



# Undergraduate Catalog 2004-2006



UNIVERSITY OF  
NEW HAVEN

WE MAKE TOMORROW

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**UNIVERSITY OF  
NEW HAVEN**

**UNDERGRADUATE  
CATALOG  
2004–2006**

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Disability Services (Voice/TDD): (203) 932-7332

Health Services Office: (203) 932-7079

Health Services Fax: (203) 931-6090

Website: *www.newhaven.edu*

This catalog supersedes all previous bulletins, catalogs, and brochures published by the University of New Haven and describes academic programs to be offered beginning in Fall 2004. Undergraduate students admitted to the university for Fall 2004 and thereafter are bound by the regulations published in this catalog. Those admitted prior to Fall 2004 are bound by those new regulations which have been duly instituted and announced prior to the semester during which they are effective.

The University of New Haven is committed to affirmative action and to a policy which provides for equal opportunity in employment, advancement, admission, educational opportunity, and administration of financial aid to all persons on the basis of individual merit. This policy is administered without regard to race, color, national or ethnic origin, age, gender, religion, sexual orientation, or disabilities not related to performance. It is the policy of the University of New Haven not to discriminate on the basis of gender in admission, educational programs, activities, or employment policies as required by Title IX of the 1972 Educational Amendments. This school is authorized under federal law to enroll non-immigrant alien students.

Inquiries regarding nondiscrimination, affirmative action, equal opportunity, and Title IX may be directed

to the university's equal opportunity/affirmative action officer at 300 Boston Post Road, West Haven, CT 06516; phone (203)932-7265. Persons who have special needs requiring accommodation should notify the Director of Disability Services and Resources at 300 Boston Post Road, West Haven, CT 06516 or by Voice/TDD at (203)932-7332.

Every effort has been made to ensure that the information contained in this publication is accurate and current as of the date of publication; however, the university cannot be held responsible for typographical errors or omissions that may have occurred.

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*The university reserves the right to make, at any time, whatever changes it deems necessary in admission requirements, fees, charges, tuition, faculty, instructors, policies, regulations, and academic programs prior to the start of any class, term, semester, trimester, or session. The university reserves the right to divide, cancel, or reschedule classes or programs if enrollment or other factors so require. All such changes are effective at such times as the proper authorities determine and may apply not only to prospective students but also to those who are already enrolled in the university.*

Dear Student:

At the University of New Haven, we provide world-class career preparation in all of our programs, but our overarching goal is to prepare students to lead meaningful lives. Through our courses in the arts, humanities, and sciences, we cultivate our students' humanity; and, by integrating real-life learning in our academic programs — through such areas of emphasis as community service, internships, student-faculty research, and student self-governance — we prepare our students for leadership in their careers and as members of a democratic society.

The technological and economic complexity as well as the great cultural diversity of the world in which you will live and work will require you to be exceptionally flexible, compassionate, and tolerant human beings. I hope your UNH education will lead you to measure your personal success not just by the dollars you earn but primarily by the positive impact you can have on the lives of others. For this reason, I encourage you — regardless of your major — to explore this catalog for courses that will enrich your sense of social justice and societal responsibility.

The faculty at UNH has impressive academic and professional credentials, in many cases bringing with them national and even international reputations in their fields. More important to you as a student, they are committed in unrivaled ways to the success of each and every one of their students. I hope you will take advantage of their interest in you and get to know as many faculty members as possible and allow them the privilege of knowing you.

One of my favorite quotations, and one that I use often in speaking to students, is from Ernest Boyer, a former president of the Carnegie Foundation, who once warned that the “crisis of our time relates not to technical competence, but to a loss of the social and historical perspective, to the disastrous divorce of competence from conscience.” As you focus in your studies on your technical training in whatever field you choose to study, I hope you will also allow yourself some time to take courses and participate in extra-curricular activities that challenge you to question your own values as well as prevailing societal values and to look for ways to improve the world that you will help form as a member of a global society.

I wish you success in your studies and personal enrichment through your experiences at the University of New Haven. Please come to see me if there is ever anything I can do to assist you.

With best wishes,



Steven H. Kaplan  
President





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# THE UNIVERSITY

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*We Make Tomorrow . . . .*

*At the University of New Haven, we are wholly dedicated to the professional future of our students, caringly committed to their achievement.*

**UNIVERSITY OF  
NEW HAVEN**

*We provide the people, the programs, and the places that enable our students to prepare for personal success — in their careers and in life.*

The University of New Haven is a private, independent, comprehensive university based in southern New England, specializing in quality educational opportunities and preparation of both traditional and returning students for successful careers and self-reliant, productive service in a global society.

