not open to students who have taken HON 102.)

3 cr.

HON 220 Foundations and Central Ideas of the Natural Sciences

Prerequisite: Acceptance into the Honors Program, and one natural science course with a laboratory. This course examines the nature of the universe from the standpoint of the natural sciences. It begins with an introduction to the approach used by the natural sciences to study the universe, the scientific method. Five major ideas in the natural sciences: the structure of the atom (physics), the periodic table (chemistry), the big bang theory of the origin of the universe (astronomy), plate tectonics (geology), the structure of DNA (biology), and evolution (biology) are then examined in the context of their historical development and the scientific method. Once these have been discussed, the natural sciences will be contrasted with other fields of human endeavor, comparing the methods used by each with the scientific method. Finally, complex questions from the real world of applied fields will be analyzed and the method of benefit/risk analysis will be introduced. This course satisfies the lab science requirement.

3 cr.

HON 240 Russian Culture and Civilization

Prerequisite: Acceptance into the Honors Program. What is Russia? Winston Churchill answered this question with his now famous characterization of Russia as “a riddle wrapped in a mystery inside an enigma.” Others have been more specific in answering this question. The purpose of this course is to evaluate some of these answers after examining key themes in Russia’s literature, visual and performing arts, religion and philosophy, and history and politics. This course satisfies the cultures requirement.

3 cr.

HON 290 Special Topics in Honors

Prerequisite: Acceptance into the Honors Program. Topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

HON 293 Honors Differential Equations

Prerequisite: MATH 235 and acceptance into the Honors Program. This is an honors level course in the theory and applications of differential equations. Although the standard techniques for solving first and order equations are presented, they are explored in depth, both quantitatively and qualitatively, and with computer assistance. Some of the methods studied include separation of variables, integrating factors, characteristic equations, series solutions, operators, and LaPlace transforms. In addition, several unusual applications are considered such as Lorenz equations, Hamiltonian systems, chaos theory, medicine dosages, and disease dynamics. Some of these applications also serve as an introduction to the theory of linear differential systems. This course satisfies the differential equations requirement for mathematics and engineering majors.

3 cr.

HON 310 Supermarket Tabloids: Discerning Trash From Truth

Prerequisite: Acceptance into the Honors Program. From stories in the tabloids to tabloid advertisements for health and beauty products and for psychic hotlines, we are confronted with claims that are not necessarily supported by fact, logic, or experiment. Some of these claims are intentionally fraudulent and others simply misguided. We will explore the ways in which these claims are presented; we will use communication techniques such as audience analysis, persuasion, and language manipulation to detect questionable claims. We will also experimentally examine the science behind some of these claims. For example, we will investigate the feasibility of spontaneous human combustion (we will not use actual human beings) and we will test our psychic abilities in the laboratory. In addition, we will write articles and advertisements promoting questionable claims. Ultimately, we will become masters at discerning trash from truth.

3 cr.

HON 333 Independent Study

Prerequisites: Acceptance into the Honors Program, arrangement with a member of the honors faculty and approval of the Honors Research Committee. 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. Students can only count one faculty-directed research project toward their honors graduation requirements. See Independent Study on p. 31.

3 cr.

HON 370 Religion, Law and Morality

Prerequisite: Acceptance into the Honors Program and sophomore standing. Since the Golden Age of Athens and before, the interplay of law, religion, and morality has played a central role in shaping community life. This seminar explores (1) the nature and quality of religious thought and its relationship to the idea of law and community affairs, broadly speaking; (2) the relationship of "church and state" in the classic definition and evolving interpretations of the First Amendment to the U.S. Constitution; and, (3) the legitimate roles, if any, of religion and morality in the world of positive law.

3 cr.

HON 380 Business and Culture of Baseball

Prerequisite: Acceptance into the Honors Program and sophomore standing. This course will examine the history of baseball in America as a game, a profession and a business. Topics will include the dynamics of markets and the issues of income distribution monopoly power with particular reference to the business of professional baseball, and the ongoing interaction between baseball and American culture. This course satisfies the integrated liberal and professional requirement.

3 cr.

HON 389 Art in Nature - Nature in Art

Prerequisite: Acceptance into the Honors Program and sophomore standing. This course explores aspects of the natural world and their representations in the art. These aspects include the idea of the infinite, ideas of paradox and chaos, and properties of the universe and human nature. Also explored are elements of art, such as pattern, symmetry, and self-similarity, that are found in nature. Different ways of discovering and understanding these aspects are examined using ideas from philosophy, science, and the principles of truth, beauty, and reality.

3 cr.

HON 390 Special Topics in Honors

Prerequisite: Acceptance into the Honors Program. Topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

HON 495 Senior Honors Project

Prerequisites: 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 the appropriate field.

3 cr.

IE INDUSTRIAL ENGINEERING

(School of Engineering)

IE 205 Modeling of Industrial and Service Systems

Prerequisites: ENGR 103, ENGR 105 or equivalent. This course introduces common modeling techniques used for industrial and service systems. It covers analytical techniques and methodologies applicable to these functional areas for analysis and design purposes. Physical, mathematical and computer modeling approaches will be integrated throughout the course.

2 cr.

IE 308 Work Analysis and Human Factors

Prerequisite: Junior standing. 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. The design of human factor systems is emphasized. A major design and problem-solving project is required.

3 cr.

IE 312 Engineering Economic Analysis

Prerequisite: Junior standing. 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.

3 cr.

IE 314 Manufacturing Processes

Prerequisite: ME 309. This is a study of various methods of manufacturing. Areas studied include stages of product processing, equipment determination and justification, tooling metrology, as well as estimating design-to-product cost.

3 cr.

IE 315 Quality Control and Engineering Statistics

Prerequisite: ENGR 212 or equivalent. 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.

3 cr.

IE 318 Industrial Design Laboratory I

Prerequisites: IE 205, ENGR 212 or concurrently. This is a laboratory course in industrial engineering. Students use their knowledge of the design process in performing experiments in methods engineering, computer and physical models, production systems and quality engineering. One class hour, three-hour lab.

2 cr.

IE 326 Production Planning and Control

Prerequisite: ENGR 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.

3 cr.

IE 328 Industrial Design Laboratory II

Prerequisite: IE 318. This is a continuation of IE 318 with emphasis on the design process. A significant portion of study is dedicated to quality engineering and contemporary computer application toward service and manufacturing systems. Experiments build on previous topics with additional experiments on TQM, QFD, database design and application, facility layout and quality control. One class hour, three-hour lab.

2 cr.

IE 334 Computer Simulation and Design

Prerequisite: A programming course; ENGR 212 or equivalent. 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.

3 cr.

IE 410 Engineering Project Management

Prerequisite: Junior or senior standing. 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.

3 cr.

IE 420 Operations Research

Prerequisite: ENGR 212 or equivalent. This is an introduction to the techniques and application of operations research. Emphasis is on the modeling of real-world problems.

3 cr.

IE 422 Industrial Safety and Ergonomics

Prerequisite: IE 308. This is a study of issues related to human interaction(s) within a workplace. The focus is on industrial safety and ergonomics in industrial workplace design. Other topics include: anthropometry and its impact on industrial design, the principles of industrial hazard avoidance and the roles of NIOSH and its relationship with OSHA.

3 cr.

IE 424 Computer Integrated Manufacturing

Prerequisite: IE 314. 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.

3 cr.

IE 426 Production Design

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.

3 cr.

IE 428 Industrial Design Laboratory III

Prerequisite: IE 315; IE 326; IE 328. This is a continuation of IE 328 with emphasis on integrating equipment and topics from previous courses. A significant portion of study is dedicated to facility and material handling

design. Students will also design and propose their own experiments in addition to performing traditional experiments in facility layout and location, human factors, and CAD/CAM. One class hour, three-hour lab.

2 cr.

IE 429 Design and Analysis of Experiments

Prerequisite: ENGR 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.

3 cr.

IE 439 Project Preparation

Corequisite: IE 410; 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.

1 cr.

IE 440 Senior Design Projects

Prerequisite: IE 410; IE 439; graduating senior status. 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.

3 cr.

IE 480 Internship in Industrial Engineering

See "Internships" on page 32.

3 cr.

IE 490 Special Topics in Industrial Engineering

This is a study of an advanced topic in engineering of special interest to industrial engineering majors, but not offered on a regular basis.

3 cr.

ILP INTEGRATED LIBERAL AND PROFESSIONAL

ILP 225 Gender and Work

Prerequisite: None. Students will be 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.

3 cr.

ILP 367 Baseball and American Culture: The Evolution of a Pasttime

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.

3 cr.

INST INTERNATIONAL STUDIES

(School of Arts and Sciences)

INST 101 Introduction to Contemporary Global Issues

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. This course is equivalent to POSC 101.

1-3 cr.

INST 190 Special Topics in International Studies

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.

1-3 cr.

INST 290 Special Topics in International Studies

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.

1-3 cr.

INST 480-481 Internship in International Studies

See "Internships" on p. 32.

INST 490 Seminar in International Studies

Prerequisite: Senior standing and fifteen 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.

3 cr.

LA LIBERAL ARTS (School of Arts and Sciences)

LA 100 First Year Seminar

This course represents a segment of the general education requirements, specifically that pertaining to personal development. First Year Seminar is, first and foremost, a course designed to ease the transition to the first year of college and to foster 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 disciplines, 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. Depending on the section of the course, personal mission statements, time and resource management, personal assessment, and study strategies can be included. 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 distin-

guished by the use of student assistants known as Freshman Seminar Assistants whose role is to support students in the academic transitions of the first year.

2 cr.

LA 150 Laboratory in Writing Fundamentals I

This is a one-credit laboratory course designed to supplement the work in ENGL 132 English Composition I: College Reading and Writing with a review of English fundamentals. Topics include sentence structure, mechanics, and usage.

1 cr.

LA 151 Laboratory in Writing Fundamentals II

This is a one-credit laboratory course that introduces basic rhetorical principles and applies the principles taught in LA 150 to assignments in ENGL 133 English Composition II: Introduction to Literature.

1 cr.

LA 175 Academic Reading Strategies I

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.

1 cr.

LA 176 Academic Reading Strategies II

This is a one-credit laboratory course that applies the strategies taught in LA 175 to textbooks from courses across the curriculum.

1 cr.

LA 190 Special Topics in Liberal Arts

Liberal Arts topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

LA 250 Language Support Lab I

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.

1-2 cr.

LA 251 Language Support Lab II

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.

1-2 cr.

LA 290 Special Topics in Liberal Arts

Liberal Arts topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

LA 390 Special Topics in Liberal Arts

Liberal Arts topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

LA 391 Student Literacy Volunteers

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.

1-3 cr.

LA 490 Special Topics in Liberal Arts

Liberal Arts topics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

LA 491 Student Literacy Volunteers

Prerequisite: Sophomore standing or higher, LA 391. This is a continuation of the work in LA 391.

1-3 cr.

LS LEGAL STUDIES

(School of Business)

LS 301 Legal Aspects of Business

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.

3 cr.

LS 309 Legal Studies Simulation

Prerequisite: LS 301. This is a simulation focusing upon the legal process and the use

of alternative dispute resolution to resolve legal conflicts. Students are expected to engage in role-playing.

1 cr.

LS 360 Legal Studies for Sport Management

Prerequisite: MAN 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 following areas of Sport Law: negligence law, 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.

3 cr.

LS 424 Legal Studies for Human Resource Management

Prerequisite: Either LS 301 or LS 360; MAN 323. This 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 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.

3 cr.

MAN MANAGEMENT

(School of Business)

MAN 101 Principles of Management

The course provides an overview of management in organizations. Coverage of various management concepts will facilitate the attainment of key learning outcomes including: the historical context surrounding the emergence of management theory, concepts and prac-

tices; basic models of leadership in organizations; the process of effective organizational change; the key elements in an effective decision-making process. Additionally, students will develop their skills through practice in the areas of presentation, teamwork, writing, and research.

3 cr.

MAN 204 Organizational Behavior

Prerequisite: MAN 101. The course examines individual, interpersonal, and group behavior in organizations. Coverage of these areas will facilitate the attainment of key learning outcomes focused on: how personality and perception influence behavior in organization; concepts associated with effective work design; theories and concepts of decision making and problem solving; theories and concepts of motivation; theories and concepts of leadership; theories and concepts from the behavioral sciences to develop strategies for effective teamwork.

3 cr.

MAN 250 Managing Sport Organizations (Formerly MAN 350)

Prerequisite: MAN 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 insuring organizational performance. Key learning outcomes focus on: 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.

3 cr.

MAN 308 Employee Relations

Prerequisite: MAN 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: workplace factors that lead to union organizing; the elements of the organizing process; identification of unfair labor practices; concepts of the collective bargaining process strike mechanism and mediation; the concepts of the arbitration process; the role of third parties in the labor-management relationship.

3 cr.

MAN 311 International Management

Prerequisite: EC 205. The course focuses on issues related to managing in the international business environment. Coverage of the broad spectrum of issues will facilitate the attainment of learning outcomes focused on: international trade theories, comparative and competitive advantages, multinational corporations, European Union and NAFTA, managing a multinational corporation, impact of cultural differences in managing a multinational corporation, ethics and social responsibility.

3 cr.

MAN 315 Organizational Theory

Prerequisite: MAN 101. 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: vocabulary of organizational theory to explain organizational dimensions; 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 contradiction as they relate to organizational life; inherent tensions of specialization and integration that characterize organizational designs and processes.

3 cr.

MAN 323 Human Resource Management

Prerequisite: MAN 101, MAN 204 and junior standing. The course provides an overview of human resources management practices in organizations. Focus on key learning outcomes includes: the strategic role of human resources 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; value of job description and building motivation into the job design.

3 cr.

MAN 331 A Humanistic Approach to Leadership and Management

Prerequisite: MAN 101 and junior or senior standing. This 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 basic differences among successful leadership styles and situational factors; personal leader-

ship styles; leadership skills such as initiative, planning and risk taking; application of humanistic leadership principles to work and family situations; effective leadership decisions; non-traditional learning sources in everyday leadership opportunities.

3 cr

MAN 333 Independent Study in Management

See "Independent Study" on p. 31.

3 cr

MAN 341 Leadership and Change

Prerequisite: Junior standing. This course focuses on the leadership challenges in organizations pursuing change. Key learning outcomes in this course include: a range of current perspectives on the key elements of effective leadership; the fundamental elements and best practices in the area of organizational change; using the concepts of leadership and change to analyze organizational change situations.

3 cr

MAN 355 Sport Facility Planning and Management

(Formerly MAN 455)

Prerequisite: MAN 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, arenas, resorts, and health and fitness clubs; 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.

3 cr

MAN 366 Sport Marketing

(Formerly MK 366)

Prerequisite: MK 200, MAN 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. The historical foundations of sport marketing, and 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 are areas of specific focus. Course work will emphasize the appli-

cation of marketing principles to actual sport organizations, and an additional one credit is applied to this course as a result of this heightened practical focus.

3 cr

MAN 390 Special Topics in Management

This is a study of advanced topics in management of special interest to management majors, but not offered on a regular basis.

1-3 cr

MAN 422 Conflict Resolution

Prerequisite: MAN 101, MAN 204, MAN 308.

The course provides in-depth coverage of conflict-resolution in organizational settings. Key learning outcomes focus on: alternative dispute resolution theories and practices; theory of third-party intervention; the role of mediation; collective bargaining; negotiations; grievance arbitration.

3 cr

MAN 425 Contemporary Issues in Human Resource Management

Prerequisite: MAN 101, MAN 204, LS 301 or LS 360, LS 424, MAN 323. The course provides in-

depth coverage of several current human resource management issues. Key learning outcomes focus on workplace diversity; workplace demography and training; sexual harassment awareness and prevention; causes and analysis of workplace violence. Outcomes for this course are time-sensitive and will be adjusted to reflect changes in the business and regulatory environments.

3 cr

MAN 433 Performance Team Leadership

Prerequisite: Senior standing. The course provides students with an enhanced understanding of current perspectives on leadership and managing teams. Key learning outcomes focus on: planning and organizing team projects; motivating team members; facilitating decision-making in a team situation; providing direction to a project team; expressing idea and opinions in a team environment; responding and providing feedback to team members; managing intra-team conflict; providing written feedback on performance to team members.

3 cr

MAN 450 Practicum in Sport Management

Prerequisites: MAN 355, MK 366, LS 360. This course provides the student with an opportunity to gain hands-on experience in sport management through a practicum in the College'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 sport related programs and services, development of professional skills, understanding of practice of sport management and refinement of career direction.

3 cr.

MAN 460-461 Advanced Field Experience in Sport Management

Prerequisites: 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 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 6-credit course designed to be taken in the senior year.

3 cr. each.

MAN 465 Seminar in Sport Management

Prerequisite: MAN 250, MAN 355, MK 366, LS 360 and LS 424. The course examines contemporary issues in sport management. Key learning outcomes focus on: revenue development models in a variety of sport business life-cycle events; environmental forces shaping policy making within sport organizations; ownership models and issues; sport governing bodies and regulatory agencies; maximization of sport organization revenue streams; budget analysis; human resource development practices in sport organization including cori/sori checks, salary caps, player development, and volunteer training.

3 cr.

MAN 480-481 Internship in Management

See "Internships" on p. 32.

3 cr.

MATH MATHEMATICS

(School of Arts and Sciences)

MATH 100 Algebra Fundamentals

Prerequisite: One year of secondary school algebra. This is a review of the fundamentals of high school algebra designed for students who need a review in preparation for MATH 111 Analysis for Business and Economics I. May not be counted toward the general college mathematics requirement; may be taken for credit only as a general elective. Offered upon demand.

3 cr.

MATH 107 Mathematics For Elementary Education I

Prerequisite: MATH 100 or the equivalent within the last four years or successful performance on the Western New England College 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. Offered in the fall semester.

3 cr.

MATH 108 Mathematics for Elementary Education II

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. Offered in the spring semester.

3 cr.

MATH 109 Pre-Calculus Mathematics

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, func-

tions and graphs, radicals and exponents, trigonometric functions, identities, and equations. TI-83 calculator is required. Offered in the fall semester.

3 cr.

MATH 111 Analysis for Business and Economics I

Prerequisite: MATH 100 or the equivalent within the last four years, or successful performance on the Western New England College placement test. This course covers modeling with single-variable functions in addition to a study of calculus as a method of optimization. Topics include fitting curves to data as well as linear, quadratic and exponential functions with applications to supply, demand, cost, revenue, and profit. A brief study of integral calculus as it applies to probability distributions is also included. Emphasis is on the problem-solving approach with use throughout of the graphing calculator and a spreadsheet program. TI-83 Calculator is required. Offered fall and spring semesters.

3 cr.

MATH 112 Analysis for Business and Economics II

Prerequisites: MATH 111. A continuation of MATH 111, this course considers modeling with multi-variable functions. Topics include compound interest (both discrete and continuous), present value (both discrete and continuous), systems of linear equations, break-even analysis, Markov Chains, linear programming, and descriptive statistics. A brief study of optimization of multi-variable functions using calculus is also included. TI-83 Calculator is required. Offered fall and spring semesters.

3 cr.

MATH 115 Contemporary Mathematics I

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, Hamilton circuits, minimum network problems, Fibonacci numbers, the golden ratio, and fractal geometry. Students who have successfully completed MATH 116 cannot receive credit for this course. Offered in the fall semester.

3 cr.

MATH 117 Mathematical Reasoning

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 semester.

3 cr.

MATH 118 The Heart of Mathematics

This course is intended to help students discover what mathematics is truly about. Mathematics is not a set of formulas to be applied to a list of problems. Rather the goal is to show students that mathematics is creative, powerful, and artistic and to expose students to many techniques of thought that can be used to solve problems, analyze situations, and sharpen the way they look at the world. The course will emphasize basic strategies of thought and analysis as they apply to real life situations. The course will cover topics from number theory, geometry, topology, chaos, fractals, and probability. Through analyzing problems from these areas, students will be exposed to the power of mathematics and its inexorable quest for elegance, symmetry, order, and grace. Offered upon demand.

3 cr.

MATH 120 Introductory Statistics for the Arts and Sciences

(Formerly MATH 207)

Prerequisite: MATH 100 or the equivalent within the last four years, or successful performance on Western New England College 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 PSY 207, QM 203, or ENGR 212. Credit for both this course and PSY 207 or QM 201 or MATH 207 is not permissible. TI-83 calculator is required. Offered fall and spring semesters.
3 cr

MATH 123 Calculus I for Management, Life, and Social Sciences

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 looking at population trends, velocities and accelerations, depreciation of resources, and rates of change of medication in the blood stream. 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. Offered fall and spring semesters.
3 cr

MATH 124 Calculus II For Management, Life, and Social Sciences

Prerequisite: MATH 123 or the equivalent. This is a study of exponential and logarithmic function, techniques and applications of integration, and multivariable calculus. Among the applied topics are models of growth and decay, continuous interest, payments on loans, consumers' and producers' surplus; and probability distributions. Credit for both this course and MATH 134 is not permissible. TI-83 calculator is required. Offered fall and spring semesters.
3 cr

MATH 133 Calculus I

Prerequisite: MATH 109 or the equivalent. This course is an introduction to single-variable differential calculus, with an emphasis on trigonometric, exponential, and logarithmic functions. Topics include functions, parametric curves, limits, continuity, the derivative and applications of the derivative, and indeterminate forms. Credit for both this course and MATH 123 is not permissible. TI-

86 graphing calculator is required. Offered fall and spring semesters.
4 cr

MATH 134 Calculus II

Prerequisite: MATH 133. This course is an introduction to single-variable integral calculus, with emphasis on trigonometric, exponential, and logarithmic functions. Topics include antiderivatives, the integral, the Fundamental Theorem of Calculus, techniques of integration, applications of integration, differential equations, and infinite sequences and series. Credit for both this course and MATH 124 is not permissible. TI-86 graphing calculator is required. Offered fall and spring semesters.
4 cr

MATH 190 Special Topics in Mathematics

Topics in mathematics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.
1-3 cr

MATH 235 Calculus III

Prerequisite: MATH 134 or MATH 124. This is an extension of the basic concepts of calculus to functions of several variables. Topics include three-dimensional analytic geometry, vectors and vector functions, partial differentiation, and multiple integration. TI-83 calculator is required. Offered fall and spring semesters.
3 cr

MATH 236 Differential Equations

Prerequisite: MATH 134. This is a survey of the standard techniques for solving ordinary differential equations. Emphasis is on first and second order linear equations with a focus on applications. The Laplace transform method and some "one-step" numerical methods of solution are included. TI-86 calculator is required. Offered fall and spring semesters.
3 cr

MATH 250 Applied Discrete Mathematics

Prerequisite: PH 204 and either MATH 124 or MATH 134. This course covers concepts of induction, recursive definitions of sets, sequences, and operations; relations and functions: partial orderings, topological sorting, and equivalence relations; trees and graphs: adjacency list and matrix representations, depth and breadth first searching, shortest path, spanning tree, Euler and Hamilton paths, articulation points, and

Warshall's algorithm. Offered in the spring semester.

3 cr.

MATH 261 Discrete Structures I

Prerequisite: PH 204 and either MATH 124 or MATH 134; or permission. This is a first course in discrete mathematical structures with an emphasis on the foundations of higher mathematics. It is designed for students who need a transitional course to bridge the gap between the study of calculus and the study of a variety of upper division mathematics courses where the ability to think like a mathematician is critical. Emphasis is on exploring, thinking, and thought processes as opposed to "how to do it" when solving problems. The topics include sets, sequences, relations, functions, the language of mathematics, proof and exploration, induction, cardinality, algorithms, and recursion. Offered in the fall semester.

3 cr.

MATH 262 Discrete Structures II

Prerequisite: MATH 261 or permission. This is a continuation of the study of discrete mathematical structures with an emphasis on the foundations of higher mathematics. The topics include combinatorics, graphs, and trees. Emphasis is on the exploration of mathematical ideas by working with examples, asking questions, making guesses, and testing conjectures. Applications of the topics are presented in several diverse fields. Offered in the spring semester.

3 cr.

MATH 272 Probability

Prerequisite: MATH 235. This is a calculus-based course in the theory of probability. Topics include sample spaces, combinatorics, axioms and rules of probability, conditional probability and independence, discrete and continuous random variables, mathematical expectation, and the moment generating function. Offered in alternate spring semesters.

3 cr.

MATH 290 Special Topics in Mathematics

Topics in mathematics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

MATH 306 Linear Algebra

Prerequisite: MATH 124 or MATH 134. Topics covered in this course include vectors and matrices, systems of linear equations, vector spaces, mappings, determinants, eigenvalues

and eigenvectors, and transformations. Applications in many fields are discussed. The computer is used at the discretion of the instructor. TI-86 calculator is required. Offered in the spring semester.

3 cr.

MATH 310 Topics in Actuarial Science

Prerequisite: MATH 235 and permission of the instructor. This is a course specifically designed to provide students with additional preparation for the first actuarial examination. Topics are selected from the areas of calculus, real analysis, and probability and statistics depending upon the needs of the students. The course may be repeated for credit subject to the permission of the instructor. Offered on demand.

1-3 cr.

MATH 333-334 Independent Study in Mathematics

Prerequisite: Senior standing. See "Independent Study" on p. 31.

1-3 cr.

MATH 350 Engineering Analysis I

Prerequisite: MATH 236. This course studies selected topics from linear algebra, vector calculus, line and surface integrals, Fourier series and integrals, and partial differential equations. The emphasis is on engineering applications and the use of the computer to illustrate techniques. Offered in every fall semester, and in the spring upon demand.

3 cr.

MATH 363 Mathematical Foundations and Methods for Computer Science

Prerequisite: MATH 262 and CS 283; 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. Offered in the fall semester.