## Our Mission

To develop career-ready and cultivated graduates, well prepared for meaningful roles and the pursuit of lifelong learning in a global economy and society.

## Our Vision

To be the institution of choice for students who seek the highest quality education for professionally oriented careers. We will be noted for our ability to combine professional education with liberal arts and sciences and with the development of high ethical and cultural standards among our graduates.

## Our Guiding Principles

UNH is committed to educational innovation, to continuous improvement in career-focused and professional education, and to support for scholarship and professional development.

UNH takes pride in, and models itself by, the standard of best practices in its commitment to service, quality, integrity, and personal caring. All academic programs, as well as campus and student life, provide rich opportunities for leadership, personal growth, and participation in the aesthetics of life so that the University of New Haven will personify a

successful commitment to diversity, equality, and “the pursuit of happiness.”

Our goal is to distinguish ourselves by the measures of student admissions; retention; career development; collaboration with business, industry, and community; and the success of our graduates and their support as alumni.

## Our Values

- Belief in and practice of UNH’s Mission and Vision
- Commitment to the success of our students through caring and responsive service
- Teamwork: helping each other to succeed
- Communication: trusting, open, honest, and straightforward
- Commitment to thoughtful action
- Thinking, articulating, doing, and evaluating
- Leading by example with continuous improvement
- Facing all issues and being accountable
- Respect for the individual, including his or her thoughtful input
- Recognizing success

## How We Will Be Known

- Excellence in career professions
- Currency in information technology and knowledge management
- Exceptional faculty, talented students, and accomplished alumni
- Mentored and engaged real-life learning

- Cultural awareness in a global society
- Community, business, and professional partnerships
- Ideal size and presence
- Student satisfaction

The hallmarks of a UNH education are quality educational opportunities at all post-secondary levels, through career-oriented academic programs with a strong liberal arts foundation, taught by a caring and highly qualified faculty in safe, convenient, and diverse campus environments.

A solid core curriculum of liberal, humanistic coursework is balanced with professional programs in business, engineering, applied computer sciences, public safety, and other advanced technical areas.

Moreover, the university is flexible enough to meet the needs of students who work while they attend UNH. A range of programs for part-time study is offered at night. A cooperative education program makes it possible for students to augment their academic program with related work experience.

The Graduate School offers students the opportunity to continue study beyond the bachelor's degree on a part-time or full-time basis.

By responding to the educational needs of its students, the University of New Haven has become a major regional university serving both our students and the business community.

## Accreditation

The University of New Haven is a coeducational, nonsectarian, independent institution of higher learning chartered by the General Assembly of the State of Connecticut.

The University of New Haven is accredited by the New England Association of Schools and Colleges (NEASC), Inc., a nongovernmental, nationally recognized organization whose affiliations range from elementary schools to collegiate institutions offering postgraduate instruction.

Accreditation by NEASC indicates that an institution meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or

college is one which has available the necessary resources to achieve its stated mission through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by NEASC is not partial but applies to the institution as a whole. It is not a guarantee of the quality of every course or program offered or of the competence of individual graduates. Rather, it provides reasonable assurance of the quality of opportunities available to students.

The UNH School of Business is actively seeking accreditation by the Association to Advance Collegiate Schools of Business (AACSB). The School has voluntarily committed to participate in a systematic program of quality enhancement and continuous improvement that makes AACSB accreditation a more realistic and operational objective.

The University of New Haven's curricula leading to the bachelor's degrees in chemical, civil, electrical, industrial, and mechanical engineering are fully accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). The Computer Science bachelor's degree program is fully accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (CAC/ABET).

Individual programs, departments, and schools hold various forms of national professional accreditation which are listed in relevant sections of the catalog.

## History

The University of New Haven was founded in 1920 as the New Haven YMCA Junior College, a division of Northeastern University. It became New Haven College in 1926 by an act of the Connecticut General Assembly. For nearly 40 years, the college held classes in space rented from Yale University.

In September 1958, the college completed construction of a classroom building on Cold Spring Street, New Haven, for its daytime engineering programs. That same year, the college received authoriza-

tion from the Connecticut legislature to offer the bachelor of science degree in the fields of business, accounting, management, and industrial engineering.

Although the student body on the new Cold Spring Street campus numbered fewer than 200, the college's facilities were fast becoming overcrowded. To meet the needs of the college and the local community, the Board of Governors purchased, in 1960, three buildings and 25 acres of land in West Haven formerly belonging to the New Haven County Orphanage.

The combination of increased classroom space and four-year degree programs sparked a period of tremendous growth in enrollment and facilities. In 1961, the year after the college moved to West Haven, the graduating class numbered 75. Forty-three years later the figure has climbed to 1,200 graduates annually.

New Haven College received full accreditation for its baccalaureate programs from the New England Association of Schools and Colleges in 1966. In 1969, the college took a major step forward with the addition of the Graduate School. Initially offering programs in business administration and industrial engineering, the Graduate School expanded rapidly. Today, 30 master's programs, along with a wide variety of graduate certificates, offer the approximately 1,800 graduate students many choices for post-baccalaureate study.

In 1970, on the fiftieth anniversary of its founding, New Haven College became the University of New Haven, reflecting the increased scope and the diversity of academic programs offered. Today, the university offers a rich variety of undergraduate and graduate degree programs in six schools: the College of Arts and Sciences, the School of Business, the School of Engineering and Applied Science, the Tagliatela School of Hospitality and Tourism, the School of Public Safety and Professional Studies, and the Graduate School.

Undergraduate and graduate courses and programs are offered on the main campus in West Haven as well as in New London and at other off-campus and in-plant sites. Graduate courses in selected fields are offered in New London, Stamford, Waterbury, Stratford, Shelton, and Newington. The graduate forensic science, fire sci-

ence, and human nutrition programs are offered at satellite locations in California.

## Philosophy

The University of New Haven, a private, comprehensive, multi-campus university based in southern New England, provides quality educational opportunities and preparation for self-reliant, productive, ethical service in a global society

Since its founding in 1920 the University of New Haven has been an innovator in providing quality educational opportunities with special emphasis on programs addressing current and emerging social needs.

Building on its successful past, the university will strive to achieve prominent and distinctive leadership as an institution that empowers students with substantive knowledge, ability to communicate, problem-solving skills, and the practical experience appropriate for success as leaders in their professions and as citizens of the local and world communities.

The university is committed to participatory governance and quality management through continuous improvement as the means to achieve its goals and perform its primary service—successful student and faculty growth and learning.

## Schools of the University

### College of Arts and Sciences

The College of Arts and Sciences offers associate's and bachelor's degrees in numerous fields, from traditional to career-focused, all of which prepare graduates for life in a global environment.

Through the Graduate School, the College of Arts and Sciences also offers master's degree programs and graduate certificates. Detailed information on the graduate programs is available in the Graduate School catalog.

### School of Business

The School of Business offers programs in the fields

of business administration, accounting, communication, marketing, business economics, finance, international business, and sports management.

Through the Graduate School, the School of Business offers the MBA and other master's degree programs as well as a number of business-related graduate certificates.

## School of Engineering and Applied Science

The School of Engineering and Applied Science offers degree programs in nine fields: chemistry, chemical engineering, civil engineering, computer engineering, computer science, electrical engineering, general engineering, industrial engineering, and mechanical engineering.

Master of science degree programs and graduate certificates in several engineering fields are offered through the Graduate School. Students should consult the Graduate School catalog for details.

## Tagliatela School of Hospitality and Tourism

The Tagliatela School of Hospitality and Tourism offers programs in dietetics, hotel and restaurant management, and tourism administration. The school's certificates offer concentrated study in the hospitality field.

A master of science degree in executive tourism and hospitality management is offered through the Graduate School. Students should contact the Graduate School for details.

## School of Public Safety and Professional Studies

The School of Public Safety and Professional Studies provides programs for students who wish to major in degree programs specifically oriented toward careers in criminal justice, forensic science, forensic psychology, fire science, arson investigation, fire protection engineering, forensic computer inves-

tigation, legal and paralegal studies, human services, and occupational safety and health and related programs. The school provides a broad professional education which often incorporates classroom learning with laboratory and field experience. The school attracts students of varied ages and levels of experience, from recent high school graduates to seasoned industry professionals. It also serves professionals seeking programs designed to meet requirements of national and/or regional accreditations and licenses.

Graduate degree programs are available in national security, criminal justice, forensic science, fire science, occupational safety and health management, and professional counseling, as are numerous certificate programs. Several of our graduate programs are offered in California as well as at our main campus.

## UNH–Southeastern Connecticut

UNH–Southeastern offers graduate programs geared to the needs and interests of students in the New London area. Graduate engineering, business, computer science, and education programs are available on an evening or weekend basis to the general public as well as to employees of certain corporations. For further information, please contact UNH–Southeastern Connecticut, 469 Pequot Avenue, New London, CT 06320, or phone (860) 701-5454, or visit the website at [www.newhaven.edu/sect](http://www.newhaven.edu/sect).