3 cr.

MATH 371 Modern Aspects of Geometry

Prerequisite: MATH 261. 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. Offered in alternate fall semesters.
3 cr.

MATH 373 Mathematical Statistics

Prerequisite: MATH 272. This course and the prerequisite are intended to prepare students to take the actuarial exam on probability and statistics. Topics include sampling distributions of certain statistics, confidence intervals, tests of hypotheses, regression and correlation, goodness of fit tests, and Bayesian estimation. Offered in alternate fall semesters.
3 cr.

MATH 377 Elementary Number Theory

Prerequisite: MATH 261. 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; gcd's; prime factorization; congruencies; theorems of Wilson, Fermat, and Euler; pseudoprimes; multiplicative functions; and primitiveroots. Other topics include recent applications of the classical subject area in cryptology and computer science. Offered in alternate fall semesters.
3 cr.

MATH 390 Special Topics in Mathematics

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.
1-3 cr.

MATH 412 Introduction to Topology

Prerequisite: MATH 261. This course covers introductory topics in the general theory of topological spaces. Included are examinations of plane topology and topological properties of metric spaces. Offered on demand.
3 cr.

MATH 418 Introduction to Modern Algebra

Prerequisite: MATH 261. This is an introduction to the abstract theory of groups, rings, and fields. Topics include homomorphisms and polynomials and their roots. The emphasis is on the axiomatic approach to algebra and the construction of proofs. Offered in alternate spring semesters.
3 cr.

MATH 420 Mathematical Modeling

Prerequisite: MATH 272; MATH 236 or MATH 311. This is an introduction to the construction and refinement of mathematical models. Applications include resource allocation, environmental planning, and decision theory. The mathematics involves difference equations, Markov chains, linear and dynamic programming, game theory, and queuing theory. Offered in the spring semester.
3 cr.

MATH 421 Real Analysis

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. Offered in alternate spring semesters.
3 cr.

MATH 427 Complex Analysis

Prerequisite: MATH 235. 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.
3 cr.

MATH 480-481 Internship in Mathematics

See "Internships" on p. 32.
1-3 cr.

MATH 490 Seminar

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.
3 cr.

ME MECHANICAL ENGINEERING

(School of Engineering)

ME 106 Statics

Prerequisite: MATH 134 or concurrently; PHYS 133; ENGR 103, ENGR 110 or concurrently. 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 tech-

niques. 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. An individual written report analyzing an aspect of engineering mechanics and a group analytical project involving computer programming or simulation are required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

3 cr.

ME 203 Dynamics

Prerequisite: ME 106. 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. An individual project of a typical dynamics problem is required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

3 cr.

ME 205 Measurement Computing

Prerequisites: ENGR 105 or equivalent; ENGR 208. 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, end quizzes. One class hour and 1.5 laboratory hours.

2 cr.

ME 208 Mechanics of Materials

Prerequisite: MATH 236 or concurrently; ME 106. This introductory course is offered to both mechanical engineering majors and non-majors 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.

3 cr.

ME 303 Thermodynamics I

Prerequisite: CHEM 105; 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 ener-

gy, 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.

3 cr.

ME 304 Thermodynamics II

Prerequisite: ME 303. This intermediate course is offered to mechanical engineering majors and non-majors 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 non-reactive 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.

3 cr.

ME 309 Materials Science

Prerequisite: CHEM 105; 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.

3 cr.

ME 312 Kinematics and Dynamics of Machinery

Prerequisite: ME 203. This course requires students to use analytical, graphical and computer methods to determine the performance of mechanisms, machinery and control systems. Students learn displacement, velocity, acceleration and force analysis of linkages, cams, gears, and other machine elements. Additionally students will be introduced to the study and design of control systems for machinery. The course emphasis is placed on the practical design and operation of mechanical systems and machinery. Several case studies encompassing real design and control problems from industry are used both in the classroom and in the laboratory to enhance the learning process. The method of assessing students includes classroom participation, homework assignments, examinations, case projects, and a final exam. Two class hours, one three-hour lab.

3 cr.

ME 313 Mechanical Laboratory I

Prerequisite: ME 203; ME 208; ME 205 or concurrently; ENGR 103; ENGR 105 or concurrently; ENGR 212 or concurrently. 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. Additionally, each student works on an interdisciplinary semester-long 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. One class hour, one three hour lab.

2 cr.

ME 314 Mechanical Laboratory II

Prerequisite: ME 303; ME 309; ME 313; ME 316 or concurrently, or permission of the department chair. 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 with other team members to perform laboratory experiments in materials science, mechanics of materials, fluid mechanics, thermodynamics, data acquisition, 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 semester-long team design project under the supervision of faculty project advisors. Periodic written progress reports and a final written report are submitted, and, 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. One class hour, one three hour lab.

2 cr.

ME 316 Fluid Mechanics

Prerequisite: ME 203; ME 303 or permission of instructor. This introductory course is offered to both mechanical engineering majors and non-majors 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, determine hydrostatic forces on submerged surfaces, develop and use the continuity, momentum and energy equations, understand dimensional analysis and dynamic similitude, analyze flow in closed conduits, calculate the drag force on various two- and three-dimensional bodies, and understand boundary layer theory, model testing, and fluid measurement techniques. Additionally, students will learn design procedures relating to low-drag aerodynamics. An individual project involving an open-ended fluid dynamics design problem is required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

3 cr.

ME 320 Mechanical Vibrations

Prerequisite: ME 203; 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.

3 cr.

ME 410 Advanced Mechanical Engineering Application Techniques

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.

3 cr.

ME 417 Heat Transfer

Prerequisites: ME 303; ME 316. This senior level course is offered to both mechanical engineering majors and non-majors 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, non-circular 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. An individual project to design cooling systems for integrated circuits and electronic devices is required. The methods of assessing students include homework assignments, quizzes, examinations, projects, and a final exam.

3 cr.

ME 422 Control Systems

Prerequisite: MATH 350; 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.

3 cr.

ME 425 Design of Machine Elements

Prerequisite: ME 208; ME 309; ME 312 or concurrently; ME 320 or concurrently. This senior level course is offered to mechanical engineering majors and 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 modified Goodman 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 critical speeds of shafts and the characteristics of clutches and brakes to satisfy operating conditions; the specification of extension, compression, torsional and leaf springs subjected to either steady or fluctuating loads to satisfy design specifications; and the specification of threaded fasteners, v-belt drives, and rived and welded connections to satisfy loading conditions. A project involving the design of machine elements is required. The method of assessing students includes homework assignments, quizzes, examinations, and projects.

3 cr.

ME 435 Mechanical Laboratory III

Prerequisite: ME 314; ME 320 or concurrently; ME 417 or concurrently; and senior standing. This is the last course in a three-course laboratory sequence. The experimental methodology and communication skills developed in ME 313 and ME 314 are reinforced and the engineering team approach is also used throughout the course. Each student, as a member of a team, experiences four distinct activities: the first is CAD/CAM manufacturing exercise; the second is a vibrations analysis; the third is in energy systems analysis; and, the fourth is an interdisciplinary, semester-long team design project where team members work on a semester-long project under the guidance of a faculty project advisor. Technical writing and presentation skills are honed in preparation for the senior design project capstone course. The assessment is based upon the quality of both the writing and engineering content of the writ-

ten reports and the oral presentation. One class hour, one three hour lab.

3 cr.

ME 437 Design Projects

Corequisites: ME 439 and approval of the Department. 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.

3 cr.

ME 439 Professional Awareness

Prerequisite: Senior status. 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 resume, 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.

1 cr.

ME 440 Senior Design Projects

Prerequisite: ME 439 and graduating senior status. This is a capstone design course that prepares students for entry-level positions. In this course, each the 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 stu-

dents. 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.

3 cr.

ME 480 Internship in Mechanical Engineering

See "Internships" on p. 32.

3 cr.

ME 490 Special Topics in Mechanical Engineering

A study of an advanced topic in engineering of special interest to mechanical engineering majors.

3 cr.

ME 511 Advanced Mechanics of Materials

Prerequisite: ME 208; MATH 350. This advanced course builds on the material presented in ME 208 and develops the student's ability to apply the principles of advanced mechanics of materials to problems. Students will locate the shear center of composite sections; determine the stresses and deflection of curved bars and beams, determine the deflection, slope, moment, and shear for beams on elastic foundations; determine the stresses and deformations in thick-walled cylinders; determine the deflection and slope in beams using Castigliano's theorem; and, determine the stresses in initially curved and eccentrically loaded columns. The method of assessing students will include in class exams and a comprehensive final exam.

3 cr.

ME 519 Experimental Stress Analysis

Prerequisite: ME 208; ME 435 or concurrently. This senior/graduate course is offered to mechanical engineering majors and is designed to introduce students to the most common engineering techniques used to

evaluate and improve structural designs. Students will learn the basic theory of electrical resistance strain gages, photo-elasticity and brittle coatings and use of these techniques to determine the state of stress in structural members. The use of strain gages for transducer applications and calibration of finite element analyses are also emphasized. During the laboratory sessions, students become proficient in the mounting of strain gages, the use of strain measuring and photo-elasticity equipment, and the use of data acquisition systems. When possible, modern finite element analysis packages, such as I-DEAS Master series, are utilized to analytically determine the strains in a loaded member in order to compare them with those obtained using strain gages and/or photo-elastic methods. The methods of assessing students include homework assignments, laboratory experiments and written reports. Two class hours, one three-hour lab.

3 cr.

ME 526 Gas Dynamics

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, projects, and a final exam.

3 cr.

ME 542 Computer-Aided Engineering

Prerequisite: Senior or graduate 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 optimization 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 hour lab.

3 cr.

ME 544 Computer Applications in Mechanical Engineering

Prerequisite: ENGR 103; 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 ten 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.

3 cr.

ME 551 Fluid Machinery Design

Prerequisite: ME 304; ME 316; and senior standing. This course introduces students to the analysis and design of fluid machinery. Topics include control volume theory, fluid flow, fluid power analyses, boundary layer theory and airfoil theory. Students learn to use these theoretical procedures both in the conceptual design of aircraft components and fluid machinery and to apply specific speed, actuator disk theory, and flow-through analysis to select and design pumps, blowers, and propellers for specific applications. Design analysis procedures for compressors

and turbines are presented and utilized. Students are also introduced to similitude and model testing of fluid machinery. Several case studies encompassing actual industrial design problems are used in the classroom to enhance the learning process. An individual fluid machinery design project is required. The method of assessing students includes classroom participation, homework assignments, examinations, projects, and a final exam.

3 cr.

ME 590 Special Topics in Mechanical Engineering

A study of an advanced topic in engineering of special interest to mechanical engineering majors.

3 cr.

METR METEOROLOGY
(School of Arts and Sciences)

METR 101 Introductory Meteorology

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.

3 cr. Laboratory fee \$50.

METR 190 Special Topics in Meteorology

Topics in meteorology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

MK MARKETING
(School of Business)

MK 200 Principles of Marketing
(Formerly MK 101)

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.

3 cr.

MK 301 Buyer Behavior

Prerequisite: MK 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.

3 cr.

MK 317 Promotional Strategy

Prerequisite: MK 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 integrated marketing communications.

3 cr.

MK 318 Marketing Research

Prerequisites: CIS 202, MK 200, QM 201. 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.

3 cr.

MK 320 Price and Product Strategy

Prerequisites: EC 206, MK 200, MK 301, and QM 201. 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.

3 cr.

MK 322 Sales and Sales Management

Prerequisite: MK 301. This course is an examination of the role of personal selling in the marketing mix. Planning, training, organization, forecasting, and reporting of individual sales personnel and group sales activities are emphasized.

3 cr.

MK 323 Distribution Strategy

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.

3 cr.

MK 333 Independent Study in Marketing

See “Independent Study” on p. 31.

1-3 cr.

MK 340 Promotion Design and Applications

Prerequisites: CIS 202 and MK 200. 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.

3 cr.

MK 346 Relationship Marketing

Prerequisites: CIS 202 and MK 317. 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.

3 cr.

MK 370 E-Commerce Electronic Marketing - Issues and Strategies

Prerequisites: CIS 202 and MK 317. This course investigates the dynamic world of electronic commerce, the technological innovation that has taken the business world

by storm. An overview of electronic commerce and the development of a digital marketing strategy will be the primary focus of the class. Readings from current journals, trade books, cases and simulations will be used as a basis for class discussions.

3 cr.

MK 390 Special Topics in Marketing

This course is a study of advanced topics in marketing of special interest to marketing majors, but not carried in the catalog on a regular basis.

1-3 cr.

MK 411 Multinational Marketing

Prerequisites: Junior standing and MK 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.

3 cr.

MK 421 Marketing Management

Prerequisites: Senior standing and MK 318. 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.

3 cr.

MK 422 Campaign Planning and Management

Prerequisite: MK 317. 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.

3 cr.

MK 440 Marketing Seminar

Prerequisites: Senior Marketing or Marketing Communications/Advertising standing MK

421 or MK 422, intended to be taken during the student's final semester. This course is an examination of a variety of viewpoints regarding marketing and business. Through reading and discussion, students develop a critical perspective of the field. An area of interest is researched, and findings are presented in a position paper.

3 cr.

MK 480 Internship

See "Internships" on p. 32.

3 cr.

**ML MILITARY LEADERSHIP
(Army ROTC/School of Business)**

ML 100 Introduction to Army Physical Fitness

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.

1 cr.

ML 101 Foundations of Officership

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.

1 cr.

ML 102 Basic Leadership

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.

1 cr.

ML 201 Individual Leadership Studies

Development of problem solving and critical thinking skills through experiential learning activities. Application of effective written and oral communication, feedback, and conflict resolution skills.

2 cr.

ML 202 Leadership and Teamwork

Focuses on self-development guided by knowledge of self and group processes. Experiential learning activities are designed to challenge current beliefs, knowledge, and skills.

2 cr.

ML 301 Military Leadership I

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.

3 cr.

ML 302 Military Leadership II

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.

3 cr.

ML 401 Leadership and Management

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.

3 cr.

ML 402 Military Law and Officership

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.

3 cr.

MUS MUSIC

(School of Arts and Sciences)

(All MUS courses satisfy Elements of Culture "A" requirement.)

MUS 101 Music Appreciation

This is a non-technical course designed with the listener in mind. The 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. Offered every semester.

3 cr.

MUS 151152 Campus Chorus

Students participate in the performance of the campus chorus. May be taken more than once.

1 cr.

MUS 161162 Pep Band

Students participate in the performances of the college's pep band. May be taken more than once.

1 cr.

MUS 171172 Jazz Ensemble

Students participate in the performances of the college's jazz ensemble. May be taken more than once.

1 cr.

MUS 190 Special Topics in Music

Topics in music that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

MUS 201 Basic Music Theory

This course is designed to be an introduction to the art and science of music theory—the basic building blocks of constructing music. Through study of the text *Basic Materials in Music Theory*, it is intended that students will gain a basic working knowledge of musical notation, structure, and harmony. Work for the class will include, at times, minimal singing and some work at the piano. It is expected that you will practice outside of class. There may also be some small composition exercises assigned, mostly for those who want to learn more about composition.

3 cr.

MUS 202 The Art Of Song: Ensemble**Vocal Technique**

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 vocal production, and will learn fundamentals of music reading, musicianship and choral singing. Lecture rehearsals may be augmented with assigned listenings and video screenings.

3 cr.

MUS 290 Special Topics in Music

Topics in music that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

MUS 320 American Popular Music

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 pertains to the recordings.

3 cr.

MUS 321 Curtain up! American Musical Theater

Musical theater has become a uniquely American art form, reflecting American society and culture, and constantly evolving in terms of musical style, plot, and presentation, in keeping with changing societal mores and tastes. We will examine the mechanical components of the genre (plot, lyrics, score, dance, etc.); the history of its evolution as an American art form, from early roots in European and African American music and stage productions to current shows; and individuals who have made significant contributions to the art form—actors, composers, lyricists, directors, producers, and choreographers.

3 cr.

MUS 390 Special Topics in Music

Topics in music that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

PEHR PHYSICAL EDUCATION, HEALTH, AND RECREATION

(School of Arts and Sciences)

Note: PEHR 151 and PEHR 153-199 is a two credit hour coupling. PEHR 151 is lecture format, and PEHR 153-199 are practica.

PEHR 151 Personal Health and Wellness

This is an exploration of current health issues and self-responsibility in achieving optimal health. Personal Health is intended to educate students in health issues pertinent to the college-aged population. Subject matter includes nutrition and weight control, disease prevention, the body's functions, medical self-care, and the wellness model. In

addition, students learn about issues specific to the college-age population including substance abuse, sexually transmittable diseases, and eating disorders. All students are required to take this course in their freshman year.

1 cr. Laboratory fee \$25.

PEHR 153199 Lifetime Activities Series

These courses are to be taken in the freshman year. In keeping with the College philosophy on physical education, the emphasis is on lifetime, carry-over value activities including soccer, swimming, volleyball, walking and jogging, aerobic dance, fundamentals of martial arts, personal fitness endurance/strength training, tennis and racquetball. In addition, two activity based courses Games Children Play and RAD — rape aggressive defense training for women are offered to fulfill the PE credit as well as for majors in teacher preparation and criminal justice (see descriptions below). *1 cr.*

PEHR 163 Games Children Play

Instruction is given in age-appropriate physical education activities and games for students planning to teach children at the elementary level. This course includes an introduction to the Massachusetts comprehensive health curriculum frameworks, cooperative games, indoor and playground activities, folk dance and multicultural games, special needs and management strategies, and the integration of physical education in the elementary school curriculum. Required for students pursuing certification in elementary education.

1 cr.

PEHR 165 RAD: Rape Aggressive Defense for Women

Safety and survival in today's world requires a definite course of action. The RAD program provides effective options by teaching women to take an active role in their own safety, self-defense and psychological well being. Beginning with awareness, prevention, risk reduction and avoidance techniques, we quickly progress 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, by utilizing easy, effective, and proven self-defense tactics. Our system of realistic defense will provide a woman with the knowledge to make an educated decision about resistance. The R.A.D. system of physical defense is currently being taught at many col-

leges and universities. The growing and widespread acceptance of this system is primarily due to the ease, simplicity, and effectiveness of our tactics, solid research, and unique teaching methodology. R.A.D. Systems is the only self-defense course endorsed by the International Association of Campus Law Enforcement Administrators.

1 cr.

PH PHILOSOPHY

(School of Arts and Sciences)

All PH courses except PH 110, PH 204, and PH 304 satisfy the ethical perspective requirement (GCR).

PH 103 Introduction to Philosophy

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?" "What is the best form of government?" Offered every semester.

3 cr.

PH 110 Critical Thinking

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. Offered every semester.

3 cr.

PH 190 Special Topics in Philosophy

Topics in philosophy that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

PH 204 Symbolic Logic

(Formerly PH 104 Elementary Logic)

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. Offered every spring.

3 cr.

PH 208 Ethics

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. Offered every semester.

3 cr.

PH 209 Philosophy in Literature

Not open to students who have had PH 103. This is an exploration of fundamental issues in philosophy as they are presented in major literary and philosophic works. The course explores the concept of the self, the problem of evil, free will and determinism, ideals in living, and views on the nature of reality. The readings may include Kafka's *Metamorphosis*, Voltaire's *Candide*, Dostoevsky's *Notes from Underground*, and Crane's *The Open Boat*. Offered in alternate years.

3 cr.

PH 210 Ethics for Social Workers

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.

3 cr.

PH 290 Special Topics in Philosophy

Topics in philosophy that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

PH 301 Great Philosophers

Prerequisite: PH 103 or PH 104 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.*

3 cr.

PH 303 Social and Political Philosophy

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?" "Is capitalism preferable to socialism?" Offered in alternate years.

3 cr.

PH 304 Philosophy of Religion

Prerequisite: PH 103 or permission of the instructor. 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 in alternate years.

3 cr.

PH 307 Contemporary Moral Problems

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. Offered every semester.

3 cr.

PH 309 Medical Ethics

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 health care, and the just allocation of medical care. Attention will also be paid to the application of major moral theories. Offered in alternate years.

3 cr.

PH 310 Ethics in the Professions

Prerequisite: Junior 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. Offered every semester.

3 cr.

PH 320 Western Religions

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. Offered every fall.

3 cr.

PH 321 Eastern Religions

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. Offered every spring.

3 cr.

PH 322 Religions in America

Prerequisite: Sophomore standing. This course is designed as a comprehensive introduction to the role religious thought has played and continues to play in American life.

3 cr.

PH 333-334 Independent Study in Philosophy

See "Independent Study" on p. 31.

1-3 cr.

PH 350 Greek and Roman Philosophy

Prerequisite: Sophomore standing. A critical examination of the views of the Pre-Socratics, Plato, Aristotle, Epicureans, Stoics, and Sceptics on selected topics in metaphysics, epistemology, ethics, and political philosophy.

3 cr.

PH 352 Modern Philosophy

A critical examination of major philosophers of the 16th through 19th centuries, this course may focus on such figures as Descartes, Leibniz, Spinoza, Hobbes, Locke, Berkeley, Hume, Kant, Mill, and American pragmatists.

3 cr.

PH 353 Twentieth Century Philosophy

Prerequisites: Six credits of philosophy. Philosophy in the twentieth century is a diverse field. It may be divided roughly into several interrelated families. First there is a distinction between Western and Eastern philosophy. This course focuses on the Western tradition. Western philosophy may be broken down into the categories of British and American "analytic" philosophy, and Continental philosophy. This course may cover one or both of these families, depending on the interests of the instructor. In addition to examining methods of philosophical inquiry, this course will focus on one or more of the following subfields: logic and philosophy of language, metaphysics, epistemology, ethics, and political philosophy.

3 cr.

PH 390 Special Topics in Philosophy

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.

1-3 cr.

PHYS PHYSICS

(School of Arts and Sciences)

PHYS 101 Physics of Energy I

This is a study of the principles of mechanics and thermodynamics applied to energy-related topics including transportation, heating, air conditioning, and applications of solar energy. Two class hours, three-hour lab.

3 cr. *Laboratory fee \$50.*

PHYS 102 Physics of Energy II

This is a study of electricity, electronics, and nuclear physics with particular attention to energy supply and demand, sources of electrical power, and nuclear generation of electricity. Two class hours, three-hour lab

3 cr. *Laboratory fee \$50.*

PHYS 103 Elementary Physics I

This is an elementary non-calculus based course for general students. Kinematic motion, Newton's laws, conservation laws, rotational motion, fluid behavior, and wave motion are discussed. Two class hours, three-hour lab

3 cr. *Laboratory fee \$50.*

PHYS 104 Elementary Physics II

Prerequisite: PHYS 103 or equivalent. This is a continuation of PHYS 103 covering electricity and magnetism, optics, and atomic physics. Two class hours, three-hour lab.
3 cr. Laboratory fee \$50.

PHYS 113 General Astronomy

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. No prior background in the physical sciences is presupposed. Occasional observations are held, weather permitting. The course satisfies the lab science requirement.
3 cr.

PHYS 123 Physics For Pharmacy

Prerequisite: MATH 123 and MATH 124. This course is a calculus-based introduction to the fundamental principles of mechanics covering applications to biology and the life sciences. Emphasis is placed upon problem solving and the development of solutions from first principles. Students gain an understanding of kinematics, statics, gravitation, Newton's laws of motion, and their application to translational and rotational dynamics, energy, momentum, hydrostatics, and fluid flow.
4 cr.

PHYS 131 Elements of Mechanics I

Corequisite: Enrollment in MATH 131. This is a course designed for students who have no background in secondary school physics or for those needing a review. This problem-solving course covers concepts in mechanics such as motion, Newton's laws, and energy. Credit for both this course and Physics 101 is not permissible.
3 cr.

PHYS 132 Elements of Mechanics II

Prerequisite: Physics 131, MATH 131, or the equivalent. 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. Three class hours, three-hour lab.
4 cr.

PHYS 133 Mechanics

Prerequisite: One unit of secondary school physics; MATH 123, 124, 133 or concurrently. This is an introductory course dealing with Newton's laws of motion and their applica-

tions. 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. Three class hours, three-hour lab.
4 cr. Laboratory fee \$50.

PHYS 134 Electricity and Magnetism

Prerequisite: PHYS 132 or PHYS 133; MATH 123, 124, 132 or 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. Three class hours, three-hour lab.
4 cr. Laboratory fee \$50.

PHYS 190 Special Topics in Physics

Topics in physics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.
1-3 cr.

PHYS 290 Special Topics in Physics

Topics in physics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.
1-3 cr.

PHYS 333-334 Independent Study in Physics

See "Independent Study" on p. 31.
1-3 cr. Laboratory fee may be required.

PHYS 390 Special Topics

Topics in physics that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.
1-3 cr.

PHYS 440 Undergraduate Research

Prerequisite: Permission of the Department, approval of the dean. See "Undergraduate Research" on page 32. 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.
1-3 cr. Laboratory fee.

POSC POLITICAL SCIENCE

(Formerly Government)

(School of Arts and Sciences)

POSC 101 Introduction to Contemporary Global Issues

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. This course is equivalent to INST 101.

3 cr.

POSC 102 American National Government

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.

3 cr.

POSC 190 Special Topics in Political Science

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.

1-3 cr.

POSC 201 Comparative Politics

Prerequisite: POSC 101, 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.

3 cr.

POSC 203 International Relations

Prerequisite: POSC 101, 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 multi-state system.

3 cr.

POSC 205 Public Administration

Prerequisite: POSC 101, 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.

3 cr.

POSC 207 Western Political Thought

Prerequisite: POSC 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.

3 cr.

POSC 209 American Political Thought

Prerequisite: POSC 102. This is a study of American political thinkers from the colonial period to the 20th century.