## Graduate School

The Graduate School, founded in 1969, offers 30 master's programs and a variety of graduate certificates. The main campus in West Haven offers all programs. Courses leading to the master's degree in business administration, education, forensic science and national security, and other selected subjects are also offered at off-campus locations in California, New London, Newington, Stamford, and Waterbury, depending on the program.

Programs offered by the Graduate School are:

Business Administration (MBA)

Business Administration/Industrial Engineering  
 (dual degree)  
 Business Administration/Public Administration  
 (dual degree)  
 Cellular and Molecular Biology  
 Community Psychology  
 Computer Science  
 Criminal Justice  
 Education  
 Electrical Engineering  
 Environmental Engineering  
 Environmental Science  
 Executive MBA (EMBA)  
 Executive Engineering Management (EMSEM)  
 Fire Science  
 Forensic Science  
 Health Care Administration  
 Hospitality and Tourism  
 Human Nutrition  
 Industrial Engineering  
 Industrial Hygiene  
 Industrial/Organizational Psychology  
 Labor Relations  
 Management of Sports Industries  
 Mechanical Engineering  
 National Security and Public Safety  
 Occupational Safety and Health Management  
 Professional Counseling  
 Public Administration

Graduate certificates are also offered through the Graduate School.

The Graduate School operates on a trimester calendar, with terms beginning in September, January, and April. Classes generally meet once each week during the regular trimesters. In addition, an abbreviated summer session is offered during July and August. Classes meet twice each week during this special summer session.

To accommodate working professionals, most courses meet in the evenings, beginning at 5:30 or 6 p.m. A few classes are scheduled earlier in the day or on weekends. Students may enroll either full- or part-

Additional information regarding graduate programs may be obtained from the Graduate School Admissions Office, by email from [gradinfo@newhaven.edu](mailto:gradinfo@newhaven.edu), or by calling (203) 932-7133 or 1-800-DIAL-UNH, ext. 7133.

## Degrees Offered by the University

The University of New Haven offers undergraduate programs leading to the bachelor of arts degree, the bachelor of science degree, and the associate in science degree. A number of undergraduate certificates are also available.

### Bachelor's Degrees

The bachelor's degree programs at the University of New Haven require 120 or more credit hours of study and generally take a minimum of four years for full-time students. Part-time students take advantage of courses offered in the evening and complete their undergraduate degrees on a schedule that complements their careers. Accelerated programs for working adults are offered in various disciplines.

### Associate's Degrees

Associate's degree programs are designed to encourage students to begin their college education even though they do not yet want to commit themselves to a full, four-year course of study. A minimum of 60 credit hours is required for the associate's degree, and the credits earned usually apply toward relevant bachelor's degree programs.

### Certificates

Students can take their first step toward an undergraduate degree by registering for one of the certificates offered by the university.

Each certificate is carefully designed as a concentrated introduction to a particular subject area and

consists of courses totaling 12 or more credit hours.

Later, students may choose to apply the credits they have earned toward a relevant undergraduate degree at the university.

Please contact the director of part-time admissions or the appropriate academic department for further details.

## Graduate Degrees

Through the UNH Graduate School, programs are offered leading to the master of arts degree, the master of science degree, the master of public administration, the master of business administration, the executive master of business administration, and a number of graduate certificates. For more information, contact the Graduate School Admissions Office, or consult the Graduate School catalog.

# University Policies

## Diversity Policy

The University of New Haven is committed to achieving a diverse and pluralistic community which reflects the multiracial and culturally diverse society of contemporary America.

The Diversity Committee has been established to guide the university in implementing this diversity policy. The university will work toward attracting and retaining a diverse faculty, staff, and student body for the purpose of creating a pluralistic scholarly community. The committee will assist the administration in the development and implementation of programs and policies that support an enriched educational experience for a diverse university community.

The University of New Haven does not discriminate in admissions, educational programs, or employment against any individual on the basis of that individual's gender, race, color, religion, age, disability, sexual orientation, or national or ethnic origin.

## Notification of the Family Educational Rights and Privacy Act (FERPA)

The Family Education Rights and Privacy Act affords students certain rights with respect to their education records, as follows:

(1) **The right to inspect and review records within 45 days of the day the university receives a request for access.** Students should submit to the registrar, dean, head of academic department, or other appropriate official written requests that identify the record(s) they wish to inspect. The university official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the university official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

(2) **The right to request amendment of records that the student believes are inaccurate or misleading.** Students may ask the university to amend a record that they believe is inaccurate or misleading. They should write the university official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the university decides not to amend the record as requested by the student, the university will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding hearing procedures will be provided to the student when notified of the right to a hearing.

(3) **The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent.** One exception which permits disclosure without consent is a disclosure to school officials with legitimate educational interests. A school official is a person employed by the university in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the university has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Governors; or a student serving on an offi-

cial committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

(4) The right to file a complaint with the U.S. Department of Education concerning alleged failures by the University of New Haven to comply with the requirements of FERPA. The name and address of the office that administers FERPA are Family Policy Compliance Office, U.S. Department of Education, 600 Independence Avenue SW, Washington, DC 20202-4605.

## The Student Right-to-Know and Campus Security Act

In accordance with Connecticut's Public Act 90-259 concerning campus safety and the 1990 federal law, PL101-542: The Student Right-to-Know and Campus Security Act, all colleges and universities receiving state and federal financial assistance are required to maintain specific information related to campus crime statistics and security measures, annually provide such information to all current students and employees, and make the data available to all prospective students and their families and to prospective employees upon request.

Safety on the university campus is a natural source of concern for parents, students, and university employees. Education – the business of the University of New Haven – can take place only in an environment in which each student and employee feels safe and secure. UNH recognizes this and employs a number of security measures including its own sworn police department to protect the members of this community.

The Student Right-to-Know and Campus Security Act (Clery Act) is a federal law that requires all colleges and universities to disclose annually information about crime on and around their campuses. The Campus Crime Report includes statistics for the three most recently completed calendar years.

The full report for the University of New Haven,

prepared by the UNH Police Department, is available on the UNH website and in printed form at the UNH Police Department. This report also includes information on university policies concerning sexual assaults, alcohol, drugs, weapons, and residence hall security.

## Drug-Free and Smoke-Free Environment

In accordance with federal law concerning a drug-free campus environment, the relevant university policy and regulations are provided to all current students and employees. The information is also available upon request at the human resource department.

The No Smoking policy is in effect in any campus administrative, academic, or recreational building. This restriction applies to all UNH offices, classrooms, hallways, stairwells, restrooms, dining facilities, conference/meeting facilities, athletic facilities, and any other public spaces within these buildings. Smoking is confined to outdoor space, with ashtrays provided at entrances to each building.

Smoking in the residence halls is restricted to rooms, suites, and apartments which have been designated as allowing smoking as agreed upon by the roommates. Smoking is not allowed in lobbies, hallways, laundry rooms, meeting rooms, community rooms, or any other public spaces within the residence halls.



# UNIVERSITY CURRICULA

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## University Core Curriculum

The University of New Haven is a microcosm of American society: necessarily specialized and unavoidably complex. Nevertheless, it is the belief of the university that all students matriculating for associate's or bachelor's degrees should develop a common set of skills; furthermore, they should be exposed to a commonality of intellectual experiences which are the distinguishing traits of a university graduate. The purpose of the University Core Curriculum is to prepare all graduates for the changing, complex lives they will lead, to focus on the quality of their lives, and to enhance and expand the development of the wisdom by which they will frame their lives.

The University Core Curriculum, in seeking to achieve these goals, is dynamic. The core offers students the broadest possible perspective in their disciplines. For that reason, the University Core Curriculum includes new interdisciplinary courses as well as existing disciplinary ones. The interrelationship of these courses enables students to develop the following skills and conceptual abilities:

- Communication Skills
- Clear Reasoning:
  - Quantitative skills
  - Problem-solving and synthetic reasoning
  - Scientific methodology
- Dimensions of Our World, including the following:
  - Social and cultural
  - Natural and physical
  - Technical
  - Historical
  - Ethical and moral
  - Aesthetic

Courses will be chosen from the following categories:

- Laboratory science
- Social science

History  
Literature or philosophy  
Art, music, or theatre

## Bachelor's Degree Core Requirements

The University Core Curriculum for bachelor's degree programs encompasses a minimum of 11 courses, totaling 34 credits. Individual schools or departments may require additional core curriculum courses for their students. Some of the objectives outlined above are incorporated into more than one of the following areas.

### Communication Skills . . . . . 6 credits

The intent of this area is to develop student skills in reading, writing, and communicating in the English language. Two courses are required and should be taken in the freshman year:

- E 105 Composition (or E 106 for international students)
- E 110 Composition and Literature (or E 111 for international students)

If a student places out of E 105, then CO 100 Human Communication or a technical writing course (E 220 or E 225) must be taken.