3 cr.

POSC 210 State Politics in America

Prerequisite: POSC 101, 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.

3 cr.

**POSC 218 Public Policy in America
Formerly GO 336**

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, health care, education, etc.) and the way in which these are addressed in the public sector by interest groups, bureaucrats, and elected politicians.

3 cr.

POSC 290 Special Topics in Political Science

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.

1-3 cr.

POSC 310 Politics of Developing Societies

Prerequisite: POSC 101 or POSC 102. This is a study of the developing societies of the world in the context of rapidly changing socio-economic 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.

3 cr.

POSC 312 Politics of Ethnic Conflict: Africa

Prerequisite: POSC 101 or POSC 102. 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.

3 cr.

POSC 316 Politics of Europe

Prerequisite: POSC 101 or POSC 102. 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.

3 cr.

POSC 318 Politics of The Middle East

Prerequisite: POSC 101 or POSC 102. 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.

3 cr.

POSC 321 The U.S. Congress

Prerequisite: POSC 102. This course introduces you to 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.

3 cr.

POSC 322 The US Presidency

Prerequisite: POSC 102. 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 Whitehouse and the President's interaction with other governmental institutions.

3 cr.

POSC 324 Parties and Elections

Prerequisite: POSC 102. 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.

3 cr.

POSC 325 Constitutional Law

Prerequisite: POSC 102. 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.

3 cr.

POSC 326 Civil Liberties

Prerequisite: POSC 102. 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.

3 cr.

POSC 333-334 Independent Study in Government

See "Independent Study" on p. 31.

1-3 cr.

POSC 338 Challenges in Local Government Management

Prerequisite: POSC 102. 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.

3 cr.

POSC 340 International Law and Organization

Prerequisite: POSC 101 or POSC 102. 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.

3 cr.

POSC 342 Environmental Politics

Prerequisite: POSC 102. This is an examination of how political institutions have addressed the issue of environmental quality, waste management, clean air and energy policy are some of the topics covered, The focus of the course will be on environmental politics in the United States.

3 cr.

POSC 350 American Foreign Policy

Prerequisite: POSC 101 or POSC 102. 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.

3 cr.

POSC 355 Comparative Foreign Policies

Prerequisite: POSC 101 or POSC 102. 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.

3 cr.

POSC 390 Special Topics in Political Science

Prerequisite: Sophomore 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.

1-3 cr.

POSC 480-481 Internships in Political Science

See Internships on p. 32.

1-3 cr.

POSC 490 Seminar in Political Science

Prerequisite: Senior standing and fifteen 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.

3 cr.

PSY PSYCHOLOGY

(School of Arts and Sciences)

PSY 101 Introduction to Psychology

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 determi-

nants, and psychology's applications in various fields of human activity.

3 cr.

PSY 150/151 Introduction to Physiological Psychology Research

Prerequisite: Permission of the instructor. In this course the student will become familiar with basic laboratory techniques, animal care and handling, and research conducted in the laboratory.

1 cr. each course

PSY 190 Special Topics in Psychology

Topics in psychology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

PSY 204 Organizational Psychology

Prerequisite: PSY 101. Not open to those who have received credit for MAN 204. 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.

3 cr.

PSY 207 Statistics for the Social Sciences

Prerequisite: MATH 100 or higher. This is an introduction to the basic descriptive and inferential techniques for presenting, analyzing, and interpreting data gathered in the social sciences. Topics include frequency distributions and graphs, measures of central tendency and variability, score conversions, correlation and regression, sampling and sampling distributions, hypothesis testing, tests of significance, confidence intervals and effect size. Credit for both this course and MATH 207 or QM 207 is not permissible.

3 cr.

PSY 211 Developmental Psychology

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.

3 cr.

PSY 212 Adolescent Personality and Development

Prerequisite: PSY 211. 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.

3 cr.

PSY 250/251 Intermediate Physiological Psychology Research

Prerequisite: Permission of the instructor. In this course the student will increase their knowledge and skills in general laboratory techniques by assisting in surgical procedures, histology, drug administration, and in designing and performing experiments.

1-3 cr. each course.

PSY 290 Special Topics

Topics in psychology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

PSY 301 Introduction to Interviewing

Prerequisite: PSY 101. 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.

3 cr.

PSY 304 Educational Psychology

Prerequisite: PSY 101. 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.

3 cr.

PSY 305 Psychology of Women

Prerequisite: PSY 101. 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.

3 cr.

PSY 306 Abnormal Psychology

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.

3 cr.

PSY 307 Psychological Assessment

Prerequisite: PSY 101; PSY 207 or QM 207 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.

3 cr.

PSY 309 Research Methods

Prerequisite: PSY 101; PSY 207 or permission of the instructor. 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.

3 cr.

PSY 310 Research Methods II

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.

3 cr.

PSY 311 Child Behavior Management: Theory and Practice

Prerequisite: PSY 211; PSY 313 or permission of the instructor. This is an examination of the basic principles of behavior manage-

ment 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.

3 cr.

PSY 312 Physiological Psychology

Prerequisite: PSY 101; College BIO or permission of the instructor. 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.

3 cr.

PSY 313 Learning

Prerequisite: PSY 101 and sophomore standing. This is an examination of the theoretical principles of operant and respondent conditioning using human and comparative studies from laboratory, educational, and therapeutic settings.

3 cr.

PSY 314 Social Psychology

Prerequisite: PSY 101 and sophomore standing. This is a study of the individual in society including interactions and role-relationships with group members. The emphasis is on socio-cultural factors affecting behavior and their effects on motivation, personality, attitudes, prejudices, opinions, interpersonal perceptions, and non-verbal communication.

3 cr.

PSY 315 Cultural Psychology

Prerequisite: PSY 211 or permission of the instructor. 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.

3 cr.

PSY 317 Psychology of the Exceptional Person

Prerequisite: PSY 101 and sophomore 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.

3 cr.

PSY 319 Forensic Psychology

Prerequisite: PSY 101 and sophomore 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, hypnosis and lie detection, police interrogation and confession, insanity, domestic violence, sexual abuse, the death penalty, and public policy.

3 cr.

PSY 320 Health Psychology

Prerequisite: PSY 101 and sophomore standing. 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 interpretation, stress hardiness, and prevention. Students will also learn and practice a variety of intervention protocols, including the relaxation response.

3 cr.

PSY 321 Sports Psychology

Prerequisite: PSY 101 and sophomore 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.

3 cr.

PSY 323 Behavior Modification

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.

3 cr.

PSY 324 Drugs and Behavior

Prerequisite: 9 credits in Psychology; PSY 312 or permission of the instructor. This is a course in behavioral pharmacology with an emphasis on examining the pharmacokinetics and behavioral effects of recreational and prescribed psychoactive drugs. This course includes a number of laboratory exercises. Students will be required to prepare an APA formatted paper based on their experimental results.

3 cr.

PSY 333-334 Independent Study

See "Independent Study" on p. 31.

1-3 cr.

PSY 342 Analysis of Behavior: Principles and Classroom Applications

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.

4 cr.

PSY 346 Applied Programming I

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.

4 cr.

PSY 348 Systematic Inquiry in Applied Research

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 writ-

ten 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.

4 cr.

PSY 350/351 Advanced Physiological Psychology Research

Prerequisite: PSY 250/251 and permission of instructor. In this course the student will further increase their knowledge and skill level of general laboratory techniques by performing surgical procedures, histology and drug administration. 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.

1-3 cr. each course

PSY 390 Special Topics

Topics in psychology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

PSY 413 Learning, Memory and Cognition

Prerequisite: PSY 313 and junior standing. This is an advanced examination of the basic research and theories in learning, human memory and cognition, and their applications to human behavior. Topics include operant and respondent conditioning, memory, cognitive theory, conceptual behavior, and biological influences on learning, memory and cognition.

3 cr.

PSY 414 Conditioning and Learning Lab

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.

3 cr.

PSY 416 Introduction to Counseling Skills

Prerequisite: Senior standing in psychology or permission of the instructor. This is a survey of 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. Students will prepare weekly reaction papers on each of the major theories of counseling and psychotherapy covered.

3 cr.

PSY 418 Behavioral Counseling Methods

Prerequisite: PSY 313; PSY 416 or permission of the instructor. 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.

3 cr.

PSY 420 History of Psychology

Prerequisite: Junior psychology standing or permission of the instructor. This is an examination of the history of psychology that includes major philosophical and scientific influences such as Darwin, Wundt, Freud, Galton, 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.

3 cr.

PSY 421 Modern Theories of Psychology

Prerequisite: PSY 313 and junior psychology standing or permission of the instructor. 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.

3 cr.

PSY 440 Undergraduate Research

Prerequisite: PSY 309, senior standing or permission of the chairperson of psychology. See "Undergraduate Research" on p. 32.

3 cr.

PSY 450/451 Senior Physiological Psychology Research Project

Prerequisite: PSY 350/351 and permission of the instructor. 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.

3 cr. each course

PSY 469 Topics in Clinical Practice I

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.)

12 cr.

PSY 470 Topics in Clinical Practice II

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.)

12 cr.

PSY 480-481 Internship in Psychology

See "Internships" on p. 32.

1-3 cr.

QM QUANTITATIVE METHODS

(School of Business)

QM 201 Introduction to Business Statistics

Prerequisite: CIS 102, 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, the chi-squared test of statistical independence, and simple linear regression. The use of computing tools in statistical analysis is emphasized heavily. Credit for both this course and MATH 207 is not permissible. 3 cr. *Laboratory fee \$25.*

QM 302 Forecasting for Business

Prerequisite: QM 201; CIS 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. 3 cr. *Laboratory fee \$25.*

QM 310 Quality and Operations Management

Prerequisites: MATH 1xx, MATH 1xy, QM 201, MAN 101, MK 200, AC 202, FIN 214, CIS 202. This course is the second quantitative methods course. Topics to be covered include inventory management including JIT and MRP, statistical quality control, linear programming, optimal scheduling, and facility layout. These topics are presented from the perspective of a quality and continuous improvement paradigm and in the context of the problem solving model. 3 cr.

QM 336 Logistics/Physical Distribution

Prerequisite: MK 101, QM 201. 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.

3 cr. *Laboratory fee \$25.*

SO SOCIOLOGY

(School of Arts and Sciences)

SO 101 Introduction to Sociology

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, economy is included. Other topics include social stratification based on class, gender, race and ethnicity, deviance, and social change.

3 cr.

SO 190 Special Topics in Sociology

Topics in sociology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

SO 203 Social Problems

Prerequisite: SO 101. This is a study of the incidence, distribution, interrelations, and nature of social problems characteristic of highly industrialized urban societies. The focus is on social structure and modern technology as causes of problems and on the role of government and social institutions in their solution.

3 cr.

SO 214 Drugs, Society, and The Criminal Justice System

Prerequisite: SO 101 or CJ 101. This is a study of the legal and social background of the pressing American problem of drugs and alcohol and their use and abuse in American society. This course is equivalent to CJ 214.

3 cr.

SO 290 Special Topics in Sociology

Topics in sociology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

SO 302 Industrial and Post-Industrial Society

(Formerly “Complex Organizations”)

Prerequisite: SO 101. This course focuses on an examination of changes in work in America through a review of industrialization from the early 1800s to the 1970s, and through an examination of research conducted from the early 1970 to present.

3 cr.

SO 305 The Sociology of Urban Life

Prerequisite: SO 101. 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.

3 cr.

SO 308 Sociology of the Family

Prerequisite: SO 101. 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.

3 cr.

SO 309 Social Deviation and Control

Prerequisite: SO 101. 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.

3 cr.

SO 310 Cultural Anthropology in the 21st Century

This is an introduction to the academic discipline of anthropology including physical anthropology, anthropological linguistics, archaeology, and cultural anthropology. The emphasis is on the concept of culture, cultural behavior, and cultural dynamics. Cultures are seen, in part, as an ecological adaptation to certain environmental niches. Concepts dealing with cultural relativity are stressed.

3 cr.

SO 311 Sociology of Minority Groups

Prerequisite: SO 101. This is an examination of the relative socio-economic status of various social groups and of the relations among them. Selected cross-cultural studies are reviewed, but emphasis is on the United States.

3 cr.

SO 314 American Culture and the Black Experience

Prerequisite: Six credit hours of psychology and/or sociology. This is a study of the impact of Black people upon American culture. The course traces the historical, psychological, sociological, and anthropological influences of the Black experience on American society. The focus is on the processes of socialization, accommodation, and acculturation.

3 cr.

SO 322 Sociological Theory and Methods

Prerequisite: SO 101, PSY 207 and junior standing or instructor's permission. This is an in-depth survey of the major sociological theories from the nineteenth 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.

3 cr.

SO 323 Seminar in Theory and Method

Prerequisite: SO 101, PSY 207, SO 322, senior standing or instructor's permission. This course is a continuation of the Theory and Methods course. Students conduct their own sociological research project involving research design, literature review, and analysis.

3 cr.

SO 324 Comparative and Historical Sociology

Prerequisite: SO 101 and junior standing. This course introduces basic analytic tools for describing and comparing macro-level social structures. Particular attention is paid to the distinctive traditions of sociological thinking in Europe and the United States. Students are expected to research and prepare a comparative and historical study of a chosen area of concern: family life, education, deviance, or social policy.

3 cr.

SO 325 Introduction to the Mayan World

Prerequisite: PSY 101, SO 101 or SO 205. This course directly involves the student in exper-

riencing the Yucatec Mayan world of southern Mexico. After preparatory lectures and orientation, students spend ten days in the Yucatan on a tour of the Mayan world. Students visit archaeological sites, caves and altars, colonial churches, Spanish towns and cities, native markets, and the Caribbean coast. Students are encouraged to experiment with local foods and language and gain insight into the traditional native American ways of life, history, and custom. May be used as a substitute for an elements of culture requirement "C" course.

3 cr.

SO 330 Sociology of Communication

Prerequisite: PSY 101 or SO 101. This course focuses on theories of communication as presented in the works of symbolic interactionists and social conflict theorists, such as G.H. Mead and Karl Marx.

3 cr.

SO 333-334 Independent Study in Sociology

See "Independent Study" on p. 31.

1-3 cr.

SO 341 The Sociology of Work

Prerequisite: SO 101. 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 resumes 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.

3 cr.

SO 343 Domestic Violence

Prerequisite: PSY 101, SOC 101, CJ 101 or permission of instructor. 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. This course is equivalent to CJ 343.

3 cr.

SO 349 Multicultural Policing

Prerequisite: SO 101 or CJ 101, junior or senior standing, or permission of the instructor. 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. This course is equivalent to CJ 349.

3 cr.

SO 360 Advertising, the Media, and Society

Prerequisite: SO 101. This course focuses on a critical, sociological analysis of the interplay of the media, advertising, and society. It examines issues such as the effects of advertising on self-image and alcohol use, the role of the mass media in society, media ethics, and the role of advertising and the media in politics.

3 cr.

SO 390 Special Topics in Sociology

Topics in sociology that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies.

1-3 cr.

SO 410 Social Change

Prerequisite: SO 101 and junior or senior standing or instructor'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.

3 cr.

SO 413 Social Inequality and Justice

Prerequisite: SO 101 and senior 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.

3 cr.

SPAN SPANISH

(School of Arts and Sciences)

SPAN 101 Elementary Spanish I

This is an introduction to the language including basic pronunciation, simple conversation structure, structural analysis of sentences, and dialogue construction. Included is practice in speaking, listening, and simple reading. Approximately eight hours of laboratory work are required in half-hour periods.

3 cr.

SPAN 102 Elementary Spanish II

Prerequisite: SPAN 101 or the equivalent. This is a continuation of SPAN 101 at a level of increasing complexity and with some attention to writing the language. Approximately eight hours of laboratory work are required in one-half-hour periods. Offered every spring.

3 cr.

SPAN 130 Spanish for Criminal Justice

Prerequisite: Criminal justice major or minor. 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.

3 cr.

SPAN 140 Spanish for Social Services

Prerequisite: Social Science major or minor (SO, SW, PSY, or CJ). 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. Offered once a year.

3 cr.

SPAN 190 Special Topics in Spanish

Topics in Spanish that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

1-3 cr.

SPAN 203 Intermediate Spanish I

Prerequisite: SPAN 102 or the equivalent. This is a systematic review of Spanish grammar and sentence structure with study and practice in the more complex structures. The emphasis is on vocabulary building through conversation, reading, and composition aimed at providing an understanding of the culture of Hispanic groups and societies. Offered every fall.

3 cr.

SPAN 204 Intermediate Spanish II

Prerequisite: SPAN 203 or the equivalent. This is a continuation of SPAN 203. Emphasis is on conversational skill through oral and audio-lingual practice. Reading materials are selected to expand the student's oral and reading skills. Offered every spring.

3 cr.

SPAN 290 Special Topics in Spanish

Topics in Spanish that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies

1-3 cr.

SPAN 305 Advanced Conversational Spanish I

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; oral exercises from Spanish texts, newspapers, and magazines; and audio-lingual drills are used to develop fluency in the spoken language. A portion of the course is devoted to techniques in composition and translation. Offered every fall.

3 cr.

SPAN 306 Advanced Conversational Spanish II

Prerequisite: SPAN 305 or permission of the instructor. This is a continuation of SPAN 305 with emphasis on cultural and societal conditions in contemporary Latin America. Offered every other year.

3 cr.

SPAN 333-334 Independent Study in Spanish

See "Independent Study" on p. 31.

SPAN 390 Special Topics in Spanish

Topics in Spanish that are not offered on a regular basis are examined. The course may be repeated for credit if the topic varies
1-3 cr.

SW SOCIAL WORK (School of Arts and Sciences)

SW 100 Introduction to Social Work

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.

3 cr.

SW 190 Special Topics in Social Work

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.
1-3 cr.

SW 203 Child Welfare

This is a survey of the history and development of children's services. Topics include foster care, adoption, day care, and protective and other services for minors and families; public and private services; policy formulation; the decision making process for authoritative intervention; foster care placement; permanency planning; and ethical guidelines for practice with children and families.
3 cr.

SW 204 Social Work and Criminal Justice

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.

3 cr.

SW 216 Human Behavior in the Social Environment

Prerequisite: SO 101, PSY 101, SW 101 or permission of instructor. This course is a social systems approach to the relations among individuals, families, groups, communities, and organizations. Emphases are human diversity and its influence on the social environment; the impact of the social environment on human growth, development, and behavior; and the relevance of these issues to social work practice.

3 cr.

SW 290 Special Topics in Social Work

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.
1-3 cr.

SW 301 Social Work Intervention Methods I

Prerequisite: SW 100, SW 216, junior standing. 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 a helping relationship project, which provides the opportunity to integrate course content with field work in an agency setting.

3 cr.

SW 302 Social Work Intervention Methods II

Prerequisite: SW 301 and junior standing. 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.

3 cr.

SW 303 Social Work Interventive Methods III

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.

3 cr.

SW 304 Social Work Interventive Methods IV

Prerequisite: SW 301, 302, and 303. 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 multi-problem 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.

3 cr.

SW 310 Substance Abuse and the Family

Although this is a 300 level course because of the reading and workload, it is not necessary to have previous social work courses to take this course. Some background in sociology, psychology, or social work is useful, 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.

3 cr.

SW 313 Social Welfare and Social Policy

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.

3 cr.

SW 314 Field Instruction in Macro Practice

This course, taken concurrently with SW 303, Social Work Methods III and SW 313, Social Welfare and Social Policy 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. This course is graded on a pass/fail basis.

3 cr.

SW 319 Social Work and Research

Prerequisite/co-requisite: PSY 207 or MATH 207 and junior 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.

3 cr.

SW 320 Dynamics of Oppression and Empowerment

Prerequisite: Junior standing and SO 311. 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. 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 level perspectives. The course helps students continue to develop culturally sensitive social work practice skills and an appreciation of the impact of power on the client-worker relationship.

3 cr.

SW 383 Women's Issues

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 focussing on women's strengths.

3 cr.

SW 390 Special Topics in Social Work

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.

1-3 cr.

SW 409, 410 Field Instruction in Social Work I

Prerequisite: All required 100, 200, and 300 level social work courses, and senior standing in social work. 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

some services under the supervision and guidance of professional personnel. Students are limited to a total of six credits for SW 409 and SW 410. These courses are graded on a pass/fail basis.

6 cr.

SW 411, 412 Field Instruction in Social Work II

Prerequisite: SW 409, SW 410, and senior standing in social work. 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. These courses are graded on a pass/fail basis.

6 cr.

SW 414 Seminar in Field Instruction I

Prerequisite: Completion of all Social Work Methods courses, Corequisite: Concurrent registration in SW 409 and 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. Students create research proposals for field-based research projects and design and carry out a project related to the impact of diversity issues in their field placements.

2 cr.

SW 415 Seminar in Field Instruction II

Prerequisite: SW 409, 410, and 414. Corequisite: Concurrent registration in SW 411 and 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. Students are responsible for carrying out research projects evaluating a component of their field practicum experience and continuing the diversity project developed in SW 414.

1 cr.



GRADUATE 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 school 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 36-credit graduate program. Normally, the final courses are to be taken at Western New England College, 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 College.
- 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 College. 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, or May 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 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 school. 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 school 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 reason 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 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 Schools 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 College 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 College 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 Office of Continuing Education. 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 Term Calendar. A grade of "W" carries no academic penalty or prejudice.

Undergraduate Student Registration for Graduate-Level Business Courses

Several regulations, listed below, apply to undergraduate students wishing to register for graduate courses in business:

- A final-semester senior with a minimum cumulative average of 3.0 may elect to take two 500-level courses or two 600-level courses (or one of each). The graduate courses may be taken for graduate credit providing they do not exceed the normal load of five courses.
- Courses at the 500 level are not open to undergraduates who have completed the corresponding undergraduate course.
- The student must complete all undergraduate requirements in the semester in which the graduate courses are taken. 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 assistant dean in the appropriate school.

GRADUATE PROGRAMS IN ARTS AND SCIENCES

Master of Education in Elementary Education (MEEE)

The College now offers a Master of Education in Elementary Education Program. Fully accredited by the Massachusetts Department of Education, this program allows students to obtain a Master's degree for the Professional License in the elementary field. The program offers students content course work in the areas of computer technology, English, history, mathematics, and science. In addition, there is education course work 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 obtained an Initial License in elementary education.

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 twenty-first 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 on-going 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 the fall, winter, and spring, with eleven-week terms. Two courses will be offered each term, at hours in the late afternoon or early evening, convenient for working professionals. The courses will be sequenced to run every two years, so it will be possible to complete all degree requirements within that time frame. The program will require the completion of ten courses and can be achieved in a minimum of five eleven-week terms. The program will also allow students a longer period of study to complete the degree and will permit students to enroll in courses without an interest in a degree. A typical program would be fall, winter, spring, fall, and winter.

Master of Education in Elementary Education Requirements

The program requires ten courses (30 credit hours). In addition to having an Initial License for elementary teaching, students will need to have attained an overall grade point average of 2.8 in their undergraduate work to become a degree candidate.

ENGL 5xx	Literature for Elementary Teachers
HIST 520	Documents of World History
ED 540	Mathematical Theories and Skills for Elementary Teachers
ED 545	Concepts and Methods of the Natural Sciences
ED 535	Technology Education and Integration in the Elementary Classroom
ED 510	Educational Research
ED 515	Assessment: Theories, Strategies, and Design
ED 520	Administrative Skills and Mentoring
ED 525	Adult and Professional Development
ED 530	Philosophy of Education

Admission

The program is designed primarily for elementary teachers who hold an Initial License in the field, but it is also available to all teachers who have an interest in graduate study in any of the areas provided by this coursework. Non-degree participants in the program must have a Bachelor's degree from a regionally accredited college or university and a minimum 2.5 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.

Master of Arts in English for Teachers (MAET)

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 must to 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; by helping professionals develop standards based curricula and assessment, it addresses the needs of the classroom teacher.

Competency areas

The program offers courses in 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 multiple audiences
- Learning how to do intensive research, both on-line and in the library, including being familiar with ALA information literacy standards 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 proficient with major literary figures/schools/eras, and the historical and literary relationships among them, especially in English and American literature
- Mastering 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

Array of Courses

All courses have connection to the Frameworks and are determined by the backgrounds of the students enrolled in the Program. Students choose ten courses (30 credit hours) from among the courses according to their needs. Additional courses are developed as need arises.

MAET 550-559 Fundamental Studies

- MAET 550 Standards Based Planning and Assessment in the English Curriculum
- MAET 552 Advanced Grammar
- MAET 553 Teaching Writing in the English Curriculum
- MAET 554 Applied Rhetoric
- MAET 556 The Reading Process in the English Curriculum

MAET 560-569 Literary Studies

- MAET 560 Shakespeare and the Elizabethan Age
- MAET 561 Poetry
- MAET 562 Epic, Myth and Fable
- MAET 563 Literary Genres
- MAET 564 Cultural-Literary Connections
- MAET 565 Great Works of American Literature
- MAET 566 Modern American Literature
- MAET 570 Seminar: Issues in the Teaching of English

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 ten 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. A capstone project that brings together content and pedagogy is required.

Master of Arts in Mathematics for Teachers (MAMT)

Purpose

The Master of Arts in Mathematics for Teachers (MAMT) degree program is designed primarily for middle and secondary school mathematics teachers, but it is also available to all teachers with an interest in further study in mathematics and to individuals seeking a career change to teaching. 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 will be structured and taught with a vision of the mathematics scholar-teacher in the twenty-first century. Students who complete this program of study will be able to demonstrate all of the following standards:

Learning Mathematical ideas:

- Become independent learners, capable of doing and learning mathematics on their own;
- Develop their own processes, concepts, and techniques for solving problems;
- Exercise mathematical reasoning through recognizing patterns, making and refining conjectures and definitions, and constructing logical arguments, both formal and heuristic, to justify results.

Connecting Mathematical Ideas:

- Develop an understanding of the interrelationships within mathematics and an appreciation of its unity;

- Explore the connections that exist between mathematics and other disciplines;
- Apply mathematics learned in one context to the solution of problems in other contexts.

Communicating Mathematical Ideas:

- Develop skills in both written and oral communication of mathematical concepts and technical information;
- Learn to communicate effectively at various levels of formality and with people who have differing levels of mathematical insight;
- Understand and appreciate the power of mathematical language and symbolism in the development of mathematical concepts.

Building Mathematical Models:

- Work with a given model;
- Recognize constraints inherent in a given model;
- Construct models to analyze real-world settings and use symbols and reasoning in analysis.

Using Technology:

- Use calculators and computers as tools to represent mathematical ideas and construct different representations of mathematical concepts;
- Use calculators and computers to engender a broad array of mathematical modes of thinking through use of powerful computing tools ;
- Use calculators and computers to develop and use alternate strategies for solving problems.

Developing Perspectives:

- Experience and explore the dynamic nature of mathematics and its increasingly significant role in social, cultural, and economic development;
- Develop an appreciation of the contributions made by various cultures to the growth and development of mathematical ideas;

- Investigate the contributions made by individuals, both female and male, and from a variety of cultures, in the development of ancient, modern, and current mathematical topics;
- Gain an understanding of the historical development of major school mathematical concepts typically encountered in K-12 education.

Structure

The program is a part-time graduate program with courses offered in the fall, winter, spring, and summer eleven-week terms. Two mathematics courses will be offered per term, running back to back, two days a week, late afternoon and early evening, at hours convenient for the expected teacher audience. The courses will be sequenced to run every two years, so that it would be possible to complete all degree requirements in that time period. The degree requires the completion of ten courses, and can thus be achieved in a minimum of five eleven-week terms. In the spirit of collaborative learning the program will try to admit a cohort group every two years, whose intention would be to finish within that period (with summer term optional). 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 the degree, if they so desire. A typical program would be fall, winter, spring, fall, and winter.

MAMT Requirements

The program requires ten courses (30 credit hours), at least seven of which must be mathematics courses and at most three of which can be education courses. Students will be required to have an overall GPA of 3.00 or better to become a degree candidate.

Mathematics:

MAMT 548 What is Mathematics?

MAMT 550 Discrete Mathematics

MAMT 552 Geometry Revisited

MAMT 554 Number Theory

MAMT 556 Graph Theory and
Combinatorics

MAMT 558 Probability and Statistics

MAMT 560 History of Mathematics

MAMT 562 Linear and Matrix Algebra

MAMT 564 Analysis

MAMT 566	Algebraic Structures
MAMT 568	Mathematical Modeling
MAMT 590	Special Topics in Mathematics
ED 510	Educational Research
ED 515	Assessment, Theories, Strategies and Design
ED 520	Administrative Skills and Mentoring
ED 530	Philosophy of Education

Master of Science in Criminal Justice Administration

(Please note: This program is only offered at Western New England College's off-campus locations. For further information please call 1-800-446-9632 or 781-933-1595 or, in the Springfield area, 413-782-1249.)

The educational goal of this program is to provide students seeking a high quality Masters Degree in Criminal Justice Administration with a theoretical understanding and a practical grasp of the dynamics of the culture and community in which law enforcement agencies and correctional facilities perform their vital services. Also, the program provides students with the knowledge and tools necessary to administer and manage those agencies and facilities efficiently and effectively.

Program Graduates' Capabilities

1. Have an understanding and appreciation of the role of law enforcement and corrections in their communities. Have a basic understanding and appreciation of the role of law in the regulation and protection of public and private interests. Understand changes in practice required by recent decisions of federal, state and municipal courts;
2. Have an understanding and appreciation of the cultural and ethnic diversity within their community to enable their agencies to perform necessary services effectively;
3. Be acquainted with the more commonly accepted theories of the origin of community conflict and the sources of violence;

4. Understand the fabric of federal, state and local government agency interaction and politics in order to be able to provide the leadership and political acumen to gain access to the resources necessary for the efficient and effective operation of their own departments and agencies. Have an understanding of the importance of public relations;
5. Have a theoretical understanding and practical grasp of the basic principles of public agency administration and personnel management;
6. Have a theoretical understanding and practical grasp of public agency planning, accounting, budgeting, and finance;
7. Be able to identify, understand, and make efficient and effective use of technologies for law enforcement, data analysis, communications, and routine office work;
8. Have a theoretical and practical understanding of policing strategy and tactics. Understand and be able to apply the various investigatory techniques, and understand the latest scientific methods in forensics, data collection and analysis, and detection;
9. Provide leadership in the development of high professional standards by being able to write clear and effective reports, to make persuasive and interesting presentations, and to provide clear and expert testimony. Understand and practice high standards of ethical conduct;
10. Have an understanding and appreciation of, and the ability to make use of, the substantial literature of policing in both fiction and non-fiction. Recognize moral ambiguity.

Admissions Standards

1. An undergraduate degree from an accredited college or university;
2. In-service law enforcement experience required;
3. Up to six credit hours from a different master's level CJ program can be applied toward the satisfaction of the degree requirements;
4. A minimum of 24 credit hours must be completed at Western New England College;
5. Each candidate will be reviewed by the Admissions Committee to determine whether the candidate has the necessary requirements.

Foundation Courses

- MCJA 501 Management Theory and Concepts for Criminal Justice
 MCJA 502 Law Enforcement in America

Required Core Courses

- MCJA 601 Criminal Justice Administration
 MCJA 602 Organizational Behavior in Criminal Justice
 MCJA 611 Criminal Procedure
 MCJA 612 Criminal Law
 MCJA 616 Budgeting and Planning in Criminal Justice
 MCJA 620 Ethical Issues in Criminal Justice
 MCJA 625 Data Base Management in Criminal Justice
 MCJA 695 Advances Community Policing

Electives (select two)

- MCJA 609 Constitutional Law
 MCJA 610 Report Writing for the Justice Professional
 MCJA 613 Security and Loss Prevention for Management
 MCJA 614 Police and the Public: Communication Techniques
 MCJA 615 Risk Management in Criminal Justice
 MCJA 630 Field Management in Criminal Justice
 MCJA 640 Management, Unions, and Collective Bargaining in Criminal Justice
 MCJA 641 Stress Management in Criminal Justice
 MCJA 642 Organizational Development in Criminal Justice

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. The majority of graduate courses are offered in the evening. The graduate faculty are appointed from the full-time faculty.

The graduate business programs lead to the following degrees:

Students may enroll in the following part-time evening programs in business: a general Master of Business Administration (MBA); an MBA with a concentration in accounting, finance, human resource management, management information systems, or marketing; a completely online option for the MBA program (general program only); and Master of Science in Accounting (MSA). Also offered is a certificate program for graduate study in management.

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

Western New England College is the only private AACSB accredited college in western Massachusetts. With accreditation, Western New England College is among an elite company of 466 AACSB International accredited business programs.



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 multi-year review.

Master of Business Administration

Purpose

The MBA is designed to develop and enhance the skills of those who hold or aspire to hold positions of responsibility within organizations. Students attain a theoretical understanding and practical grasp of effective busi-

ness and organization principles in both global and domestic environments.

Students in the MBA program will extend and refine their knowledge of business through study, experiential exercises, and assessment of performance in the areas listed under program objectives.

Program Objectives

Managerial Skills: a theoretical understanding and practical grasp of managerial skills, such as organizing, planning, controlling, and resolving conflicts.

Problem-solving Skills: the ability to define problems, generate alternative solutions, select techniques, and develop solutions, utilizing critical thinking skills, innovation, and creativity.

Decision-making Capabilities: the capacity to weigh the risks and rewards, as well as costs and benefits, involved in making business decisions.

Quantitative Skills: the ability to solve problems in the business environment utilizing mathematical and statistical techniques.

Information Systems: an understanding of how information and technological systems can assist in the workplace and the ability to utilize the appropriate computer technology.

Communication Skills: the ability to present ideas persuasively to others orally; and the ability to write clearly, concisely, and effectively.

Leadership skills: the ability to set direction, influence, and support others in the pursuit of the organization's mission and goals.

Team-based Competencies: the skills in team-based performance situations developed through competency in such areas as cooperation, group problem solving, and consensus building.

Ethical Analysis: the evaluation of business decisions involving ethical conflicts between stakeholders and societal values.

Environmental Analysis: an understanding of how demographic diversity affects the political, social, and legal business environment.

Integrative Perspective: the ability to integrate functional areas in the analysis of organizational issues.

Structure

The MBA is composed of three areas: foundation courses, core courses, and concentration/elective courses. In addition to the general MBA, five concentrations are available: accounting, finance, human resource management, management information systems, or marketing. A completely online MBA option is also available, general program only. Students may earn a second graduate concentration (but not a second MBA degree) by returning as a non-degree student following graduation to fulfill the requirements of the additional concentration. All courses for the second concentration must be completed within eight years of the date of degree conferral.

Students without undergraduate preparation in the following foundation areas of accounting, math, communication, spreadsheet and presentation software, Internet skills, and economics must take graduate modules preparing them for the formal MBA curriculum. Waivers may be granted for previous academic or work experience or by a proficiency test through the Dean's office.

Foundation requirements: 11 credit hours (waiver possible, as noted below)

Core Requirements: 28 credit hours (graduate level courses to be taken by all students who have no previous graduate work)

Electives: 9 semester hours (graduate level courses)

Foundation Requirements

11 credit hours (waivable)

All students are expected to demonstrate proficiency, through previous academic or work experience, in the following five foundation areas. Foundation requirements must be completed before starting the course for which the foundation area is a prerequisite.

AC 500 Accounting Perspectives (3 credits): or two semesters of accounting;

BUS 510 Quantitative Analysis (2 credits): or one semester each of mathematics *and statistics*;

BUS 520 Business Communication (2 credits): or one semester each of English Composition and Business Communication or Public Speaking;

BUS 530 Computer Software/Internet Skills (2 credits): or one semester of computer applications or familiarity with the Microsoft Office Suite, and the Internet and email;

BUS 540 Economics (2 credits): or one semester each of macro- and microeconomics.

The Graduate Admissions Committee will evaluate each applicant's academic record to determine which, if any, requirements have been met. Courses meeting the foundation requirements must have been completed within eight years prior to application, with a grade of B or better. Students who have not satisfied the Accounting foundation area may enroll in a three-credit course, AC 500, Accounting Perspectives. Instruction in each of the other four foundation areas is provided via two credit modules. AC 500 and the modules are offered during the academic year. Students must earn a grade of B or higher in all foundation coursework.

Students without prior academic preparation but with proficiency in a particular foundation area may apply for a waiver. To qualify for a waiver, students must document their relevant work experience or obtain a grade of B or higher on the proficiency test in the foundation area.

Core Requirements

28 credit hours

The MBA program includes the following nine core courses. All students are required to complete these courses in the sequence following the cluster structure.

CIS 610	Information Technology Management and Applications	3
MAN 600	Team Leadership	3
MK 640	Marketing Management	3
MAN 610	Organizational Behavior and Theory	3
QM 610	Decision Support Models	3
AC 630	Accounting for Decision Makers	3
FIN 630	Managerial Finance	3
BUS 650	The Changing Social, Political, Ethical and Legal Environment of Business	4
BUS 680	Strategic Management	3

Clusters and Floating Courses

To achieve objectives of the MBA program, the nine core courses are grouped into clusters. Foundation requirements must be com-

pleted before starting the course for which the foundation is a prerequisite. Courses in a cluster may be taken in any order as long as all the prerequisites are met. Floating course BUS 650 can be taken as part of Cluster B or Cluster C. Floating electives can be taken in any of the clusters A, B, or C as long as all course prerequisites are met.

Concentration/Electives Courses

9 credit hours

Elective courses are chosen based on the students' interests and professional needs, and the requirements of the program. Elective courses may be taken anytime during the program as long as the course prerequisite are satisfied. In the general program, electives are listed as BUSE 6xx. Any 600 level course offered by the School of Business satisfies this requirement. Students with concentrations must select from electives specific to their area.

Master of Business Administration (MBA) - General Program

The general program provides students with the opportunity to select electives that meet personal and career goals not addressed by the other concentrations.

Students are expected to demonstrate proficiency through academic or work experience in the five foundations area listed below. Foundation requirement must be completed before starting a course for which the foundation is a prerequisite. Students are expected to complete all courses in one cluster before taking courses in the next cluster. However, courses within a cluster may be taken in any order as long as prerequisites are met. BUS 650 may be taken as part of Cluster B or Cluster C. Other floating courses may be taken in any of the clusters A, B, or C. In all cases, course prerequisites must be met.

Foundation requirements -11 credit hours

BUS 510	Quantitative Analysis
BUS 520	Business Communication
BUS 530	Computer Software/Internet Skills
BUS 540	Economics
AC 500	Accounting Perspectives

Cluster A courses-9 credit hours

CIS 610	Information Technology Management and Applications
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MAN 600	Team Leadership
MK 640	Marketing Management

Cluster B courses-12 credit hours

MAN 610	Organizational Behavior and Theory
QM 610	Decision Support Models
AC 630	Accounting for Decision Makers
FIN 630	Managerial Finance

Cluster C course-3 credit hours

BUS 680	Strategic Management
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Floating Electives 13 credit hours

(including 9 credit hours of general electives)

BUS 650	The Changing Social, Political, Ethical and Legal Environment of Business	(4 credits)
BUSE 6xx	Business Elective	
BUSE 6xx	Business Elective	
BUSE 6xx	Business Elective	

Concentration in Accounting

The MBA with a concentration in accounting provides students the opportunity to study the accounting function from a management point of view. Its purpose is to develop and enhance the skills of those who hold or aspire to hold positions of responsibility within organizations. Students attain a theoretical understanding and practical grasp of effective business and organization principles in both global and domestic environments. Students in the MBA program will extend and refine their knowledge of business through study, experiential exercises and assessment of performance in the areas listed under program objectives.

The program is also designed to satisfy the education requirements to sit for the CPA examination in Connecticut and many other states. Students taking the CPA exam in jurisdictions other than Connecticut must check the requirements of the respective jurisdiction to make sure their curriculum is consistent with those requirements. The Accounting Concentration builds upon an undergraduate degree in accounting. Students must complete the following 24 undergraduate credit hours before they can complete the upper level graduate courses in accounting:

6 hours of elementary accounting

6 hours of intermediate or advanced accounting

3 hours of cost accounting

3 hours of taxation

3 hours of auditing

3 hours of accounting information systems

Students lacking an undergraduate degree in accounting may complete 21 hours of graduate study as follows:

3 hours of introductory financial reporting

3 hours of managerial accounting

6 hours of intermediate or advanced accounting

3 hours of taxation

3 hours of auditing

3 hours of accounting information systems

At Western New England College, the undergraduate courses that complete these requirements are:

AC 201	Financial Reporting I
AC 202	Managerial Accounting
AC 305	Financial Reporting II
AC 306	Financial Reporting III
AC 309	Cost Accounting
AC 330	Accounting Information Systems
AC 413	Fundamental Concepts of the Tax Structure
AC 419	Auditing and Assurance Services

The graduate courses that complete these requirements are:

AC 500	Financial Reporting I
AC 630	Accounting for Decision Makers
AC 602	Financial Reporting II
AC 603	Financial Reporting III
AC 640	Accounting Information Systems
AC 613	Fundamental Concepts of Taxation
AC 619	Auditing and Assurance Services

Administrative Policies

Students who are lacking all or some of the above eight undergraduate courses can be admitted into the program but all of the remaining courses must be completed with no grade below a B within three years. MBA transfer credit limitations do not apply to undergraduate courses and GPA calculations will be based on graduate courses only. Relevant undergraduate prerequisites or

their graduate alternatives must be satisfied for all graduate level courses before the student is eligible to take them.

MBA Program requirements

Students are expected to demonstrate proficiency through academic or work experience in the five foundations area listed below. Foundation requirement must be completed before starting a course for which the foundation is a prerequisite. Students are expected to complete all courses in one cluster before taking courses in the next cluster. However, courses within a cluster may be taken in any order as long as prerequisites are met. BUS 650 may be taken as part of Cluster B or Cluster C. Other floating courses may be taken in any of the clusters A, B, or C. In all cases, course prerequisites must be met.

Foundation Requirements-11 credit hours

BUS 510	Quantitative Analysis (2 credit hours)
BUS 520	Business Communication (2 credit hours)
BUS 530	Computer Software/Internet Skills (2 credit hours)
BUS 540	Economics (2 credit hours)
AC 500	Accounting Perspectives (3 credit hours)

Cluster A courses-9 credit hours

CIS 610	Information Technology and Management and Applications
MAN 600	Team Leadership
MK 640	Marketing Management

Cluster B courses-9 credit hours

MAN 610	Organizational Behavior and Theory
QM 610	Decision Support Models
FIN 630	Managerial Finance

Cluster C course-3 credit hours

BUS 680	Strategic Management
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Floating Electives-16 credit hours

(including 12 credit hours of accounting electives)

BUS 650	The Changing Social, Political, Ethical and Legal Environment of Business (4 credits)
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Accounting Electives

Four accounting elective courses are taken in the summer or fall quarters only

AC 6xx	**Accounting Elective

** must be selected from AC 610, AC 611, AC 614, AC, 620, AC 622

Concentration in Finance

The concentration in finance provides students with an opportunity to understand the financial theory and practical application concepts to actual case problems. Also, a study of the investment markets, analysis, and a survey of financial institutions are covered.

Students are expected to demonstrate proficiency through academic or work experience in the five foundations area listed below. Foundation requirement must be completed before starting a course for which the foundation is a prerequisite. Students are expected to complete all courses in one cluster before taking courses in the next cluster. However, courses within a cluster may be taken in any order as long as prerequisites are met. BUS 650 may be taken as part of Cluster B or Cluster C. Other floating courses may be taken in any of the clusters A, B, or C. In all cases, course prerequisites must be met.

Foundation Requirements-11 credit hours

BUS 510	Quantitative Analysis
BUS 520	Business Communication
BUS 530	Computer Software/Internet Skills
BUS 540	Economics
AC 500	Accounting Perspectives

Cluster A courses -9 credit hours

CIS 610	Information Technology Management and Applications
MAN 600	Team Leadership
MK 640	Marketing Management

Cluster B courses -12 credit hours

MAN 610	Organizational Behavior and Theory
QM 610	Decision Support Models
AC 630	Accounting for Decision Makers
FIN 630	Managerial Finance

Cluster C course-3 credit hours

BUS 680	Strategic Management
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Floating electives-13 credit hours

(including 9 credit hours of finance electives)

BUS 650	The Changing Social, Political, Ethical and Legal Environment of Business (4 credits)
FIN 6xx	Finance Elective
FIN 6xx	Finance Elective
FIN 6xx	Finance Elective

Concentration in Human Resource Management

The concentration in human resource management is intended to provide students with the skills necessary to work in the human resource environment of a business.

Students are expected to demonstrate proficiency through academic or work experience in the five foundations area listed below. Foundation requirement must be completed before starting a course for which the foundation is a prerequisite. Students are expected to complete all courses in one cluster before taking courses in the next cluster. However, courses within a cluster may be taken in any order as long as prerequisites are met. BUS 650 may be taken as part of Cluster B or Cluster C. Other floating courses may be taken in any of the clusters A, B, or C. In all cases, course prerequisites must be met.

Foundation requirements-11 credit hours

BUS 510	Quantitative Analysis
BUS 520	Business Communication
BUS 530	Computer Software/Internet Skills
BUS 540	Economics
AC 500	Accounting Perspectives

Cluster A courses-9 credit hours

CIS 610	Information Technology Management and Applications
MAN 600	Team Leadership
MK 640	Marketing Management

Cluster B courses-12 credit hours

MAN 610	Organizational Behavior and Theory
QM 610	Decision Support Models
AC 630	Accounting for Decision Makers
FIN 630	Managerial Finance

Cluster C course-3 credit hours

BUS 680	Strategic Management
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Floating electives-13 credit hours

(including 9 credit hours of human resource management electives)

BUS 650 The Changing Social, Political, Ethical and Legal Environment of Business (4 credits)

MAN 631 Human Resource Management

MAN 6xx* Elective

MAN 6xx* Elective

* These electives must be selected from, MAN 630, MAN 640, MAN 642

Concentration in Management Information Systems

The concentration in management information systems provides students the opportunity to study systems and information concepts in organizations from a management point of view. Students completing the program have sufficient knowledge to become information analysts—those who work in a user department performing the liaison between their department and a computer department. The concentration in MIS would also be appropriate for any manager who works with or is concerned with information systems in organizations.

Students are expected to demonstrate proficiency through academic or work experience in the five foundations area listed below. Foundation requirement must be completed before starting a course for which the foundation is a prerequisite. Students are expected to complete all courses in one cluster before taking courses in the next cluster. However, courses within a cluster may be taken in any order as long as prerequisites are met. BUS 650 may be taken as part of Cluster B or Cluster C. Other floating courses may be taken in any of the clusters A, B, or C. In all cases, course prerequisites must be met.

Foundation requirements-11 credit hours

BUS 510 Quantitative Analysis

BUS 520 Business Communication

BUS 530 Computer Software/Internet Skills

BUS 540 Economics

AC 500 Accounting Perspectives

Cluster A courses-9 credit hours

CIS 610 Information Technology Management and Applications

MAN 600 Team Leadership

MK 640 Marketing Management

Cluster B courses-12 credit hours

MAN 610 Organizational Behavior and Theory

QM 610 Decision Support Models

AC 630 Accounting for Decision Makers

FIN 630 Managerial Finance

Cluster C course-3 credit hours

BUS 680 Strategic Management

Floating electives-13 credit hours

(including 9 credit hours of Information systems electives)

BUS 650 The Changing Social, Political, Ethical and Legal Environment of Business (4 credits)

CIS 665 Issues in Data Communications

CIS 675 Database Management

CIS 677 Systems Analysis, Modeling and Design

Concentration in Marketing

The concentration in marketing is designed for students whose present professional responsibilities or plans for career development require basic understanding and competency in the functional areas of marketing. Students in this concentration benefit from the special emphasis on marketing research methodologies, the development and marketing of new products, physical distribution and channel management, and marketing planning and strategy.

Students are expected to demonstrate proficiency through academic or work experience in the five foundations area listed below. Foundation requirement must be completed before starting a course for which the foundation is a prerequisite. Students are expected to complete all courses in one cluster before taking courses in the next cluster. However, courses within a cluster may be taken in any order as long as prerequisites are met. BUS 650 may be taken as part of Cluster B or Cluster C. Other floating courses may be taken in any of the clusters A, B, or C. In all cases, course prerequisites must be met.

Foundation requirements-11 credit hours

BUS 510 Quantitative Analysis

BUS 520 Business Communication

BUS 530 Computer Software/Internet Skills

BUS 540 Economics

AC 500 Accounting Perspectives

Cluster A-9 credit hours

CIS 610	Information Technology Management and Applications
MAN 600	Team Leadership
MK 640	Marketing Management

Cluster B courses-12 credit hours

MAN 610	Organizational Behavior and Theory
QM 610	Decision Support Models
AC 630	Accounting for Decision Makers
FIN 630	Managerial Finance

Cluster C courses-3 credit hours

BUS 680	Strategic Management
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Floating electives-13 credit hours

(including 9 credit hours of marketing electives)

BUS 650	The Changing Social, Political, Ethical and Legal Environment of Business (4 credits)
MK 6xx	Marketing Elective
MK 6xx	Marketing Elective
MK 6xx	Marketing Elective

Additional MBA Concentration

A student who has completed any Western New England College MBA program may earn an additional MBA concentration, but not a second MBA degree, by completing additional graduate courses in a postgraduate non-degree status. The requirement is usually three or more School of Business 600-level courses, depending upon the concentration selected.

Master of Science in Accounting (MSA)

Purpose

The Masters of Science in Accounting degree provides students with the opportunity to satisfy the requirements to sit for the CPA exam in Connecticut and Massachusetts, and to develop the skills in planning, controlling, evaluation and analysis that characterize a successful career in accounting. Students taking the CPA exam in other jurisdictions must check the requirements of the respective jurisdiction. This program provides students with a challenging academic environment that extends and

refines their knowledge of business and accounting through study, experiential exercises and assessment performance.

Program Objectives

Technical competence in accounting: knowledge of current accounting practices and an understanding of contemporary problems and issues in the accounting field. Managerial Skills: a theoretical understanding and practical grasp of managerial skills, such as organizing, planning, controlling and resolving conflicts. Decision-making ability: skills appropriate for a successful professional career in industrial, institutional, and governmental organization. Representative skills may include communication, leadership, team building, information systems analysis, and evaluation of ethical conflicts.

Admissions Standards

Admission is based on the candidate's undergraduate grade point average and the GMAT or other appropriate standardized test score.

Administrative Policies

Admission, continuation, and transfer policies of the MSA are the same as those of the MBA but with the additional requirement that students must have completed the foundation courses listed below 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 all or some of the foundation courses can be admitted into the program but after admission all remaining courses must be completed within four years with no grade below a B. MBA transfer credit limitations do not apply to undergraduate courses and GPA calculations will be based on graduate courses only. Relevant prerequisites must be satisfied for all upper level graduate courses before the student is eligible to take them.