### Clear Reasoning . . . . . 9 credits

#### Quantitative Skills (3 credits)

All students must be able to think abstractly, solve problems, and demonstrate a basic ability to do numerical computations and elementary algebra.

Choose from the following:

- M 109 Intermediate Algebra *or*
- M 127 Finite Mathematics *or*

demonstration of an equivalent level of skill. Students may satisfy this requirement by satisfactory performance on a placement test administered by the mathematics department.

**Problem-solving and synthetic reasoning (3 credits minimum)**

Students should be able to use a computer to meet their needs. They should be able to operate the machinery, bring a program into execution, and use that program to accomplish some useful end.

Students may select one of the following:

- CS 107 Introduction to Data Processing
- CS 110 Introduction to C Programming I
- EAS 112 Methods of Engineering Analysis

*OR*—one of the following three-course sequences:

## I

- M 127 Finite Mathematics
- M 228 Elementary Statistics
- SO 350 Social Survey Research

## II

- M 127 Finite Mathematics
- P 301 Statistics for the Behavioral Sciences
- P 305 Experimental Methods in Psychology

## III

- M 127 Finite Mathematics
- P 301 Statistics for the Behavioral Sciences
- SO 350 Social Survey Research

**Scientific Methodology (3 credits)**

Scientific methodology is often taken to represent the best example of clear reasoning and is one of the basic methods through which we gain knowledge of the universe. Understanding the methods of science improves the student's ability to reason clearly. In special cases this requirement can be fulfilled by a research course that familiarizes the student with the theory, methods, and culture of science. A request for such substitution must be made to the Core Curriculum Committee. The substitution will be approved if the request is accompanied by a proposal for a research project and if the proposal requires the student to provide a survey of the literature and to discuss methodology, causal relationships observed, and the results and significance of the research.

Students select one of the following:

- EAS 107 Introduction to Engineering
- HS 108 History of Science
- HU 300 Nature of Science
- PL 240 Philosophy of Science and Technology

**Dimensions of Our World . . . . 19 credits****Laboratory Science**

Students should understand the methodology of at least one basic science. One of the following laboratory courses satisfies the requirement:

- BI 121 General and Human Biology with Laboratory I
- BI 122 General and Human Biology with Laboratory II
- BI 253 Biology for Science Majors with Laboratory I
- BI 254 Biology for Science Majors with Laboratory II
- CH 103 & 104 Introduction to General Chemistry with Laboratory
- CH 105 Introduction to General and Organic Chemistry with Laboratory
- CH 115 & 117 General Chemistry I with Laboratory
- CH 116 & 118 General Chemistry II with Laboratory
- EN 101 & 102 Introduction to Environmental Science with Laboratory
- PH 100 Introductory Physics with Laboratory
- PH 103 General Physics I with Laboratory
- PH 104 General Physics II with Laboratory
- PH 150 Mechanics, Heat, and Waves with Laboratory

**Social Sciences**

Some breadth of understanding of our society is to be acquired by taking a basic course in each of two different social science departments. The following are acceptable choices:

- EC 133 Principles of Economics I
- EC 134 Principles of Economics II
- P 111 Introduction to Psychology
- PS 101 Introduction to Politics

PS 121	American Government and Politics
PS 241	International Relations
PS 281-285	Comparative Political Systems
SO 113	Sociology
SO 114	Contemporary Social Problems
SO 221	Cultural Anthropology
SO 390	Sociology of Organizations

### History

Western civilizations are studied as a basis for understanding our own society:

HS 102	The Western World in Modern Times
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### Literature or Philosophy

Students should acquire some depth of understanding of the human condition and of human endeavor. One sophomore-level course in literature or philosophy is to be selected from the following courses:

**Any literature course (E)** at the 200 level or higher *or*

PL 101	Introduction to Philosophy
PL 205	Classical Philosophy
PL 206	Modern Philosophy
PL 215	Nature of the Self
PL 222	Ethics

### Art, Music, or Theatre

Students should study the methodology, history, practice, and content of one of the arts. Students must choose one of the following courses:

AT 101	Introduction to Studio Art I
AT 231	History of Art I
AT 232	History of Art II
AT 331	Contemporary Art
MU 111	Introduction to Music
MU 112	Introduction to World Music
MU 125	Elementary Music Theory
MU 211	History of Rock
T 131	Introduction to the Theatre
T 132	Theatrical Style
T 241	Early World Drama and Theatre
T 242	Modern World Drama and Theatre

## Associate's Degree Core Requirements

Students pursuing an associate's degree must satisfy the following core curriculum requirements:

Communication Skills	6 credits
Quantitative Skills	3 credits
Computers	3 credits
Social Science	3 credits
History	3 credits
Art, Music, or Theatre	3 credits

These requirements are explained in detail above. All core requirements satisfied by the student for the associate's degree will be applied toward the larger bachelor's degree core if the student continues study.

## Academic Advising

To assist students in their academic development, the university assigns an academic advisor from the department of each student's chosen field of study. As soon and as often as possible, wise students seek the advice of their academic advisors regarding major requirements, career opportunities, choice of a minor, and progress in their major, as well as other areas of personal interest. At the time of registration, the academic advisors assist in and approve course selection. Students also confer with their advisors when adding or dropping courses, and advisors often make referrals to other qualified personnel on campus. The academic advisor is, therefore, the link between the student and the academic regulations of the university.

## The Honors Program

The UNH Honors Program is designed for exceptionally motivated students who have shown high levels of academic achievement. In order to enter the program, a student must have completed at least 24 credit hours with a cumulative grade point average of at least 3.3 at the time the first honors course is undertaken.

Applicants for the program are evaluated on the basis of high school performance, college performance, standardized test (SAT, ACT) scores, and recommendations of college teachers.

The university requires every student, regardless of major, to take a number of core courses in nine general areas. The Honors Program offers students an intellectually exciting and challenging way to satisfy some of these core requirements.

Students in the program take one honors seminar each semester for four semesters. Each seminar actively involves students in problem solving and inquiry. Topics in the seminars draw from several disciplines and study linkages between disciplines. Each course satisfies one of the university core curriculum requirements.

Honors Seminars offered recently have included the following:

“Physics and Music: The Persistence of Symmetry.” The parallel views of the physicist and the musician were explored to see how these views developed side-by-side and where they diverged.

“Cultural Entrepreneurialism.” The cultural importance of Connecticut artifacts was integrated with their potential as sites for tourism and economic development. Historical, cultural, literary, and economic impacts were assessed in relation to geography, population, education, and cultural expectations.

“Engineering and Society.” Relationships between engineering and society were investigated by focusing on environmental concerns.

“Politics and American Art.” This course focused on the major styles and motifs in American art and architecture and their relationship to American political history, attitudes, and concepts from Colonial times through the 20th century.

“Contexts and Images: African-Americans in Literature and Film.” This course provided an opportunity to examine literature and film as integral elements of African-American experience, heritage, and culture from the Civil War to the present.

After completing the four honors seminars, students write an honors thesis in their major discipline under the guidance of a professor in the major department. Up to six credits may be awarded for this thesis. The results of the research are to be presented orally to members of the student’s major department and to members of the Honors Committee.

In order to remain in the program, students must maintain a cumulative grade point average of at least 3.3 throughout their studies at UNH.

### Advantages of the Honors Program

In addition to a challenging and exciting curriculum, the Honors Program offers:

**Financial Aid:** A student who has successfully completed the four seminar courses described above and one additional semester of work on an honors thesis, all with a cumulative grade point average of 3.3 or higher, will be granted a 50% tuition reduction by UNH for the final semester in residence at UNH.

In addition, students in the Honors Program with a cumulative grade point average of 3.5 or higher and who are either rising juniors or seniors are eligible to apply for one of the six John Hatfield Scholar awards. These competitive awards are \$1000.00 per semester tuition scholarships, awarded to Honors Program students with high grade point averages who are active in student life and community service. In addition to the financial award, John Hatfield Scholar recipients receive special parking privileges, a bronze medallion, and a certificate of recognition.

**Small Classes:** Honors program classes provide an opportunity for participation and discussion in a setting where students know their instructors and their fellow students especially well.

**Recognition:** A student who successfully completes the honors program, including the honors thesis, will be designated as an Honors Scholar on the transcript and on the diploma awarded at graduation. Thus, prospective employers, graduate schools and other institutions will be aware of this extra accomplishment in the student’s pursuit of the undergraduate degree.

### Developmental Studies Program

The developmental studies program is designed to strengthen the basic skills of entering students. Courses within the program are taught by members of the faculty of the mathematics department and the English department.

The English department offers two developmental courses: E102 Academic Reading and Speaking and E103 English Fundamentals. These courses offer students a comprehensive study of the basic reading, speaking, and writing skills necessary in using the English language effectively. M103 Fundamental Mathematics is taught by the mathematics department.

Placement in these courses is determined by examinations given by the respective departments. Such placement becomes a first priority for affected students because the university believes that such students can become successful college students only upon correction of skill deficiencies.