Structure

The MSA consists of three areas: foundation courses which can be completed at the undergraduate or graduate level, core courses and elective courses. Courses in each area are listed below

Undergraduate Foundation Courses 24 credit hours

AC 201	Financial Reporting I
AC 202	Managerial Accounting
AC 305	Financial Reporting II
AC 306	Financial Reporting III
AC 309	Cost Accounting
AC 330	Accounting Information Systems
AC 413	Fundamental Concepts of the Tax Structure
AC 419	Auditing and Assurance Services

Alternate Graduate Foundation Courses 21 credit hours

AC 500	Financial Reporting I
AC 630	Accounting for Decision Makers
AC 602	Financial Reporting II
AC 603	Financial Reporting III
AC 640	Accounting Information Systems
AC 613	Fundamental Concepts of Taxation
AC 619	Auditing and Assurance Services

Core Courses 15 credit hours

AC 610	Cost-Based Decision Making
AC 611	Municipal and Fund Accounting
AC 622	Accounting Theory and Contemporary Issues
AC 614	Advanced Topics in Taxation
AC 620	Advanced Topics in Auditing

Other Business Courses 15 – 18 credit hours

General Business Electives may be substituted for the courses listed below by students who have earned a C or better in equivalent courses at the undergraduate level. Students lacking 24 hours of non-accounting business courses must complete a non-accounting graduate business elective in addition to those listed below.

FIN 630	Managerial Finance
LS 621	Law and the Business Community
BUS 694	Ethics and Professionalism
QM 610	Decision Support Models
MAN 6XX	
or	
BUS 6XX	

CERTIFICATE PROGRAM FOR GRADUATE STUDY IN MANAGEMENT

This program is intended for college graduates in any major who wish to study management at the graduate level. Flexible curriculum options make this certificate equally appropriate for MBA-holders who need to update or augment their knowledge of management theory and technique, or for students who have few or no previous management courses.

The curriculum consists of six 600-level graduate courses (18 credit hours) from the management department chosen by the student with the concurrence of an advisor.

Only courses completed within three and one-half years of the certificate completion date may be counted toward the requirements.

Requirements for admission are a graduate degree or an undergraduate degree with a cumulative average of at least 2.5 or permission of the assistant dean of the School of Business. Official transcripts are required.

Further information and the application is available from the Office of Continuing Education.

Courses may be taken in any order as long as prerequisites are met. A suggested program of study is:

MAN 600
MAN 610
MAN 630
MAN 631
MAN 651
MAN 6xx

GRADUATE PROGRAMS IN ENGINEERING

The Master of Science Program provides specialization in electrical engineering, engineering management, and mechanical engineering. At the graduate level, programs of study become less structured and more specialized. Although it is possible to earn a degree strictly on the basis of coursework alone, students with research interests or the intention of further graduate work may undertake a thesis project.

Master's Advisor

The progress of each student toward the M.S. degree is guided and directed by a master's advisor, who is a School of Engineering faculty member nominated by the student and approved by the dean of the School of Engineering. Incoming students seeking the degree are urged to discuss their proposed concentration area with faculty members in that area with a view toward selecting an advisor later in the semester.

Degree requirements

The master of science program requires a minimum of 30 credit hours of graduate courses (with a B (3.0) or better average) for completion in either a thesis or non-thesis option. A minimum of five courses must be at the 600 level. Courses are offered in the evening.

Thesis Option-Minimum Curriculum Requirements

The curriculum for the master of science program, thesis option, requires a minimum of 24 credit hours of course work and six hours of thesis. The student is admitted to candidacy after satisfactory completion of 6 hours of graduate course work 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. The distribution of course credits is:

Engineering Core Courses	12
Engineering Concentration Electives	9
Electives	3
Thesis	6
Total	30

Non-thesis Option-Minimum Curriculum Requirements

The curriculum for the master of science program, non-thesis option, requires a minimum of 30 credit hours of graduate course work. Students are admitted to candidacy as soon as possible after satisfactory completion of 6 hours of course work, maintaining a "B" average or better. A final comprehensive examination is required in the MSME and MSEE programs, which covers all course work completed by the student for the degree. The MSEM program requires an exit interview as part of the assessment of student learning in the program. The course distribution is:

Engineering core courses	12
Engineering Concentration Electives	9
Electives	9
Total	30

Master of Science in Electrical Engineering (MSEE)

High technology industries are an important sector of the economy, particularly in the Northeast. The MSEE program provides an engineering science-intensive approach to increase student's understanding and problem-solving abilities. Concentrations are offered in either computer or electrical engineering in addition to core courses that focus on mathematical analysis, signal and system theory, microcomputers, software engineering, and solid-state electronic devices.

Course Requirements

In addition to the required core courses, the student must elect one of the concentration areas listed below. Elective courses and thesis topics are selected in consultation with the master's candidate advisor.

Core Courses

Core courses for the electrical engineering program are as follows:

EE 525 Linear Systems Theory
 MATH 501 Engineering Analysis II
 and two courses chosen from:
 CPE 525 Software Engineering

CPE 560	Microcomputer Hardware Design
EE 511	Random Signals and Noise
EE 567	Solid-state Electronic Devices
EE 580	Signal Processing

Computer Concentration

Students electing the computer concentration select a minimum of three courses from the following:

CPE 545	Computer Graphics Software
CPE 550	Topics in Compiler Design Theory
CPE 620	Advanced Computer Architecture
CPE 655	Computer Network Architecture
CPE 660	Microprocessor Software Design
CPE 680	Distributed Processing

Electrical Concentration

Students electing the electrical concentration select a minimum of three courses from the following:

EE 535	Fuzzy Logic
EE 545	Neural Networks
EE 570	Computer Controlled Systems
EE 611	Digital Communication Systems
EE 614	Advanced Electromagnetics
EE 625	Stochastic Processes/Kalman Filters
EE 650	Advanced Digital Signal Processing
EE 667	Advanced Electrical Materials
EE 670	Optimal Control Systems

Approved Electives

Students in the electrical engineering program may select elective CPE or EE courses in the concentration areas and other CPE, EE, EMGT, and ME courses at the 500 and 600 levels approved by the master candidate's advisor.

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 MS in Engineering Management program addresses this need by including core courses in engineering administration, project management, statistical methods for quality assurance, and the economic aspects of engineering decisions.

Core Courses

EMGT 605	Engineering Management
EMGT 609	Engineering Cost Analysis
EMGT 615	Statistical Quality Control
EMGT 648	Project Management

Program concentrations: In addition to the required core courses above, students can expand their technical knowledge in keeping with their interest and professional needs by either selecting a general concentration, a concentration in production and manufacturing systems, a concentration in quality engineering, or a concentration in computer and engineering information systems.

General Concentration

Engineering Electives—nine credit hours minimum*

Electives—nine credit hours maximum

Production and Manufacturing Systems Concentration

(EMGT 622 Production Management and a minimum of two of the following engineering courses)

EMGT 629	Advanced Manufacturing Engineering Systems
EMGT 637	Ergonomics and Occupational Safety
EMGT 640	Energy Management
EMGT 643	Design of Experiments
EMGT 647	Facility Planning
ME 543	Introduction to Computer-Aided Manufacturing
ME 640	Flexible Manufacturing Systems
ME 654	Computer Control of Manufacturing

Electives—nine credit hours maximum**

Quality Engineering Concentration

EMGT 607 Quality Management
 EMGT 643 Design of Experiments
 EMGT 644 Quality Systems and Process Improvement
 Electives—nine credit hours maximum**

Computer and Engineering Information Systems Concentration

(CIS 610 Information Technology Management and Applications and a minimum of two of the following courses)
 EMGT 624 Engineering Management Information Systems
 EMGT 626 Computer Simulation of Engineering/Business
 ME 542 Computer-Aided Engineering
 ME 543 Introduction to Computer-Aided Manufacturing
 ME 654 Computer Control of Manufacturing

Electives—nine credit hours of the following courses or other graduate courses approved in consultation with the master candidate's advisor.

CIS 665 Issues in Data Communication
 CIS 671 Management Support Systems
 CIS 675 Database Management
 CIS 677 Systems Analysis, Modeling and Design
 CPE 525 Software Engineering
 CPE 545 Computer Graphics Software

* Any engineering management or other engineering graduate-level course approved by the master candidate's advisor.

** Any graduate-level course approved by the master candidate's advisor.

Master of Science in Mechanical Engineering (MSME)

This program has been designed to meet the needs of both the practicing professional and the person planning further graduate study. The tremendous impact of computers on mechanical engineering has created a need for advanced training that blends the computational aspects of engineering science with current applications in computer-assisted engineering, CAD and CAM. Modern materials testing and fluid flow facilities are available for research studies.

Course Requirements

In addition to four required core courses, students must take concentration courses as specified below.

Core Courses

EMGT 609 Engineering Cost Analysis
 — or —
 EE 525 Linear Systems Theory
 ME 510 Advanced Mechanical Engineering Applications
 ME 542 Computer Aided Engineering
 — or —
 ME 544 Computer Applications in Mechanical Engineering
 ME 610 Measurement Systems

Mechanical Engineering Concentration Courses

(Select a minimum of three courses)
 ME 620 Computational Methods in Vibrations and Structural Analysis
 ME 630 Computational Methods in Heat Transfer and Fluid Mechanics
 ME 635 Design of Thermodynamic Systems
 ME 640 Flexible Manufacturing Systems
 ME 646 Applied Finite Element Analysis
 ME 654 Computer Control of Manufacturing

Mechanical Engineering Approved Electives

Any graduate-level course approved by the masters candidate's advisor.

GRADUATE ENGINEERING CERTIFICATE PROGRAMS

Students may complete a four-course sequence in one of the following areas:

- Computer Engineering
- Electrical Engineering
- Engineering Management
- Mechanical Engineering

For information on specific certificates, contact the Office of Continuing Education.

CONTINUING EDUCATION

L. Douglas Kenyon
Director, Continuing Education and Off-Campus Programs

Linda K. Bowman
Associate Director, Continuing Education
Director, Professional Development

Ida B. Wilcox
Assistant Director, Springfield Off-Campus
Programs and Professional Development

Judy Cadden
Assistant Director, Student Services

Lisa M. Vachon
Educational Counselor/Recruiter

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

Part-time students may be admitted into the Master's Degree programs offered by the School of Arts and Sciences, the School of Business, and the School of Engineering.

GRADUATE NON-DEGREE OPTIONS

Certificate Programs:

Western New England College makes certificate programs available to those who do not wish a degree, but seek specialized training beyond a few courses. Programs are intended for college graduates who wish to enhance their career prospects and/or education. Further information on admission and program options may be obtained from the appropriate school or the Office of Continuing Education. Graduate Certificates are available in Management (see p. 260) and Engineering (see p. 264).

Graduate Non-Degree Study

Please refer to p. 19 "Graduate Non-degree Status."

SCHOOL OF LAW

Arthur R. Gaudio
Dean

Eric J. Gouvin
Associate Dean

For more than three-quarters of a century, Western New England College 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 and with membership in 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 6,000 alumni who live and practice in 49 states and several U.S. territories.

For admissions information, contact the School of Law at 413-782-1406 or 800-782-6665 or at www1.law.wnec.edu, on the web.

Combined Juris Doctor/Master of Business Administration (JD/MBA) Degree

After completing one year of the Juris Doctorate program, students may simultaneously complete the requirements of the Juris Doctor from Western New England College School of Law and a Master of Business Administration from Western New England College School of Business. Nine 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 School of Business and the JD Program through the School of Law.



GRADUATE COURSES

Courses are listed alphabetically by prefix.

In the graduate engineering programs, the 500-level courses are open to both undergraduates who have met the course prerequisites and graduate students who have not taken the equivalent as part of their undergraduate program of study. Courses numbered 600 and above are open only to 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 foundation courses. Courses numbered 600 and above are open only to graduate students who have successfully completed the related 500-level foundation courses or received waivers. Only 600-level courses may be used as electives in the graduate business programs.

Graduate Courses in Arts and Sciences

Education

ED 510 Educational Research

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.

3 cr.

ED 515 Assessment: Theories, Strategies and Design

This course is designed to provide inservice 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.

3 cr.

ED 520 Administrative Skills and Mentoring

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 MA Department of 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.

3 cr.

ED 525 Adult and Professional Development

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. Student will be assessed by examinations and written assignments.

3 cr.

ED 530 Philosophy of Education

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.

3 cr.

ED 535 Technology Education and Integration in the Elementary Classroom

Prerequisites: Graduate standing or senior with permission of instructor. 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 micro-computer 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.

3 cr.

ED 540 Mathematical Theories and Skills for Elementary Teachers

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.

3 cr.

ED 545 Concepts and Methods of Natural Sciences**(Formerly CHEM 515)**

Prerequisite: Two semester of laboratory science. Open only to students in MEEE program. This course examines the principal 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 intro-

duced. Laboratory experiments, group work, and problem solving will be emphasized.

3 cr.

HIST 520 Documents of World History

Prerequisite: Graduate standing or seniors with instructor's permission. This course will explore in depth the topics in world 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.

3 cr.

MAET 550-559 Fundamental Studies**MAET 550 Standards Based Planning And Assessment In The English Curriculum**

This course presents an overview of current pedagogy in the English language arts classroom. It is a practical course intended to help teachers or prospective teachers of secondary English understand how to become skillful in the implementation of curriculum.

Topics that are covered include: What are standards? How are they important in shaping curriculum? What does a standards-based lesson look like? How does assessment inform instruction? What are the rubrics and why are they needed? What does the MCAS assess and how does it affect what and how we teach? What is the scope and sequence and how does it affect long-range planning? What is curriculum mapping and why do it?

3 cr.

MAET 552 Advanced Grammar

This course reviews the rules and conventions of Standard Written English, with emphasis on the assessment and development of student writing.

3 cr.

MAET 553 Teaching Writing in the English Curriculum**(Formerly "Applied Rhetoric I")**

This course covers principles of rhetoric, including both composition theory and the application of rhetorical principles to the evaluation and development of student writing

3 cr.

**MAET 554 Applied Rhetoric
(Formerly "Applied Rhetoric II")**

This course discusses contrastive rhetoric and sociolinguistics, and it applies rhetorical principles to the evaluation and development of student writing.

3 cr.

**MAET 556 The Reading Process In The
English Curriculum**

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.

3 cr.

MAET 560-569 LITERARY STUDIES**MAET 560 Literary Studies - Shakespeare
and The Elizabethan Age**

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.

3 cr.

MAET 561 Literary Studies - Poetry

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.

3 cr.

**MAET 562 Literary Studies - Epic, Myth,
and Fable**

This course includes close readings of significant examples of these three genres and discusses how these materials act as sources for references and allusions in other forms of writing. Students consider the purposes fulfilled by these narratives in world cultures and analyze innovations and common conventions used in these genres.

3 cr.

MAET 563 Literary Studies - Genres

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.

3 cr.

**MAET 564 Literary Studies - Cultural-
Literary Connections**

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.

3 cr.

**MAET 565 Literary Studies - Great Works
of American Literature**

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.

3 cr.

**MAET 566 Literary Studies - Modern
American Literature**

This course examines works of the second half of the Twentieth Century, with an emphasis on literature from representative American cultural groups.

3 cr.

**MAET 570 Seminar: Issues In The
Teaching Of English**

The capstone seminar provides students with a broad understanding of contemporary literary theory and with the opportunity to reflect on how their MAET coursework has impacted their teaching. The primary component of the seminar, however, is the production of an article-length piece of literary scholarship. Students work with the instructor and their classmates in developing topics, which may or may not involve pedagogical issues, and in researching and writing their projects. At least half of each class session is held in a workshop format, and the course concludes with the presentation of projects to all MAET students and faculty.

3 cr.

Mathematics**MAMT 550 Discrete Mathematics**

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.

3 cr

MAMT 552 Geometry Revisited

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, isometries 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.

3 cr

MAMT 554 Number Theory

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 congruencies, will be covered, along with such topics as Euclidean algorithm, prime factorization, the greatest common divisor, linear Diophantine equations, the Chinese Remainder Theorem, and Euler's phi-function.

3 cr

MAMT 556 Graph Theory and Combinatorics

This course is a study of structures such as nets of polyhedra and, more generally, graphs and digraphs. Fundamental concepts include paths, cycles, trees, connectivity, matchings, networks, tournaments, planarity, Hamiltonian graphs, eulerian graphs, and graph colorings. The course also includes combinatorial applications of graph theory such as the use of fundamental counting principles, recurrence relations, and combinatorial algorithms.

3 cr

MAMT 558 Probability and Statistics

This course introduces probabilistic and statistical thinking in applied settings, with the goal of enabling students to use such thinking in their everyday lives. Topics 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 calculator will be used.

3 cr

MAMT 560 History of Mathematics

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.

3 cr

MAMT 562 Linear and Matrix Algebra

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 we shall turn 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 mathe-

matics. Many applications will be considered throughout the course, and a TI-83 graphing calculator will be used extensively.

3 cr.

MAMT 564 Analysis

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.

3 cr.

MAMT 566 Algebraic Structures

Prerequisite: MAMT 562 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.

3 cr.

MAMT 568 Mathematical Modeling

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.

3 cr.

MAMT 590 Special Topics in Mathematics

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.

1-3 cr.

Criminal Justice

MCJA 501 Management Theory and Concepts for Criminal Justice

This course provides a fundamental examination of the role of management in criminal justice and law enforcement organizations. Management theories and concepts are discussed and applied through case analysis. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 502 Law Enforcement to America

This course begins with a study of the history of law enforcement in America, and extends to the role of law enforcement in present day America. Concepts of patrol, community policing, peacekeeping, police corruption, police discretion, and police organizations are studied as well as the role of corrections. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 601 Criminal Justice Administration

This course covers criminal justice organizations, their processes, power, and organization conflicts. Problems of communication, motivation, job design, leadership, and group behavior are studied as well as steps in decision-making, organizational effectiveness, and change and innovation. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 602 Organizational Behavior in Criminal Justice

This course provides an examination of the behavioral aspects of criminal justice organizations. Emphasis is placed on research findings and the applications of behavioral science to CJ organizations. Topics include leadership, group dynamics, and communication. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 609 Constitutional Law

This is a study of the major constitutional decisions which have shaped the current status of America including Federalism, the Separation of Powers, powers of the state and federal governments, the nationalization of the Bill of Rights, First Amendment rights, the rights of persons accused of crime, and equal protection of the law. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 610 Report Writing for the Justice Professional

Techniques of writing clear and effective reports, and the ability to teach subordinates to do the same, is the major emphasis of this course. Students should be able to observe and report salient facts relating to crime scenes, interviews, demonstrations, meetings, and arrests. The development of the more lengthy format for a position paper/study is included. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 611 Criminal Procedure

This is a study of the concepts and practices of prosecution including jurisdiction, extradition, statute of limitations, and jeopardy. This includes proceedings by the prosecution prior to trial including complaint, warrant, arrest, summons, preliminary examinations, indictments, bench warrants, and arraignments. Steps available to defendants such as bail, habeas corpus, and the various types of pleas are discussed. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 612 Criminal Law

This course covers such major common law felonies as robbery, rape, arson, sodomy, burglary, larceny, and murder as well as other common law crimes and certain statutory crimes, both state and federal. The course also includes recent changes in the law regarding such crimes and their prosecution. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 613 Security and Loss Prevention for Management

The purpose of this course is to provide the professional manager with proven techniques of reducing loss or threat of loss, both

through security design in industry and physical security in business. It includes the interrelationship between physical security and crime prevention as well as the functions of the manager necessary to provide intrusion and access control as well as internal theft and control. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 614 Police and the Public Communication Techniques

This course is designed to enable students to make persuasive and interesting public presentations; to deal with the press, radio, and television media in an effective manner; to understand and be able to use proper interviewing techniques; and to be able to present an honest, professional, yet authoritarian face to the public in order to gain and keep its respect. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 615 Risk Management in Criminal Justice

The purpose of this course is to inform the justice professional of actions and techniques designed to reduce or eliminate needless liability suits against criminal justice agencies. Specific topics include the hiring and firing of personnel, types of suits brought by employees, record keeping techniques which work, liability problems of high speed chases, the failure to respond, improper training, identifying municipal liability problems, and sexual harassment. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 616 Budgeting and Planning in Criminal Justice

Criminal justice administrators are regularly faced with the challenges of managing the financial resources funded by taxpayers. This course provides professionals with an opportunity to learn about the procedures involved in planning, forecasting, preparing, and implementing a budget in a governmental or not-for-profit criminal justice agency. Relevant accreditation standards are reviewed. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 620 Ethical Issues in Criminal Justice

This is a study of the moral and ethical issues facing the criminal justice professional, taught from the background of numerous literary works involving this field of criminal justice. The basis of ethical considerations in the various fields of criminal justice are examined. Students should ultimately understand and practice high standards of ethical conduct, and be able to recognize moral ambiguity. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 625 Data Base Management in Criminal Justice

This is a study of concepts, theory, terminology, and design techniques in databases. Topics include physical data organizations, database architecture, data models with emphasis on relational model, logical database design, normalization, and relational query languages. Two projects are required. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 630 Field Research in Criminal Justice

This course covers basic scientific methods and principles of research as well as evaluation techniques used in the criminal justice field. Students are required to use these techniques in doing an extensive research project in the field of criminal justice in order to demonstrate the ability to properly collect and analyze data. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 640 Management, Unions, and Collective Bargaining in Criminal Justice

This course analyzes the role of collective bargaining in criminal justice and analyzes the perspectives of management and unions. Topics include public sector bargaining, the role of mediation and arbitration, and policy alternatives to personnel management. The development of union organizations, the collective bargaining process, and other related topics are explored. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 641 Stress Management in Criminal Justice

This course is designed to study the identification and appraisals of stress and tension in the criminal justice environment. Topics include planning and implementing proven programs, techniques, and strategies to reduce stress at work. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 642 Organizational Development in Criminal Justice

This course examines behavioral science principles and practices applied in criminal justice organizational culture, its human and social processes, and the role of planned systematic change. *This course is normally offered only in the Off-Campus Program.*

3 cr.

MCJA 695 Advanced Community Policing

Designed to provide the actual methodology of implementing community policing in a particular department, this course covers new ways of solving community problems using examples from a number of cities which have introduced community policing. Actual and theoretical situations are used to develop problem-solving based approaches. *This course is normally offered only in the Off-Campus Program.*

3 cr.

Graduate Courses In Business**Accounting****AC 500 Accounting Perspectives**

This course is an introduction to accounting as an information system by which financial information is communicated and integrated into user's decision-making process. Emphasis will be placed on the analysis and interpretation of financial statements, application of accounting principles, concepts of cash flow, and use of internal controls.

3 cr.

AC 602 Financial Accounting II

Prerequisite: AC 201 or AC 500, or their equivalent. This is the second course in financial reporting and the first of a two - 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 output includes an understanding of the flow of information

through the accounting cycle, cash, receivables, inventories, plant and equipment, intangible assets, and current liabilities.

3 cr.

AC 603 Financial Accounting III

Prerequisite: AC 602. A continuation of AC 602. This is the second in a two-course sequence offering an in-depth examination of the financial reporting process. Key outcomes include an understanding of long-term liabilities, owners' equity, reporting errors, the statement of cash flows and earnings per share.

3 cr.

AC 610 Cost-Based Decision-Making

Prerequisites: AC 309 or AC 630, or their equivalent. This course is an introduction to the aggregation of product costs, managerial control, performance evaluation, pricing, as well as other contemporary topics, such as balanced score card, EVA, and MVA. Key outcomes include the ability to identify and apply the concepts of cost allocation, target costing and cost plus pricing, capital budgeting analysis, and transfer pricing in global economy. Recent practitioner journal articles, cases, and CPA and CMA examination questions are used.

3 cr.

AC 611 Municipal and Fund Accounting

Prerequisites: AC 201, AC 500 or their equivalents. This course examines accounting concepts for non-profit organizations. Key outputs include an understanding of generally accepted accounting principles as they apply to governmental and municipal organizations, educational institutions, hospitals, and social organizations.

3 cr.

AC 613 Fundamental Concepts of Taxation

Prerequisite: AC 201 or AC 500, or their equivalent. This course reviews the legislative origins and underlying philosophy of the development of taxing structures. Key outcomes include the ability to apply to use current structures is the assessment of potential tax liability of individuals, partnerships, and corporations are made. The student will also develop the ability to research answers to tax questions.

3 cr.

AC 614 Advanced Topics in Taxation

Prerequisite: AC 413 or its equivalent. This course examines advanced issues of taxation. Key outputs include the ability to engage in planning and tax compliance for various tax entities including corporations and partner-

ships; the determination of tax consequences of distributions to owners of tax entities; and an understanding of reorganizations and liquidations.

3 cr.

AC 619 Auditing and Assurance Services

Prerequisite: AC 305 or AC 602 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.

3 cr.

AC 620 Advanced Topics in Auditing

Prerequisite: AC 419 or its equivalent. This course examines the statements on auditing standards issued by the AICPA. Key outputs include an understanding of the effects of standards on audit reports, and current issues in auditing. Extensive use is made of case analysis.

3 cr.

AC 622 Accounting Theory and Contemporary Issues

Prerequisite: AC 306 or its equivalent. This course is a study of accounting literature. Subjects include accounting research bulletins, opinions of the Accounting Principles Board, statements and interpretations of the FASB, and trends and controversies in accounting theory. CPA theory examinations are studied. Key outputs include an understanding of the ethical conflicts that arise in public accounting, how controversies are resolved or left unresolved, how standards are promulgated, and the ability to anticipate the affects of changes in accounting standards.

3 cr.

AC 630 Accounting for Decision Makers

Prerequisites: AC 500 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 outputs 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.

3 cr.

AC 633 Independent study

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 under a graduate faculty member's guidance with the approval of the department chair and the assistant dean. 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.

3 cr.

AC 640 Accounting Information Systems

Prerequisite: AC 602 or permission of the instructor. This is a course 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.

3 cr.

AC 680 Accounting Internship

Prerequisite: Two graduate level accounting courses. The accounting internship is an opportunity for students to apply high level 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.

3 cr.

Business

BUS 510 Quantitative Analysis

This module provides an analysis of the fundamentals of algebra and introductory statistics, with emphasis on applications to business and economics. Topics include applications of linear equations, basic functions, fundamental probability concepts, and descriptive statistics.

1-2 cr.

BUS 520 Business Communication

This module further develops student skills in writing and presenting for business. Students must show proficiency both in writing and in oral presentation before being certified for credit. Use of a word processing program is recommended. A well-organized, grammatically correct position paper of at least 1000 words on some aspect of business is a final course requirement. A proficient five-minute oral presentation is also required.

1-2 cr.

BUS 530 Computer Software/Internet Skills

This module provides instruction in spreadsheet and presentation software as well as basic techniques of web and e-mail navigation, data bank searching, and elementary web-site construction.

1-2 cr.

BUS 540 Economics

This module studies how resources are allocated in western nations. Half the module will investigate how markets set prices, determine production levels, and affect social welfare. The other half will focus on aggregate phenomena including interest rates, employment levels, and national output levels. The role of government in economic resource allocation will be considered throughout.

1-2 cr.

BUS 650 The Changing Social, Political, Ethical and Legal Environment of Business

Prerequisite: BUS 540 or equivalent. This course examines business in its relation to ethics, social responsibility, public policy, legal and regulatory issues, and the global and domestic marketplace. It focuses on the dynamics of leadership and influence that will be required of the effective manager in today's organizational/business environment. Demographic trends and the many diversities developing in the pluralism of the 21st century will serve as the backdrop for this study.

4 cr.

BUS 680 Strategic Management

Prerequisite: AC 630, CIS 610, FIN 630, MAN 600, MAN 610, MK 640, QM 610. 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 satis-

faction, 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.

3 cr.

BUS 694 Ethics and Professionalism

This course focuses on the knowledge and skills needed deal with difficult ethical issues that frequently confront business managers and professionals. An examination of the conflicts involved in recent corporate scandals will enable students to reflect on and clarify their own value systems with respect to the resolution of ethical dilemmas. Key outcomes include the ability to articulate ethical problems, to identify stakeholders, and to produce reasoned personal decisions about ethical courses of action.

3 cr.

Computer Information Systems

CIS 610 Information Technology Management and Applications

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.

3 cr.

CIS 648 Computer Auditing, Security and Control

Prerequisite: CIS 610. This course addresses the need for various security controls within the information center. Both automated and manual control techniques currently in use in the industry are discussed. The course also explores the suitability of new technologies such as expert systems as audit tools. The recent trends in the computer security field are addressed. Students with an undergraduate CIS major cannot receive graduate credit for this course.

3 cr.

CIS 665 Issues in Data Communications

Prerequisite: CIS 610. This course will investigate managerial aspects of communications systems, focusing on the relationship of communications technologies to the whole organization. Sub-themes will include the relationships of communications technology with information systems, the regulatory environment, and the effects of communications technologies on people.

3 cr.

CIS 671 Management Support Systems

Prerequisite: QM 610. This course is an introduction to quantitative modeling and analysis. Model building from the managerial perspective is discussed along with the use of general-and-special-purpose computer software (spreadsheet and Management Science programs). Topics are selected from forecasting, decision theory, linear programming, network modeling, CPM/PERT, simulation, inventory control, queuing systems. Emphasis is on the use of these models in managerial decision-making.

3 cr. *Laboratory fee \$30.*

CIS 675 Database Management

Prerequisite: CIS 610. This course is an exploration of concepts, principles, issues and techniques for managing organizational data using database management systems. Topics include database architecture, data models with emphasis on relational model, logical database design, relational query languages, normalization, and database administration issues. Emphasis is on the managerial and strategic impact of databases. Two projects are required.

3 cr.

CIS 677 Systems Analysis, Modeling and Design

Prerequisite: CIS 610. This course is an introduction to the tools and techniques of system analysis and design and project management within the general framework of the System Development Life Cycle. Topics covered include modeling system logic, business processes, data flows, and relationships. Corresponding tools would include decision tables, Process Diagrams, Data Flow Diagrams, Entity Relationship Diagrams, and CASE. Other topics will be selected from project management and project scheduling tools and techniques such as Gantt charts and PERT/CPM networks. This course will also cover organizational and behavioral factors to be considered in system design.

3 cr.

Finance

FIN 611 Money, Banking, and Monetary Theory

Prerequisites: BUS 540, FIN 630 or their equivalents. This course examines the organizations, functions, and problems of modern financial institutions and the instruments they employ. Key outputs include the ability to apply basic monetary theory to the contemporary financial environment including the role of central banks, the evolving structure of the financial industry, and how risk is managed through the use of modern financial instruments.

3 cr.

FIN 617 Investment Theory

Prerequisites: AC 500, FIN 630 or their equivalents. 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.

3 cr.

FIN 618 Security Analysis and Portfolio Management

Prerequisites: 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..

3 cr.

FIN 622 International Finance and Multinational Business

Prerequisites: FIN 630 and BUS 650. This course studies business operations in a multinational environment. The course addresses the international monetary environment and financing foreign investments and operations. Key outputs include the ability to decompose risk into operational and translational components and to control risk through the use of modern financial instruments.

3 cr.

FIN 630 Managerial Finance

Prerequisites: AC 500, CIS 610, QM 610, AC 630 or their equivalents. This course examines how corporations benefit society by raising

funds in the financial markets and employing them in productive activity. Key outputs 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.

3 cr.

FIN 650 Advanced Financial Management

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.

3 cr.

Legal Studies

LS 621 Law and The Business Entity

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).

3 cr.

Management

MAN 600 Team Leadership

Prerequisite: BUS 520. This course focuses on the development of leadership and team-related competencies. Key learning outcomes include: concepts of motivation applicable to leadership practices in organizations; appropriate leadership models relevant to life and work; effective team building techniques for organizational success; personal code of ethics; importance of followership to team leadership; importance of diversity to team leadership; and the importance of vision to leadership.

3 cr.

MAN 610 Organizational Behavior and Theory

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 prob-

lems; structural aspects of organizational challenges; the relevance of individual, group, and organizational dynamics; and ethical issues and challenges in organizations.

3 cr.

MAN 630 A Humanistic Approach to Leadership and Management

This course is a study of fiction, biography, drama and film as primary sources to arrive at a better understanding of how ethical and effective leadership and management occur. Key learning outcomes include: increased awareness of the value of literature and film in developing effective leadership and management practices; differences among successful-leadership styles; situational leadership; areas of strength and deficiency in personal leadership styles; humanistic principles in analyzing ethical conflicts in leadership and management situations; applying leadership/management skills such as initiative, planning, and assessment of calculated risk-taking; effective leadership in decision-making; and decision-making utilizing non-traditional learning sources in everyday leadership opportunities.

3 cr.

MAN 631 Human Resource Management

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.

3 cr.

MAN 633 International Management

Prerequisite: AC 500, BUS 510, BUS 520, BUS 530, BUS 540 or their equivalents. 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; issues of market expansion.

3 cr.

MAN 640 Management and Conflict Resolution

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 are current trends and explored.

3 cr.

MAN 642 Organizational Development and Change

This course examines the system-wide application of behavioral science knowledge to the planned development, improvement, and reinforcement of the strategies, structures, and processes that lead to organizational effectiveness. Key learning outcomes include; the nature of planned change, the diagnostic relationship, designing interventions, and leading and managing change.

3 cr.

MAN 651 Ethics in Business

This course examines and reflects upon the inevitable moral dilemmas and ethical responsibilities facing business professionals. Learning outcomes include: role of corporate governance; relative needs of stakeholders; arguments from moral philosophy legal arguments; social and cultural customs; personal ethical business code.

3 cr.

Marketing

MK 627 International Marketing

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.

3 cr.

MK 630 Marketing Research Methodologies

Prerequisite: MK 640 and QM 610. This course includes examination, application, and utilization of quantitative research techniques to marketing problems and processes.

3 cr.

MK 632 Development and Marketing of New Products

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.

3 cr.

MK 634 Channels of Distribution Management

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.

3 cr.

MK 636 Business to Business Marketing

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.

3 cr.

MK 638 Marketing Planning and Strategy

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.

3 cr.

MK 640 Marketing Management

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, mar-

keting 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.

3 cr.

MK 642 Electronic Marketing: Issues and Strategies

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 re-orient 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. On going throughout the semester will be discussions of current events and hot topics relevant to the e-economy.

3 cr.

Quantitative Methods**QM 610 Decision Support Models**

Prerequisite: BUS 510, BUS 530 or their equivalents. 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 or models; model building and their application in spreadsheets; interpretation of modeling outcomes; and decision making.

3 cr.

Graduate Courses In Engineering**Computer Engineering****CPE 525 Software Engineering**

Prerequisite: CPE 350. 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 also learn a variety of software design methodologies including structured design, top down design, bottom up design,

incremental design, and are introduced to object oriented design. They 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 which culminates in a formal presentation.

3 cr.

CPE 545 Computer Graphics Software

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 the 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 also 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, scrolling, and animation. An individual project is required. The assessment of student learning in this course is based on writing programs as homework, supervised laboratory work, and the quality of the project.

3 cr.

CPE 550 Topics in Compiler Design Theory

Prerequisite: ENGR 105 or equivalent, CPE 310. This is a first year graduate 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. They 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 understand 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 which culminates in a formal presentation.

3 cr.

CPE 560 Microcomputer Hardware Design

Prerequisite: CPE 360 or equivalent. This is an advanced level course in microcomputer hardware design. The course participants survey a wide variety of microprocessors, memory, and peripheral components focusing on learning advantages and disadvantages to enable them in selecting the optimal components for the design task. Students design interface logic that makes all the components work together. In addition to logical design, students analyze timing and electrical loading and ensure that their design will work reliably under the worst conditions. They design interfaces with parallel and serial input/output ports, programmable counter-timers, direct memory access controllers, for user input/output systems such as keyboards and displays, communication systems, and mass storage systems. An individual project that involves design of interface for a specific application is required. The assessment of student learning in this course is based on participation in class discussion, tests, and a design project.

3 cr.

CPE 570 Operating Systems

Prerequisite: CPE 350 and CPE 420. This is a first-year graduate level 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.

3 cr.

CPE 580 Computer Networks

Prerequisite: ENGR 212 or equivalent. This is a first year graduate 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.

3 cr.

CPE 590 Special Topics

Prerequisite: Senior standing. 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.

3 cr.

CPE 620 Advanced Computer Architecture

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.

3 cr.

CPE 655 Computer Network Architecture

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.

3 cr.

CPE 660 Microprocessor Software Design

Prerequisite: CPE 525 and demonstrated knowledge of assembly language. This is a survey of fundamental concepts of structured programming of microprocessors. Topics include theoretical bases, semantic and information structure models, and top-down and bottom-up approaches to software design.

3 cr.

CPE 670 Speech Signal Processing

Prerequisite: EE 580 or equivalent. This is an advanced study of speech processing techniques. The emphasis is on current literature and developments in speech analysis, transmission, synthesis, and recognition by machine.

3 cr.

CPE 680 Distributed Processing

Prerequisite: CPE 450 or equivalent. This course examines advanced topics in distributed processing. Topics include scheduling algorithms, routing algorithms, concurrency control, distributed databases, and distributed operating systems.

3 cr.

CPE 690 Special Topics

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.

3 cr.

Electrical Engineering

EE 511 Random Signals And Noise

Prerequisite: EE 301; ENGR 212 or equivalent. This is a study of signals, both random and non-random. Topics include spectrum analysis, auto-correlation and cross-correlation functions, network analysis of systems with random signals and noise, applications to reception of radar, and space signals. A design project is required.

3 cr.

EE 523 Communications

Prerequisite: EE 302, EE 320 and MATH 350. This is a graduate level 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, and a final exam.

3 cr.

EE 525 Linear Systems Theory

Prerequisite: MATH 350; EE 301 or ME 320. Students learn the fundamentals of the state space approach to systems modeling, analysis, and design. They 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, to apply state space techniques to find zero input, zero state, and complete solution from state space system equations. In addition they 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 method of assessment of student learning in this course are homework assignments, quizzes, tests, and a design project.

3 cr.

EE 530 VLSI Design

Prerequisite: EE 312 or equivalent and EE 320 or equivalent. This is a graduate level course in VLSI design fundamentals. After successfully completing this course students are familiar with two suites of CAD tools (LEDIT, a layer editor and ICAPS, a circuit simulator) used in VLSI design, process technology (MOSIS in this case), and the IC design process (including layout constraints). Students know how to model electronic device behavior as a function of layout geometry, apply layout information to simulation models, design and lay out basic digital logic gates, are familiar with the layout and operation of analog systems (in particular, the operational amplifier), and are 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, and a final exam.

3 cr.

EE 535 Fuzzy Logic

Prerequisite: Senior or graduate standing. This course covers the fundamentals of fuzzy logic theory and its applications. In this course students learn to analyze crisp and fuzzy sets, fuzzy propositional calculus, predicate logic, fuzzy logic, fuzzy rule-based expert systems, and learn to 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.

3 cr.

EE 545 Neural Networks

Prerequisite: Senior or graduate standing. This is a study of the basic concepts of neural networks and its application in engineering. In this course students learn to single layer and multilayer neural networks architectures, linear and nonlinear activation functions, and analyze and implement McCulloch-Pitts, Hebbian, Hopfield, Perceptron, Widrow-Hoff, ADALINE, delta, and backpropagation, 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.

3 cr.

EE 548 Introduction to Electro-Optics

Prerequisite: MATH 350; 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, photodetectors, 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, students understand the design and analysis techniques used in modern electro-optics systems and are able to 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.

3 cr.

EE 550 Power Transmission

Prerequisite: EE 434 or concurrently. Students learn the theoretical foundation for power transmission. They also learn electrical characteristics and analysis of aerial transmission lines, current and voltage relationships, generalized circuit constants, circle diagrams, load flow analysis and fault analysis in symmetrical and unsymmetrical conditions, system stability, and the economic operation of

systems. They also learn the basis of the fault detection mechanism. The methods of assessing student learning in this course are homework assignments, quizzes, classroom discussions, and a final exam.

3 cr.

EE 567 Solid-state Electronic Devices

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 enhances 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.

3 cr.

EE 570 Computer Controlled Systems

Prerequisite: EE 302 and MATH 350. 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 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, control ability, and observability of sampled data system and to design computer controlled feedback systems to improve performance of a discrete time system 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.

3 cr.

EE 580 Signal Processing

Prerequisites EE 302 and MATH 350 or equivalent. This is an introductory course in digital signal processing. This course provides the necessary 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. They understand the concepts of sampling and reconstruction of analog signals, calculate correlation of discrete time signals, use discrete time Fourier and Z transforms, simulate and design FIR and IIR digital filters, implement FIR and IIR filters in real time on a signal processing microcomputer, use the DFT and FFT to calculate the spectra of discrete time signals, and have some familiarity with adaptive filters and wavelets. Methods of assessment include homework, tests, and a short paper on a topic related to signal processing.

3 cr.

EE 590 Special Topics

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.

3 cr.

EE 611 Digital Communications Systems

Prerequisite: EE 580; EE 523 or equivalent. This is a study of digital communication systems. Topics include information theory, spectral representation of signals, sampling theorem, modulation methods, error and error correcting codes, communication networks, terminals, interfacing message switching, queuing, digital filters, and fast Fourier transform.

3 cr.

EE 614 Advanced Electromagnetics

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.

3 cr.

EE 621 Coherent Optics

Prerequisite: MATH 501, 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.

3 cr.

EE 625 Stochastic Processes - Kalman Filters

Prerequisite: EE 525 or EE 570. 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.

3 cr.

EE 650 Advanced Digital Signal Processing

Prerequisite: ENGR 212; EE 580 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.

3 cr.

EE 667 Advanced Electrical Materials

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.

3 cr.

EE 670 Optimal Control Systems

Prerequisite: EE 525 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.

3 cr.

EE 680 Pattern Recognition

Prerequisite: EE 580; ENGR 212. This is an examination of pattern recognition. Topics include statistical decision theory, pattern classification by distance functions and likelihood functions, trainable pattern classifiers, deterministic and statistical approaches, pattern preprocessing and feature selection, and syntactic pattern recognition.

3 cr.

EE 690 Special Topics in Electrical Engineering

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.

3 cr.

EE 698-699 Thesis Research

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.

6 cr.

Engineering

MATH 501 Engineering Analysis II

Prerequisite: MATH 350. This is a study of selected topics from the theory of partial differential equations. Topics include vector spaces, 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. Offered on demand.
3 cr.

Engineering Management

EMGT 590 Special Topics in Engineering Management

This is a study of an advanced topic in engineering of special interest to industrial and engineering management majors, but not carried in the catalogue on a regular basis.
3 cr.

EMGT 605 Engineering Management

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.
3 cr.

EMGT 607 Quality Management

Prerequisite: Graduate standing. This course covers the fundamental concepts of quality management including the management philosophy underlying QM. 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.
3 cr.

EMGT 609 Engineering Cost Analysis

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.
3 cr.

EMGT 615 Statistical Quality Control

Prerequisite: ENGR 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).
3 cr.

EMGT 620 Multi-Criteria Decision Analysis

Prerequisite: Graduate standing. 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.
3 cr.

EMGT 622 Production Management

Prerequisite: Graduate standing. This is a study of the problems, analytical techniques, and recent developments that relate to the production function. Topics include forecasting, inventory control, production planning, scheduling, quality control, and the relationships between manufacturing and other functions of the firm. Emphasis is on mathematical and statistical methods of performing these functions.
3 cr.

EMGT 624 Engineering Management Information Systems

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.
3 cr.

EMGT 626 Computer Simulation of Engineering/Business

Prerequisite: FORTRAN or BASIC; ENGR 212 or equivalent. This is a study of the computer simulation applied to queuing networks, inventory and production control, and material handling systems.
3 cr.

EMGT 627 Legal Aspects of Engineering

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.
3 cr.

EMGT 629 Advanced Manufacturing Engineering Systems

Prerequisite: Graduate standing. This is a study of manufacturing systems techniques with special emphasis on cost estimating, automation, group technology, expert sys-

tems, flexible assembly, cellular manufacturing, and other related special topics.

3 cr.

EMGT 637 Ergonomics and Occupational Safety

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.

3 cr.

EMGT 640 Energy Management

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.

3 cr.

EMGT 643 Design of Experiments

Prerequisite: EMGT 615. 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.

3 cr.

EMGT 644 Quality Systems and Process Improvement

Prerequisite: EMGT 607 or equivalent. 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.

3 cr.

EMGT 647 Facility Planning

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.

3 cr.

EMGT 648 Project Management

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.

3 cr.

EMGT 650 Systems Integration

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.

3 cr.

EMGT 680 Engineering Management Project

Prerequisite: EMGT 605; EMGT 609; EMGT 615, and nine credit hours minimum of the engineering electives in the concentration area. 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.

3 cr.

EMGT 690 Special Topics in Engineering Management

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.

3 cr.

EMGT 698-699 Thesis Research

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.

6 cr.

Mechanical Engineering

ME 510 Advanced Mechanical Engineering Application Techniques

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.

3 cr.

ME 511 Advanced Mechanics of Materials

Prerequisite: ME 208; MATH 350. This advanced course builds on the material presented in ME 208 and develops the student's ability to apply the principles of advanced mechanics of materials to problems. Students will locate the shear center of composite sections; determine the stresses and deflection of curved bars and beams, determine the deflection, slope, moment, and shear for beams on elastic foundations; determine the stresses and deformations in thick-walled cylinders; determine the deflection and slope in beams using Castigliano's theorem; and, determine the stresses in initially curved and eccentrically loaded columns. The method of assessing students will include in class exams and a comprehensive final exam.

3 cr.

ME 519 Experimental Stress Analysis

Prerequisite: ME 208; ME 435 or concurrently. This senior/graduate course is offered to mechanical engineering majors and is designed to introduce students to the most common engineering techniques used to evaluate and improve structural designs. Students will learn the basic theory of electrical resistance strain gages, photo-elasticity and brittle coatings and use of these techniques to deter-

mine the state of stress in structural members. The use of strain gages for transducer applications and calibration of finite element analyses are also emphasized. During the laboratory sessions, students become proficient in the mounting of strain gages, the use of strain measuring and photo-elasticity equipment, and the use of data acquisition systems. When possible, modern finite element analysis packages, such as I-DEAS Master series, are utilized to analytically determine the strains in a loaded member in order to compare them with those obtained using strain gages and/or photo-elastic methods. The methods of assessing students include homework assignments, laboratory experiments and written reports. Two class hours, one three-hour lab.

3 cr.

ME 526 Gas Dynamics

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, projects, and a final exam.

3 cr.

ME 542 Computer-Aided Engineering

Prerequisite: Senior or graduate 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 optimization 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 hour lab.

3 cr.

ME 543 Introduction to Computer-Aided Manufacturing

Prerequisite: ME 203 and senior standing. This is an introduction to the design of machine tools. Topics include the role of computers in manufacturing; introduction to NC, DNC, CNC, and AC systems; design of interpolators; computers in process planning; and robotics, group technology, and FMS.

3 cr.

ME 544 Computer Applications in Mechanical Engineering

Prerequisite: ENGR 110, 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 ten 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.

3 cr.

ME 551 Fluid Machinery Design

Prerequisite: ME 304; ME 316; and senior standing. This course introduces students to the analysis and design of fluid machinery. Topics include control volume theory, fluid flow, fluid power analyses, boundary layer theory and airfoil theory. Students learn to use these theoretical procedures both in the conceptual design of aircraft components and fluid machinery and to apply specific speed, actuator disk theory, and flow-through analysis to select and design pumps, blow-

ers, and propellers for specific applications. Design analysis procedures for compressors and turbines are presented and utilized. Students are also introduced to similitude and model testing of fluid machinery. Several case studies encompassing actual industrial design problems are used in the classroom to enhance the learning process. An individual fluid machinery design project is required. The method of assessing students includes classroom participation, homework assignments, examinations, projects, and a final exam.

3 cr.

ME 590 Special Topics in Mechanical Engineering

This is a study of an advanced topic in engineering of special interest to mechanical engineering majors.

3 cr.

ME 610 Measurement Systems

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.

3 cr.

ME 620 Computational Methods in Vibration and Structural Analysis

Prerequisite: ME 510, ME 544. The student will analyze the free and forced vibration behavior of undamped and damped multi-degree of freedom systems subjected to periodic, transient and general forcing functions. Subsequently, the development of modeling techniques for both continuous and lumped-parameter systems and the application of nor-

mal mode theory is presented. The student will obtain solutions by both direct methods and modal analysis using Newtonian and Lagrangian formulations solved by matrix methods. An introduction to nonlinear and random vibrations is also presented. The student uses finite element software to solve for the eigenvalues to predict system response and mode shapes and learns to use FFT measuring equipment for model evaluation and calibration. The method of assessing student progress includes two in-class examinations and a comprehensive final exam.

3 cr.

ME 630 Advanced Heat Transfer and Fluid Mechanics

This course extends the understanding of both the basic mechanism of heat transfer and fluid mechanics and its role in the design of heat exchangers, electronic equipment cooling systems, building heating and air-conditioning systems, and refrigeration and freezing systems. The control volume method is used to obtain the numerical formulation of heat conducting problems. The student uses a computational fluid mechanics and heat transfer software package to solve problems in steady and transient conduction and forced convection heat transfer. Each student will conduct an independent design project related to fluid mechanics and/or heat transfer. The method of assessing student process includes homework assignments, in-class examinations, the design project report, and a final exam.

3 cr.

ME 635 Design of Thermodynamic Systems

Prerequisite: ME 304. Students study the design of thermodynamic systems; first, second, and third laws of thermodynamics; power and refrigeration systems; mixture and solutions; chemical reactions; phase and chemical equilibrium; and computer applications of thermal systems applied to combustion process and mechanical systems designs. The methods of assessing students are homework assignments, classroom discussions, exams, the design project report, and a final exam.

3 cr.

ME 640 Flexible Manufacturing Systems

Prerequisite: ME 543 or ME 544. This is an introduction to management decisions during FMS project planning, design, and implementation. Topics include distributed processing; integrated CAD/CAM systems and part program preparation; tool databases; industrial robots, auto-

mated warehouses, and guided vehicles; coordinate measuring machines in computer integrated systems; interfacing computers, machine tool controllers, and industrial robots; computer-aided project planning and dynamic part scheduling; economic considerations; and social aspects.

3 cr.

ME 646 Applied Finite Element Analysis

Prerequisite: Baccalaureate degree in mechanical, civil or aeronautical engineering or permission of the instructor. This graduate course is intended to assist engineers in understanding and applying the concept of the finite element modeling and analysis (FEA). Students learn to use commercially available FEA packages to perform linear and non-linear static, dynamic, transient and steady thermal analyses. Interpretation of the FEA results are emphasized. Case studies of practical significance and innovative modeling techniques are discussed and demonstrated. Each student will conduct an independent analysis on a topic related to mechanical design and submit a final written report. The method of assessing student progress includes in-class examinations, the project report, and a final exam.

3 cr.

ME 654 Computer Control of Manufacturing

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.

3 cr.

ME 690 Special Topics in Mechanical Engineering

This is a study of an advanced topic in engineering of special interest to mechanical engineering majors.

3 cr.

ME 698-699 Thesis Research

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.

6 cr.



UNDERGRADUATE STUDENT SERVICES AND INFORMATION

Learning Beyond the Classroom

Learning Beyond the Classroom is one of the unique features of a Western New England College 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.

Western New England College takes many out-of-class experiences and finds ways to help students see the educational benefit that they receive from these experiences. It might be an organized discussion about the experience; it might be a speaker who is brought in to tie together the theory and the practice; or it might be a portfolio that the student constructs. We encourage students to reflect, on their experiences beyond the classroom in order to integrate their co-curricular 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. At Western New England College, 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 Learning Beyond the Classroom experiences.

Campus Life

Living Facilities. Students may live in a variety of accommodations, ranging from traditional residence halls to room suites with semi-private baths to single story apartments or town house 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 college's apartment complex. Juniors and seniors may reside in apartments at Gateway Village or the town houses at Evergreen Village.

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 at the time of room assignment. Assignment is largely determined by the student's housing preferences, class level, and demonstrated academic performance. Requests for college housing are honored depending on availability of facilities and fulfillment of application and payment deadlines.

Each area within the residency complexes is staffed by an area coordinator or hall director, a residence manager, and several resident advisors. The area coordinator and hall director are full-time professional staff in residence, who oversee components of college housing throughout the campus. Residence managers are typically graduate students who reside on campus and are responsible for the management of their particular housing unit 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, associate director, and assistant director of Residence Life, with support and assistance from a secretary 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 snack bar, called the Rock Cafe, 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, and commuting students may

choose to participate in a variety of alternative meal plans, and may register for the meal plan of their choice at the Residence Life office during the first two weeks of each semester. 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 during the first two weeks of each semester at Residence Life.

Campus Center. The St. Germain Campus Center serves as a focal point for social, cultural, and leisure activities at the College. In addition to various recreational and dining facilities, it contains offices for student clubs and organizations, 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, Residence Life, Learning Beyond the Classroom, The Career Center, Counseling, Drug and Alcohol Education, Campus Ministry, and Diversity Programs and Services. The Office of Freshman and Transfer Students is located on the first floor. The College 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 College name or emblem are also available.

Rivers Memorial Building. 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. Pertinent faculty offices, the cultural center and the campus radio station, as well as additional conference and meeting rooms are also available here.

Parents Association

Originally founded in 1978 by a group of interested parents of undergraduate students, the Parents' Association provides an organized vehicle for allowing parents to take a more active part in the affairs of the College. Principally, the Parents' Association seeks to promote projects of direct impact on the quality of student life, assisting in providing students with educational and recreational resources and increasing dialogue between parents and the College. A Parent Handbook is published by the Parents' Association and is distributed to parents of new students.

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 College in one location by a team of client service representatives 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 Disabilities Services (SDS) office is designed to provide support for any student with a documented disability who requests academic 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 academic accommodations. All information, reports, and discussions are held in strict confidence. The director of the Student Disabilities Services office works 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 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 convenient spaces if they request this from Student Disability Services and provide a letter of verification from a doctor.

Counseling Services. The Counseling Services office provides professional, confidential help to students with personal, social, and educational concerns. Common areas of concern include adjustment to college, low self-esteem, relationships, stress, depression, eating disorders, substance abuse, sexual/physical abuse, and test anxiety. Services include individual, couple, and family counseling, crisis intervention, consultation, and referral. Psychiatric consultations are available on a referral basis. Students may borrow self-help books and tapes from a book/audio tape lending library. Remember that no concern is too small to bring in to discuss. Anything that causes uneasiness or anxiety may affect academic performance as well as one's personal life. Our caring professionals are here to help.

The CareerCenter. The career staff assist students and alumni with career planning, occupational exploration, job search strategies, graduate school decision-making, and internships. The **CareerCenter**, located on the second floor of the St. Germain Campus Center, offers a variety of programs on career-related topics. The College's strong commitment to the development of students' career decision-making is demonstrated by individual career advising services, and its assistance in identifying career options. Many of these programs are sponsored by particular residence halls and student organizations.

The **CareerCenter** offers four different career planning guidelines for students at each level of their college education, with the emphasis shifting from academic to professional from their freshman to senior year.

All students are advised to begin career planning by knowing themselves, exploring options, and building and expanding their skill base. Academically, they are urged to explore academic interests through a variety of courses, identify potential majors that relate to their interests and abilities, and focus on time management and study skills.

Career counselors can assist students in deciding on a major and which career path to follow with their major. The internship program provides students with an opportunity to experience a work environment and to apply the theory they have learned in the classroom in local businesses, industry, and organizations.

Students are also encouraged to use the resource tools available through the **CareerCenter**. These include a computer career guidance program, a library of career-related books and directories, job boards and books, company literature, periodicals, newsletters, and Internet sites related to a wide variety of occupations. An Alumni Career Network program puts students in contact with alumni actively employed in their fields and eager to share occupational information.

The Employer Relations career recruiting program brings students in contact with employers through on-campus recruiting and resume referrals. Students are encouraged to attend employer information sessions and career fairs. In addition, students

are assisted with resources for part-time and summer employment. A weekly newsletter is published and serves as a principal tool for alerting students to employment opportunities, recruiting schedules, and workshops.

The newsletter is available online at www.wnec.edu/~chr/careerpaths/. Students can find a continuing supply of updated job identification resources in this office.

The **CareerCenter** also coordinates on-campus student employment. Students who receive a Federal Work Study Award should plan to visit the **CareerCenter** to complete a student employment application, review available employment opportunities, and be referred for interviews. The Director's Employment Services Assistant coordinates these activities.

The **CareerCenter's** effective combination of educational career programs and job search services provides a valuable complement to the student's academic experience.

Health Services. Health Services is located in the Alumni Healthful Living Center. The department is directed by a full-time certified family nurse practitioner and staffed with nurse practitioners, physician assistants and a part-time physician. Health care is available Monday-Friday 8:30 a.m. to 4:00 p.m. when undergraduate classes are in session. Referrals are provided for those in need of specialist care.

During the hours when Health Services is not available, students will find access to a variety of health care facilities in close proximity to the College and can be directed to them by their Resident Advisors or the Campus Police.

Within 30 days of the first registration 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, diphtheria and the Hepatitis B series. Immunizations may be evidenced by documentation or titer values. Registration for classes is contingent upon the above requirements.

Except for treatment rendered by Health Services, 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 nine credits or greater, or graduate students taking 7 credits or greater must either purchase insurance through the College or complete a waiver form with pertinent information about their private insurer. For additional information call Health Services.

Cocurricular Activities. Cocurricular activities are an integral part of student life at Western New England College. Such activities complement the more formal academic program inside the classroom. Significant emphasis is also placed on development of leadership skills, motivation, program promotion, and effective communication. A regular series of leadership training programs is sponsored by the Student Activities Office. Student Activities also informs students about the myriad programs and activities which are offered on most weekends of the academic year.

Multicultural Interests. In support of the educational value attained through representation of various cultural backgrounds, the College recognizes the particular concerns of students of color and international students. The College values and supports diversity 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 Month, and visiting artists of rich and culturally diverse heritages.

Campus Ministry. The Office of Campus Ministry provides liturgical celebration and offers guidance and counseling in both spiritual and personal matters. Through its broad-based ecumenical and interfaith programs, Campus Ministry enables each member of the College community to worship in their own way. The Catholic, Jewish, and Protestant staff members meet Tuesdays at noon with students, faculty, and administra-

tors of their respective denominations. One particular effort sponsored through Campus Ministry involves encouraging volunteers for community outreach in areas of need such as world hunger, homelessness, adult literacy, and the like. Campus Ministry joins the Cultural Liaison Office on campus to work closely with the Springfield Council of Churches, the Western Massachusetts Interfaith Council, the Rabbinic Fellowship of Greater Springfield, and the Roman Catholic Diocese of Springfield to provide students every opportunity to fulfill their particular religious and spiritual needs.

First Year Program

Mission Statement

The Office of Freshman and Transfer Students pays particular attention to creating a network of support persons whose intention involves proactive interaction with first year students. As an agent of change, the Office of Freshman and Transfer Students 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.

The First Year Program at Western New England College seeks to lay the foundation for student success. Through intentional construction of a personal support network and sponsorship of educationally purposeful initiatives, the First Year Program prompts students to embrace intellectual challenge, acquire a sense of place, engage social connections and develop educational purpose. The First Year Program challenges students to recognize the value of college and to discard any notion of mediocrity in performance, so that full academic and personal potential can be attained.

The First Year Program values individuality and diversity. It acknowledges that students enter college at varying developmental stages and with unique needs. The First Year Program is committed to fostering a 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. It seeks to move students from

dependent to interdependent relationships. The First Year Program emphasizes interaction with faculty early in the student experience and characterizes peers as highly influential. It embraces community and seeks to quickly integrate students into the campus culture, to formulate a framework of responsible citizenship and to acquire class identity.

The Goal of the First Year Program

The formula for success in the first year 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 first year 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 First Year Program clarifies the simple tasks and attempts to make simple the more difficult tasks of college adjustment. The first year program challenges students to work to personal potential and to discard any notion of mediocrity.

Program Objectives

The First Year Program offers help in the following ways:

- Making students aware of services and resources
- Identifying a network of educational and emotional support
- Creating specific goals for academic, physical, and personal accomplishments
- Encouraging involvement and participation in campus life
- Assisting in development of an educational plan and scheduling of classes
- Promoting social adjustment
- 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.

Programs and Services

Programs and sessions are always changing to remain current with student needs. In its present form, the First 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, the program or advisor interaction is of little value. The following programs help students make 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. The First Year Program is unique in this context. 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 90-95 percent of first year students choose to participate.

2. First Week

When the first term begins, attention is paid to making the necessary preparation to begin the semester with the resources for a relatively smooth transition. Of particular consequence is the opportunity for each student to complete a personal success plan. The personal success plan provides a framework for establishing specific, reasonable, measurable, attainable, and timely goals for the first semester. It is much more probable that success will be realized when students have direction and purpose. Student life at college is symbolically represented by the Fall Convocation, an academic assembly focusing on the tradition and purpose of higher education and a forum for recognizing the preceding year's freshman honors recipients.

3. First Year Seminar

All first semester first year students and transfer students with 15 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 development of academic skills and attitudes necessary for satisfaction in college. 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 a students' academic advisor 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. Students in Pre-Pharmacy or Pre-Physician Assistants voluntarily elect to take the first year seminar as a part of their first semester curriculum. First Year Seminar is uniquely structured by each designated School. Credit values vary. Upper-class student assistance further distinguishes the course in the context of modeling and fostering academic integration. The seminar is also vitally linked with learning beyond the classroom experiences during the first year.

4. Summer Reading Assignment

All freshman students scheduled to enroll in the First Year Seminar 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 attend the first class in freshman seminar during the Summer Orientation and Registration (SOAR) program. 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 often vary in the Schools of Arts and Sciences, Business, and Engineering.

5. 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 meet-

ings 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, the first set of grades is calculated based on assignments completed to date. In progress grades are distributed to first year students through the assigned advisor. 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 either the Office of Freshman and Transfer Students or School Assistant Dean, academic progress monitoring is put in place through a series of meetings during which continuous assessment of progress is made.

6. 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 upperclass students who have previously taken the course.

7. 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 commit-

ted to building cohesiveness and respect for every first year student. First year freshman living on campus also find that residence hall assignments are often clustered around academic interests to promote the formation of study groups and sharing of career interests. It is thought that students who study together and share academic interests are more likely to find college a true learning community. First year students are also encouraged to participate in the surrounding community through a day of community service, mentoring in the Springfield Public Schools and other learning beyond the classroom experiences characterized by service to others. 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 raising.

8. Celebrating Student Success

Student achievement is valued at Western New England College. Students can expect to hear from the dean of the Office of Freshman and Transfer Students 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.

9. 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 School 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 proteges are brought together in a collaborative program with the Office of Alumni Affairs and the School 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.

Support in the First Year Transition

An alumnus of Western New England College 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:

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. 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

Each first year student is assigned to an upperclass 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.

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. Freshman Seminar Assistant

Assigned to each section of the First Year Seminar, upperclass 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 or to solicit advice and counsel regarding educational or personal goals, students and parents are encouraged to contact the Dean of Freshman and Transfer Students.

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 Schools 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 College. In addition, the Senate appoints representatives to sit on joint committees of the Faculty 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 College community.

Campus Activities Board

The Campus Activities Board is a standing committee of the Student Senate responsible for lecture programs, films, concerts, performing arts, recreation, and special affairs such as Family and Friends Weekend. It is through this body of students 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

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 student house councils living units and of social, recreational, and educational programs. It also provides feedback to the College for improvement in the design and operation of the various residence areas.

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 co-curricular endeavors and to enhance the academic experience. Examples of recognized student groups affiliated with academic departments include the Accounting Association, Marketing Club, Information Technology Association, Political Science Club, Math Club, Association for Computing Machinery Student Chapter, Management Association, Behavioral/Social Sciences Club, Criminal Justice Club, and Pre-Law Society. Particular student interests can also be pursued through such groups as the Bowling Club, Cheerleading Club, Outing Club, Dance Club, Martial Arts Club, Helping Hands, and Class Councils.

United and Mutually Equal (U & ME) and the International Student Association 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 College 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, Gospel Choir, Golden Bear Pep Band, Stageless Players Drama Club and a Jazz ensemble. Local artists are asked to perform 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 College and community events. The Golden Bear Pep Band performs at home football and basketball games along with the Dance Team and Western New England College Step Squad. The Chorus hosts a concert each semester with the Faculty/Staff Chorus. The Student Art show is featured each September in the Campus Center Art Gallery. Students may have their fiction and poetry published in the student literary magazine, *The Review of Art and Literature*. A Fine Arts minor is now offered through the School of Arts and Sciences.

Publications and Communications

The Cupola is the College yearbook. It is written 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 College'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, is a 10-watt non-commercial educational FM radio station licensed by the FCC. Programming consists of news, music, public affairs, and sports. The station, located in Rivers Memorial Building, 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 rules.

Professional Societies

Alpha Kappa Psi. Alpha Kappa Psi is one of the oldest professional associations for students pursuing business-related careers. The Theta Lambda Chapter at Western New England College provides a forum for discussion of career options, professional standards, business ethics and practices, and stresses personal ethics and academic achievement.

American Marketing Association (AMA). Western New England College 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 College 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 College is to provide students the opportunity to learn about the field of biomedical engineering. Through participation in the chapter, stu-

dents 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.

The Engineering Student Council. The purpose of this council is to coordinate, organize, and implement, many social and educational programs for the School of Engineering. Voting members of the Council are representatives from the ASME, BMES, IEEE, IIE, and SWE professional engineering societies. The Council serves as an advisory board to the dean and faculty of the School of Engineering and is an invaluable resource and sounding board for curriculum and class scheduling.

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 College 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 College.

Institute of Industrial Engineers (IIE). The objective of the Western New England College 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 College 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.

Delta Mu Delta. Delta Mu Delta is a national honor society for both men and women majoring in business administration. Its purpose is to promote higher scholarship in training for business and to recognize and reward scholastic attainment in business subjects. Student members are selected from the top 20 percent of their total class on the basis of cumulative grades. Candidates must have completed at least one half of the work required for a baccalaureate degree, and have completed at least 24 credits at Western New England College.

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.

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 College's concern for students' well being. The Center offers programs in health services and education, recreational activities, and physical education. The College'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; weight room; courts for racquetball, handball, squash, and tennis; a studio for aerobics and dance; a Wellness Center; and a multipurpose field house.

Intercollegiate Competition

Western New England College 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 College belongs to the Great Northeast Athletic Conference for most sports while football competes in the New England Football Conference. The Golden Bears strive for athletic excellence.

Other Opportunities

The College also offers opportunities which are not NCAA sponsored, such as its highly successful bowling program and its martial arts competition team. The intramural sports program offers the opportunity for every student to participate in sports. The 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 College.

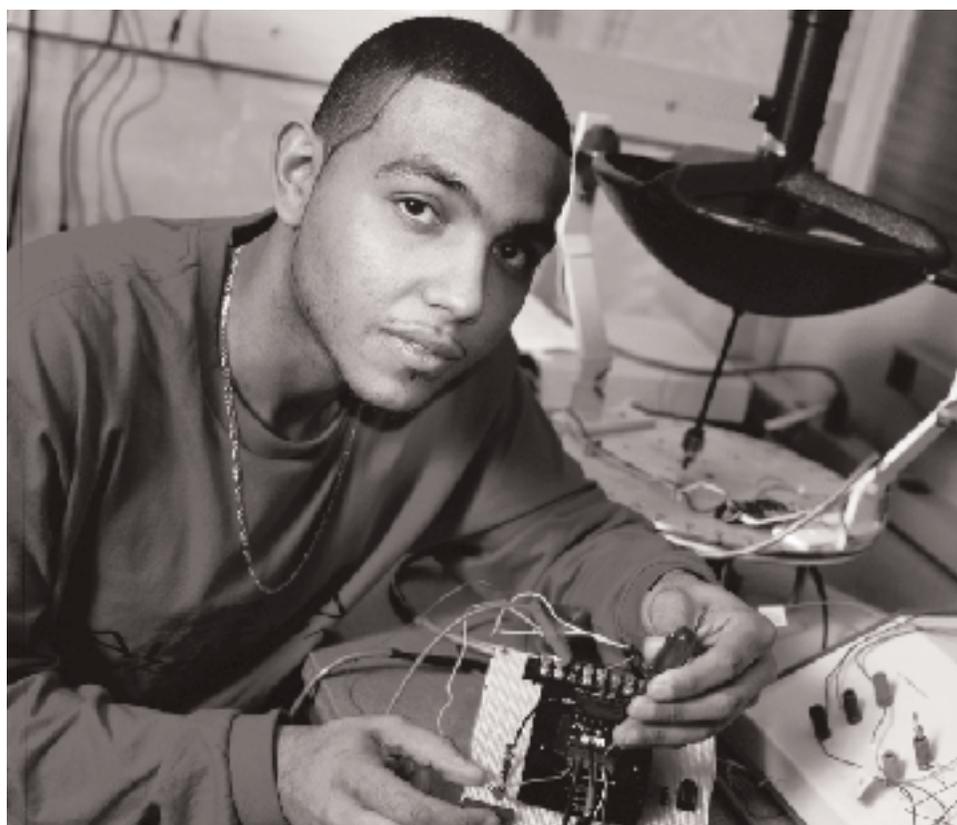
ROTC

The College offers both Army and Air Force Reserve Officer Training Corps (ROTC) programs (see p. 27). The Army ROTC program is located on campus with a full-time staff. Air Force ROTC 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 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.

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. Copies of the Student Conduct Code for both undergraduate and graduate students are made available through the Office of the Vice President for Student Affairs and Dean of Students.





TUITION

Undergraduate

Full-time Students Matriculating After 5/1/03

(12 hours or more per semester)

Basic Annual Fees (2004-2005)	Arts & Science/Business	Engineering
Tuition (12-17 credit hours per term)	*\$20,570.00	*\$21,498.00
Student Activities Fee	200.00	200.00
Technology Fee	274.00	274.00
Comprehensive Services Fee	942.00	942.00
Tuition & Fees	21,986.00	22,914.00
Residential Fee		
Room (two occupants) & Board	8,524.00	8,524.00
Total	\$30,510.00	\$31,438.00
Health Insurance Fee (subject to waiver)	1,310.00**	1,310.00**

*Students who select programs of more than 17 credit hours are charged at a rate of \$421.00 per credit hour for each credit hour over 17.

** Fiscal Year 2003-2004 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.

Pre-Physician Assistant Student Tuition

Pre-physician Assistant students who register for MCPHS courses are charged an additional amount equal to the difference between Western New England College per credit hour tuition and MCPHS per credit hour tuition for each credit hour.

Part-time Students - Undergraduate

(Less than 12 hours per semester)

Tuition per credit hour (2004-2005)	*421.00
Registration Fee (per semester, nonrefundable)	\$20.00
General Service Fee	12.00 per credit hour

Graduate Students

Graduate students are charged per credit hour as follows:

Tuition per credit hour (2004-2005)	*\$499.00
Registration Fee (per semester, nonrefundable)	\$20.00
General Service Fee	12.00 per credit hour
MAET	\$633 per course
MAMT	\$633 per course
MEEE	\$633 per course

FEE STRUCTURE

All Students

Application Fee. The College application fee of \$50 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 description section of this catalogue. 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.

Change of Schedule Fee. A deferred registration fee of \$10 is charged for each change of schedule initiated by the student which involves the addition of a course or the changing of a section. This fee must be paid immediately following approval of the schedule change. The fee is not refundable.

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, and other support activities at the College. The fee is \$471 per semester for full-time undergraduate students.

Health Insurance Fee. The College 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 \$100 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.

Technology Fee

A fee of \$137 per semester is charged for technology which provides all students with Internet access, voice mail, and E-mail. Internet access is gained through use of on-campus facilities, dialup access, and resident hall capabilities. All students have access to voice mail either directly through their residence hall service or by direct dial to the voice mail service. This service is available from on or off campus from any touch-tone phone. E-mail service is available to all students, faculty, administrators, and Internet addressable users. This fee also allows students with the opportunity to learn in a technologically sophisticated environment.

Residential Fees

College housing is available for full-time students, both men and women, in a variety of living styles. Annual room and board fees for the 2004-2005 academic year for each student are as follows:

Double Occupancy/ 20 meal plan	\$8,524.00
Gateway Apartments	*\$5,200.00
Evergreen Village	*\$6,300.00

**Room fee only.*

An initial deposit of \$300 must accompany any request for College housing. A \$500 non-refundable housing confirmation payment for the fall semester is due and payable by June 18 for current/returning students and July 1 for new/incoming students, with the balance due and payable on August 1. Room and board fees for the spring semester are due and payable no later than January 2. Summer housing is normally available and requires payment in full prior to assuming occupancy.

All rates are for occupancy on a semester basis and are not refundable. Status as a full-time student must be maintained through mid-semester to qualify for college housing. Failure to meet the established payment deadlines releases the College from any obligation to maintain the housing reservation.

Normally, College 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 check-out procedure is to have been completed.

College 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.

Housing Deposit. In order to effect residency within college housing, a deposit of \$300 must be filed along with the appropriate request for college housing. The deposit is due immediately upon notification of acceptance from the director of admissions or as otherwise defined by the College. While the deposit will be applied toward the room fee, it is not refundable to a returning student if the student fails to take occupancy. This deposit applies only to the room, not the board plan.

Residence Hall Room Damage Deposit. Students are required to leave their rooms in good order when departing from the College. A room damage deposit of \$50 per student is required of all resident students. Damages are charged against occupants of rooms when necessary. This deposit is refundable at the end of the senior year or on withdrawal from the College. The refund will be based upon the condition of the room 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, 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 2004-2005 academic year is \$4,056.00.

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. Resident students who seek consideration for an exemption from the board plan must apply in writing to the Office of Residence Life prior to assuming occupancy. Normally, such requests are considered only when extreme medical or religious conditions require dietary requirements that Food Service is unable to reasonably satisfy. All requests for exemption must be submitted annually and require appropriate documentation in order to be considered. Students who fail to secure the required exemption are not relieved of financial obligations.

General Financial Information

Checks or money orders should be made payable to Western New England College. If sent by mail, they should be addressed to Student Administrative Services.

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.

The Trustees of the College reserve the right to change tuition rates or fees whenever it is deemed necessary.

Students are not permitted to attend any College 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 College must be met before a student may qualify for re-enrollment, a certificate of honorable dismissal, a transcript, or a diploma. The College 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.

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 non-refundable 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 \$300 to \$660 per year.

Withdrawals and Refunds

Tuition and fees are not transferable to future semesters. Fees, room and board charges are non-refundable and tuition is refunded only as stated herein. The College 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 College. Refunds are made to students based on the following schedule:

100% refund of the tuition charge, less the tuition deposit, prior to the first day of classes.

75% will be refunded during the first week of classes.

66 $\frac{2}{3}$ % will be refunded during the second week of classes.

33 $\frac{1}{3}$ % will be refunded during the third week of classes.

25% will be refunded during the fourth week of classes.

No refund will be granted after the fourth week of classes.

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 College 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.

An official withdrawal form must be completed and filed with the Student Administrative Services (SAS) office. Students are urged to consult with the Dean of Students, the Dean of Freshmen and Transfer Students, or the Director of Continuing Education before taking such action. When such conditions as severe illness or absence from the area prevent a student from filing the form in person, an application for withdrawal by mail is acceptable. A letter should state the reasons necessitating the withdrawal. The date on which the official withdrawal form is filed with the SAS office is considered to be the date of withdrawal. Approved refunds will be computed on the basis of the date appearing on the official withdrawal form. Absence of class without completing the form does not constitute withdrawal from a course.

No refunds are made on fees other than tuition (with the exception of the room damage deposit). Students who withdraw with an unpaid balance will be financially liable for any amount remaining unpaid after a refund credit has been applied to the balance.

No student may withdraw in good standing from the College unless all financial obligations have been met.

Late Payment Charge

A finance charge will be computed by a period rate of one percent (1%) per month, which is an annual percentage rate of twelve percent (12%) 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.

Prepayment Plan

Students who wish to pay their College 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 non-refundable charges.

Sibling Discount

This is a \$500/year discount offered to each sibling when a family has more than one full-time undergraduate child attending Western New England College in a given year. Each student receives a \$500 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 College. 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 College 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. 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 College before their applications for financial assistance will be considered.

Students applying for any federal or state aid must submit the Free Application for Federal Student Aid for processing as soon as possible after January 1. These forms may be obtained from Student Administrative Services, from high school guidance counselors, or access on the internet at www.fafsa.ed.gov. In addition, all students and parents of dependent students must submit signed copies of their most recent federal income tax returns and W-2s. Families who receive nontaxable income must supply evidence of their nontaxable income (Social Security, Veterans Benefits, Welfare, etc.). Applications for prospective students are processed on a rolling basis beginning on March 1. All application forms for returning students must be received by Western New England College before April 15 in order to receive priority consideration. Therefore, students are encouraged to submit the required forms as early as possible. Late applicants may be considered for financial aid if sufficient funds are available. Most programs require a minimum enrollment of six credits per semester.

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. 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.

Part-time students must have final approval in to a degree program and be enrolled in at least six credits per semester a term to be eligible for financial aid.

Scholarships and Grants

Air Force ROTC Scholarships

Western New England College provides full room and board to any student receiving a four-year Air Force ROTC scholarship. If students select Gateway or Evergreen Village for residence, they receive full room and \$1,500. Other students, including Advance Designees, who received ROTC scholarships after enrolling at the College, will receive full room during the period that they qualify for the ROTC scholarship. The incentive will be considered part of all gift aid a student may receive from the College based on merit or need. In no case will the total gift aid provided by the College and external gift aid exceed the student's direct cost of education.

George I. Alden Endowed Scholarship

Scholarships are awarded annually from a fund established by the Trustees of the George I. Alden Trust in Worcester, MA, and by friends of the College. Funds are awarded to full-time undergraduate students and to graduate or professional students who have a demonstrated financial need.

Alumni Endowed Scholarship

Scholarship awards are made annually by the Alumni Association to a full-time student from each of the Schools of Arts and Sciences, Business, and Engineering. Two awards are also made to part-time students. The College selects the recipients on the basis of scholarship and demonstrated financial need.

American Society of Mechanical Engineers Scholarship

Scholarships of varying amounts are awarded annually to students in the mechanical engineering curriculum who excel in scholarship and have made a significant contribution to the mechanical engineering program at the College. Additionally their grades should warrant continuing in mechanical engineering. The students shall either be juniors or seniors at the start of the next semester.

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 the College. 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 will be 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 College or prior to studying at the College, and with a commitment to engage in service on or off campus while a student at the College. The scholarship is renewable upon demonstration of meeting the established criteria for the scholarship.

Army ROTC Scholarships

Four-, three-, and two-year scholarships are awarded annually to qualified high school seniors, freshman, and sophomore students. Scholarships pay full tuition at Western New England College, \$450 for books, and a \$1,500 stipend annually. There is also a special incentive program provided by the College for ROTC scholarship winners. Scholarship applicants must be U.S. citizens, have a minimum 2.5 GPA, and meet age and medical standards. For additional information contact the Army ROTC office at 1-800-434-WNEC or 413-782-1332/45.

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 School of Business. Preference is given to students who are involved in a leadership position in a student organization, and are enrolled in ROTC.

Julie K. Boyce Endowed 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. This fund was established by Mr. & Mrs. Terry S. Boyce in memory of their daughter, Julie K. Boyce, a member of the Class of 1990. Miss Boyce died during the final semester of her senior year. While a student at the College, 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*. Preference is given to students majoring in English.

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 the late Frederick '34/G'61 and Maria Bromage.

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 College Trustee Thomas R. Burton '70 in memory of his mother, Evelyn.

William F. Campanella Endowed Memorial Scholarship

This scholarship is awarded to a full-time undergraduate student beginning in their sophomore year who has demonstrated the following: involvement in the community, either through work in Western New England College 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.

edly on April 26, 2003. Bill's passion for and devotion to community service was demonstrated by his involvement with the 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 the 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 College. This scholarship has been established through a gift by President Anthony Caprio H'00.

Esther and Salvatore Caprio Endowed Scholarship

This merit scholarship was funded by a gift to the endowment fund of the College by Esther and Salvatore Caprio, friends of the College and parents of the College'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 College 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 College 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 College, based on either merit or need. When the Rhode Island student has initially been awarded a strictly merit based scholarship by the College, 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.

Sandra and Robert Carnevale Endowed Scholarship

A scholarship is awarded to a student in the School 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 College Trustee Robert Carnevale '68 and his wife, Sandra.

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, who served as a trustee of the College from 1959-1969. The trust is administered by Fleet Bank.

Leon D. Chapin Endowed Scholarship

A scholarship is awarded to a full-time undergraduate student majoring in the accounting curriculum 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 College at the time of his retirement in August, 1979.

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 the College.

Class of 1951 Scholarship

The scholarship is to be awarded to a current full-time freshman with demonstrated financial need and solid academic performance for whom the scholarship could make the difference for them to return for sophomore year. The funds are to be awarded to that person in equal amounts for each of their sophomore, junior, and senior years

Steven E. Cocchi Endowed Memorial Scholarship

Scholarships are awarded annually to undergraduate students, with preference given to junior and senior undergraduate School of

Business students from the greater Springfield area. The fund was created by the parents of Steven Cocchi in his memory after his death in a car accident while a student at the College.

Mark Coffey Memorial Endowed Scholarship

This scholarship is awarded to an accounting major with preference given to transfer students. The recipients must have demonstrated financial need and a 3.0 cumulative GPA for 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 College student, including transfer students, it is based on the cumulative GPA for their entire college education. The scholarship was established by family, friends, colleagues, and students of Mark Coffey, Assistant Professor of Accounting, who taught at Western New England College for 28 years. Mark served as chair of the Department of Accounting and Finance for two years, and collaborated in the development of the Masters of Science in Accounting degree program. He was the faculty advisor for the Student Accounting Association, and 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. Mark was very active in the College's Faculty Senate, the Stageless Players, and the intramural sports program. He passed away June 6, 2002.

Louis T. Cormier Endowed Memorial Scholarship

This fund was established by the wife of the late Thomas Cormier '47, formerly of the faculty of the School of Business. It is awarded annually to a student of the sophomore year 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.

Kevin S. Delbridge Endowed Scholarship

A scholarship is awarded to a full-time student from greater Springfield enrolled in the School of Business. The award is based on financial need and demonstrated academic ability. This scholarship is provided from a fund established by College Trustee Kevin S. Delbridge '77.

Diversity Scholarship of Greater Springfield

Merit scholarships of varying amounts are granted to minority students from the greater Springfield area.

Henry T. Downey Endowed Scholarship

Scholarships of varying amounts are granted to undergraduate accounting students or law students from a fund established by the College Trustees in memory of Henry T. Downey '50/L'56, former Vice-Chairman of the Board, who died in 1973.

Engineering Society of Western Massachusetts Scholarship

This scholarship is presented to a sophomore engineering student who will be entering the junior year in the fall semester. It is awarded in recognition of outstanding academic achievement.

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 College.

Financial Aid Restricted 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 will be 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 College and makes satisfactory progress toward degree completion. This scholarship was funded by a gift to the endowment fund by College Trustee Frank P. Fitzgerald '68/L'73.

George Sumner Gaunt Endowed 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 School of Business or Engineering, and have at least a 2.5 cumulative GPA. Preference is given to students working with youth development.

Gilbert State Grant Program

The Commonwealth of Massachusetts annually provides the College with funds to assist Massachusetts undergraduate students with demonstrated financial need. Awards may range from \$100 to \$2,500 per academic year.

Harley B. Goodrich Endowed 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/L'42, secretary of the Board of Trustees of Western New England College from 1942-1974, by members of Pi Tau Kappa fraternity and the College trustees.

Janice Gruppioni Underhill Endowed Scholarship

This endowed scholarship is given to a full-time undergraduate student with a demonstrated financial need. Preference is given to students with a physical disability. This scholarship was established in memory of Janice by her brother, Thomas A. Gruppioni '77.

Alison Mary Harris Endowed Memorial Scholarship

Awards are made to juniors and seniors in the School of Business. This scholarship was established in memory of Alison Mary Harris '89 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 College exchange program either to study abroad or to study at American University in Washington, D.C. 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 College 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 College 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.

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 the College from 1955 to 1976.

International Student Scholarship

A limited number of \$6,000 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 College GPA. 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).

Thomas Jefferson Endowed Scholarship

This scholarship will be 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), finan-

cial 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 College Professor of Government and Coordinator of International Studies, 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 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 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. The fund, established by William Jolicoeur G'75 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 College.

Thomas K. Kamp Scholarship

A scholarship of one-half tuition is awarded annually to a senior in the School 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, who was killed in action in Vietnam on November 17, 1969.

Phyllis M. Knecht Endowed Scholarship

This scholarship was originally funded by the sons of long-time College employee Phyllis M. Knecht and their families, and by the President of the College. 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 College and maintains a cumulative GPA of at least 3.0.

Phyllis M. Knecht was in her 33rd year of service upon her retirement from the 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 College; 1998-2002, Assistant to the President.

Mrs. Knecht has been long respected, recognized, and admired by the entire College campus as a devoted employee who has worked assiduously throughout her tenure.

David P. Kruger Endowed Scholarship

A scholarship is awarded with preference for students in the School of Business with 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 the College in 1972. Mr. Kruger has served the College 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 Alpha Lambda Delta 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 College. This scholarship was established by College Trustee Alfred LaRiviere '51/H'95/H'01 and his wife, Marian.

Alfred and Marian LaRiviere Endowed Scholarship

This scholarship(s) is awarded annually to students based on demonstrated financial need. It was established by College Trustee Alfred LaRiviere '51/H'95/H'01 and his wife, Marian.

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 College. 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.

Agnes M. Lindsay Trust Scholarship

Scholarship grants are awarded to students with demonstrated financial need from rural New England (Maine, Vermont, New Hampshire, and Massachusetts).

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 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 children of employees of Ludlow Textiles Company, Inc. and to students who are Ludlow residents. This schol-

arship is provided from a fund established by College Trustee Martin A. Lower and his wife, Roberta.

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 freshmen engineering program. The student must be enrolled as a sophomore in an engineering curriculum at the time of the award.

Arthur and Rebecca Marshall Scholarship

This scholarship is awarded to a full-time undergraduate student who demonstrates financial need. The scholarship was established by Mr. Marshall through a charitable trust held at The Jewish Endowment Foundation. Attorney Marshall was a long-time friend of the College. He was awarded the honorary degree of Doctor of Laws in 1998 by Western New England College.

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.

Horace and Gertrude McCrea Endowed Scholarship

Scholarships are awarded annually to undergraduate students from a fund established by Horace O. McCrea '23. Preference is given to students in the School 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 area. This fund was established by Raymond Meyers '51/G'64/H'01 and his wife, Shirley.

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 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.

Lawrence F. and Myra T. O'Brien Endowed 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 in memory of his parents.

Francis S. & 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 GPA, 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 highest average. Francis Oleskiewicz is a Trustee of the College 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, who served as treasurer of Western New England College from 1937-65 and on the Board of Trustees from 1951-70.

Parents Endowed Financial Aid Fund

Scholarships are awarded from a fund established by the Parents Association for students with demonstrated financial need.

Phi Theta Kappa Scholarship

An unlimited number of \$4,000 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. The scholarship is renewable for a second year of full-time study if a 2.7 Western New England College GPA is maintained.

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 and to students from the Holyoke-Springfield area.

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 and full-time status.

Presidential Scholarship

The College, in an attempt to help students with a demonstrated financial need 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 and preference is given to students with a GPA of 3.0 or above.

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.

Residence Hall Scholarship

Scholarships are available to residential students with demonstrated financial need.

Sattler-Goodrich Scholarship

A scholarship fund in memory of Allan R. Sattler '59/G'61 has been established by members of the Pi Tau Kappa fraternity and the Epsilon Phi Sigma/Tau Epsilon Phi fraternity. Awards will be made to undergraduate students who have outstanding records.

School of Arts and Sciences Endowed Scholarship

Funded by the Endowment for Student Financial Aid for the School of Arts and Sciences, this annual scholarship is awarded to undergraduate, upperclass, full-time students in the School of Arts and Sciences with demonstrated financial need and minimum cumulative GPA of 3.0.

School of Business Endowed Scholarship

Funded by the Endowment for Student Financial Aid for the School of Business, this annual scholarship is awarded to undergraduate, upperclass, full-time students in the School of Business with demonstrated financial need and minimum cumulative GPA of 3.0.

School of Engineering Endowed Scholarship

Funded by the Endowment for Student Financial Aid for the School of Engineering, this annual scholarship is awarded to undergraduate, upperclass, full-time students in the School of Engineering with demonstrated financial need and minimum cumulative GPA of 3.0.

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 \$500/year discount offered to each sibling when a family has more than one full-time undergraduate child attending Western New England College in a given year. Each student receives a \$500 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.

William and Iona Sleith Endowed Scholarship

William Sleith, alumnus of the Class of 1944, served the College as corporator and trustee from 1958 until his death in 1996. 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 College based on need. Sleith's generous gifts to the College over the years attest to his commitment to the College and to his belief that minority students are a vital constituency of the College community.

Stanley O. Smith Endowed 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 the 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 Psychology Department 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 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 School of Engineering with secondary consideration given to undergraduates majoring in Management in the School 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 School of Business who demonstrate strong academic achievement and financial need. Recipients must reside in Brimfield, Massachusetts or one of the neighboring towns of Holland, Monson, Wales or Warren. The annual award is normally a minimum of \$10,000. Available to incoming freshmen, 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 School of Business.

Jean C. Sterling Endowed Memorial Scholarship

A scholarship fund in the memory of Jean Cameron Sterling '46 has been established. It is available to undergraduate students with demonstrated financial need.

Kenneth M. Stratton Memorial Endowed Scholarship

The scholarship is awarded to either undergraduate or graduate students who are working, who have financial need, and who 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, Class of 1975, 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, Massachusetts.

Kevin R. Sullivan Endowed Memorial Scholarship

A scholarship fund in the memory of Kevin R. Sullivan '81 has been 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.

Susan Tober Endowed Scholarship

A scholarship is awarded annually to a deserving student from a fund established in 1970 by the late Susan Tober. Each year the Civitan Club of Springfield makes an additional contribution. In awarding this scholarship, attention is paid to scholastic achievement and demonstrated 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 3.00 GPA from their previous college. The scholarship is renewable if a 2.70 Western New England College GPA is maintained.

Brian P. Trelease Endowed Scholarship

A merit scholarship is awarded to a student in the School of Business from a fund established by College Trustee Brian P. Trelease '67/G'71. Funding is based on the student attaining Dean's List standing.

Trowbridge-Brown Endowed Scholarship

Scholarships are awarded annually to seniors in the School of Arts and Sciences who have the highest grade point averages 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 Scholarship

One or more scholarships are awarded annually to deserving undergraduate engineering student(s). The scholarship is named in memory of Richard H. Tucker '80, from a fund established by his family.

Tuition Assistance Grants

The College, 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. In cases of severe financial need, awards may be equivalent to the full tuition charges.

WESTBANK Endowed Scholarship

The student will be from Hampden County, will be an entering freshman enrolled in the School of Business, and will demonstrate academic promise. The endowed fund was established with contributions from WESTBANK at the generous suggestion of Donald Chase, Class of 1975, and President/CEO of WESTBANK.

Western New England College Scholarships

Scholarships of varying amounts are awarded annually to deserving students who have demonstrated financial need and above-average academic performance. These awards have been established by generous gifts from friends and alumni of the College through general scholarship giving.

Wesley and Francis Wilson Scholarship

Scholarships of amounts varying from \$200 to \$600 are available to full-time students. At least ten awards are made each year. Preference is given to students in the greater Springfield area. The scholarship is funded through a trust established by the will of E. Wesley Wilson. The trust is administered by Fleet Bank.

The Women's Opportunity Endowed Scholarship

A scholarship of not less than \$500 will be awarded to a full or part-time student who is female, who demonstrates financial need, and who is serious about the pursuit of academic excellence.

Scholarships and Special Awards Available to Part-Time Undergraduate Students

Students must be enrolled in a minimum of six credits of coursework to be considered for these scholarships and awards.

Alumni Endowed Scholarship

Scholarship awards are made annually by the Alumni Association to two undergraduate part-time students. The College selects the recipients on the basis of scholarship and demonstrated financial need.

Susan Squire Bousquet Endowed Scholarship

A scholarship is awarded annually to a student in Continuing Education with demonstrated financial need. Susan was a student at the College when she died in a car accident. Her family and friends established this scholarship in her memory.

Evelyn Burton Endowed Scholarship

Scholarships of varying amounts are awarded based on financial need to students who are single parents. This scholarship is provided from a fund established by College Trustee Thomas R. Burton '70 in memory of his mother, Evelyn.

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 College Trustee Norman J. Cartmill '50/G'61/H'01 and his wife, Doris.

Louis T. Cormier Endowed Memorial Scholarship

This fund was established by the wife of the late Thomas Cormier '47, formerly of the faculty of the School of Business. It is awarded annually to a student of the sophomore year who is a candidate for a degree in accounting, stands in the upper third of the class, and shows definite qualities of good citizenship and leadership.

Denise G. Crawford Endowed Scholarship

This scholarship is awarded to a part-time student in the School of Business. The scholarship was established by friends and family in recognition of Mrs. Crawford's 35 years of outstanding service to her Alma Mater. At the

time of her retirement, Denise Crawford '61 was the staff assistant to the academic vice president.

Carl R. Hellstrom Endowed Scholarship
Scholarships of varying amounts are available to either full-time or part-time students. This scholarship was established by Carl R. Hellstrom in 1961. Applicants must be students of good standing in the College 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.

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 grade point average that, if continued, would qualify them to graduate magna or summa cum laude. This scholarship is from a fund established in honor of Beaumont A. and Winifred S. Herman. Dr. Herman was president of the College from 1955 to 1976.

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.

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 \$4,050 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 from Student Administrative Services at the College.

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 \$4,050 a year.

Federal Perkins Loan

The College has established and administers a Perkins Student Loan Fund. Eligible students may borrow amounts not exceeding \$6,000 aggregate for pre-baccalaureate, and \$12,000 aggregate for all undergraduate and graduate years.

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 \$2,625 per year, sophomores may borrow up to \$3,500 per year, juniors and seniors may borrow up to \$5,500 per year. Graduate students may borrow up to \$18,500 per year. The total amount that undergraduates may borrow is \$23,000, while the total for graduate students is \$65,000 (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 9 percent. Repayment begins 60 days after the loan is disbursed. Applications for this loan are obtained through Student Administrative Services.

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 \$2,500 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.

State Loan

The Commonwealth of Massachusetts offers a limited amount of need-based loan funding to Massachusetts residents at a 0 percent interest rate. Application can be made by completing the Free Application for Federal Student Aid. 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) 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 \$30,000 per year. 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 College 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 College 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.

Absence Dictated by Religious Beliefs

Under Massachusetts General Laws, Chapter 151C, Section 2B, 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 may have been 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 student because of his availing himself of the provisions of this section.

Confidentiality of Student Records

The Family Education Rights and Privacy Act of 1974 (revised 1988, 1993) assures students the right to inspect and review all College 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 College 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:

- class year;
- home address and telephone number;
- major field of study;
- date and place of birth;
- dates of attendance at Western New England College;
- degrees, honors, and awards received;
- weight and height of student athletes;
- participation in officially recognized sports and activities;
- high school and any college previously attended.

A student may limit the release of the above information by filing an information waiver form with Student Administrative Services (SAS) office each year, within the first week of the start of the semester.

Firearms Possession

The General Laws of the Commonwealth of Massachusetts 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 College student organization, 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 practice of hazing, 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 possible immediate dismissal from the College.

Immunization Requirements

The laws of the Commonwealth of Massachusetts require full-time students born on or after January 1, 1957, to present evidence of immunization against measles, mumps, rubella, diphtheria, tetanus and Hepatitis B series as a condition of registration for classes. Such immunization may be evidenced through an appropriate letter of verification from a licensed physician, by completion of the Immunization History section of the Report of Medical History form required of all new students entering the College, or in the case of students who graduate from high schools in Massachusetts, through forwarding a copy of the immunization transcript provided by Massachusetts high schools to students at the time of their graduation.

While in some cases, lack of immunization may be temporarily accepted, subsequent registration requires that immunization be obtained within ten days of the first day of classes. All students are urged, therefore, to satisfy immunization requirements as soon as possible, preferably prior to registration.

In any circumstance, no full-time student born in 1957 or after may continue to be enrolled beyond ten days after the first day of classes without the required verification.

Non-Discrimination Policy

Western New England College is committed to the principle of equal opportunity in education and employment. The College does not discriminate on the basis of sex, race, color, creed, national origin, age, religion, sexual orientation, 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 College's nondiscrimination policies:

The Executive Director of Human Resources and the **Career** Center
Western New England College
1215 Wilbraham Road
Springfield, MA 01119

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.

Title III of the Americans with Disabilities Act, 42 U.S.C. 12182(a) provides that no individual shall be discriminated against on the basis of disability in the full and equal enjoyment of the goods, services, facilities, privileges, advantages, or accommodations of any place of public accommodation. As a place of public accommodation the College adheres to the stipulations of this Act. Also please see Student Disability Services on p. 292. The Office of Student Disabilities Services is located in Deliso Hall.

Selective Service Registration

All male students who either have not served 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, upon reaching 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. Until the student has filed the appropriate Statement of Educational Purpose, he is ineligible to

receive such funding, including Perkins Loans, Direct Ford Student Loans, Pell Grants, College Work-Study, and similar federal program monies.

An appropriate Statement of Educational Purpose/Registration Compliance form is included in the application for financial aid, available through the College Student Administrative Services. This compliance form must be completed before the student can receive federal program monies.

Sexual Harassment

It is the policy of the College 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 College policy and will not be condoned or tolerated. Not only is sexual harassment a violation of College policy, but it may also violate Title VII of the Civil Rights Act. Any employee or student who is subjected to sexual harassment or intimidation should immediately contact the Executive Director of Human Resources and the **Career** Center, in the case of an employee, or the 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 College. The complete policy on sexual harassment is available in Human Resources.

Smoke-Free Environment

In accordance with the provisions of the Massachusetts Clean Indoor Air Act of 1988, the College is in the process of establishing smoke-free student housing. At present, all residence facilities except for the Evergreen Village townhouses and Gateway Village apartment complex are smoke-free living environments.

Student Right-to-Know and Campus Security Act (Clery Act)

The College 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 College's policy to provide information concerning security services available on campus. The College also practices the policy of notifying the College 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 College'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 College community may obtain information provided by the Commonwealth of Massachusetts as to any registered sex offender who may be enrolled or working at the College 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 College 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.

TRUSTEES

Chairman of the Board

JOHN M. O'BRIEN III '74
President, J. M. O'Brien & Company, P.C.
Springfield, MA

Vice Chairman

MARTIN A. LOWER
Chairman and Chief Executive Officer
Ludlow Textiles Company, Inc.
Ludlow, MA

Treasurer

FREDERICK V. MOTTLE '69
Chairman, Mottle McGrath Braney & Flynn, P.C.
Worcester, MA

Secretary

ALFRED A. LARIVIERE '51/H'95
Former President/Chief Executive Officer
Western Massachusetts Telephone Workers'
Credit Union
Ludlow, MA

P.A. ARGENTINIS '66
Chairman, President and Chief Executive
Officer
Elan Technology
Midway, GA

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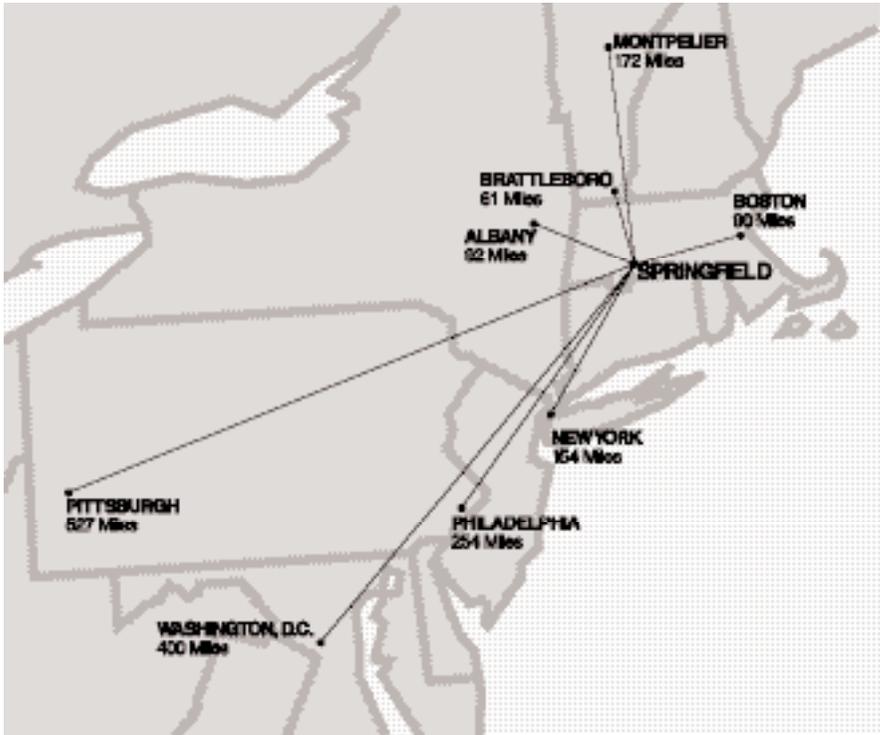
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REGIONAL MAP



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 Rd. (fifth traffic light). Turn left onto Wilbraham Rd. and follow it 1.5 miles to the third light. Turn right into the parking lot of the 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 traffic light, turn left onto Roosevelt Ave. Take Roosevelt Ave. 2.5 miles to the intersection with Wilbraham Rd. (fifth traffic light). Turn left onto Wilbraham Rd. and follow it 1.5 miles to the third light. Turn right into the parking lot of the 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 traffic light at the intersection of Allen St. and Bradley Rd. (3.2 miles). Turn left onto Bradley Rd. and travel 1.6 miles to Wilbraham Rd. and turn right. Travel 0.2 miles to the next light and turn right, into the parking lot of the Welcome Center. (Total 5.7 miles from I-91.)