Please note that although E 102, E 103, and M 103 each carry three college credits, these cannot be applied toward students' degree programs. E 103 and M 103 usually meet for up to six hours per week to provide intensive help.

Complete descriptions of the developmental courses appear in this catalog as part of the course offerings of the mathematics department and the English department.

### **Freshman Experience Seminar**

In their first year, college students face a number of new challenges. The Freshman Experience Seminar at UNH is designed to help students make the transition from high school to college.

This program incorporates the talents of more than 30 university personnel, both faculty and staff, and reflects the University of New Haven's commitment to high-quality student advising.

During their first semester, all new freshmen are required to take the 10-week team-taught FE 001 Freshman Experience Seminar, which addresses such topics as academic standards, diversity, time and stress management, college life vs. high school life, university relationships, responsible human sexuality, exploration of self, alcohol and substance abuse, and real-life learning. The goal of this seminar is to give students the tools to help them understand and succeed in what can be, and increasingly is becoming, a very competitive environment. FE 001 is also a wonderful support system for students who are away from home for the

first time. FE 001 is mandatory for all incoming first-time freshmen with no previous college experience and is a requirement for graduation.

A key component of the Freshman Seminar involves introducing the student to his or her academic advisor, who will serve as the link between the student and the academic regulations of the university.

# THE UNIVERSITY COMMUNITY

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The University of New Haven provides an environment designed to foster the personal growth of its students. Through its programs, services, and facilities, it provides the opportunity for students to become involved in meaningful activities which can develop into lifelong interests. These activities include recreational, social, community outreach, professional, and, of course, academic pursuits. In addition, the campus provides most of the services needed to assure the comfort and well-being of its students.

## Academic Support Services

Academic services are provided to facilitate and enhance students' academic progress through the university by furnishing guided access to advisory sources and ancillary support systems. Many of the available services are described below.

### Office of Academic Services

The Office of Academic Services, located in Maxcy Hall, provides a wide range of academic support to day and evening undergraduate students.

Academic Skills Counselors work with students individually or in small groups to strengthen abilities or make referrals to other qualified personnel on campus. They help students develop an individualized study strategy that focuses on textbook reading, lecture note-taking, time management, learning and memory strategies, and test-taking skills.

The office provides monitoring services to enable counselors, mentors, and coaches to assess students' progress in their courses. The office coordinates the efforts of the mentors responsible for working with students who are enrolled in the developmental math and English courses. The office also provides advisors for the activities of both the day and evening Honor Societies and the Evening Student Council. The office

provides access to the Student Ombudsman, who can assist in the resolution of student complaints, perceived grievances, and/or concerns.

### Center for Learning Resources

The Center for Learning Resources (CLR) offers free tutoring to students seeking extra help with their studies. The tutoring staff, over 25 instructors in all, is comprised largely of professionals who hold advanced degrees in their fields and who are committed to aiding the learning process. Tutoring is available six days a week throughout each semester.

The CLR includes four labs: The Math Lab offers help with mathematics, science, and business courses; the Writing Lab offers help with all writing assignments. Both labs operate primarily on a drop-in basis, but the Writing Lab also offers appointments. The two computer labs have the latest Microsoft software, math tutorials, and Internet access. The larger of these labs is available for classroom teaching.

### Developmental Studies Program

The developmental studies program is designed to strengthen the basic skills of entering students. Courses within the program are taught by members of the faculty of the Mathematics department and the English department. (See the University Curricula section of this catalog for additional information)

### Freshman Experience Seminar

The Freshman Experience Seminar at UNH is designed to smooth the transition of full-time students from high school into the substantially different environment of a university. (See the University Curricula section of this catalog for additional information.)

## Student Services

The University of New Haven cares deeply about the well-being of its students. A variety of services are available on campus to meet needs ranging from career advising to health care. Every effort is made to accommodate special student needs, such as helping international students to adjust to a new culture or ensuring that classes and facilities are readily accessible to students with disabilities. Many of the available services are described in the following pages.

### Campus Card Office/Parking Permits

The UNH Campus Card offers many services and advantages for all members of the UNH campus community. The Campus Card is a credit-card sized, color photo identification card. It is to be used as the official UNH library card and residential meal plan card, for security access identification, and for a number of other services.

All new students are required to obtain a Campus Card in order to register for a parking permit. The Campus Card must be renewed by all returning students at the beginning of the Fall term every year. Campus Card photos are taken at Echlin Hall on the main campus. Campus Card Office hours are posted at the beginning of each term.

Resident freshmen are not permitted to have vehicles on campus, or parked on city streets in the neighborhoods adjacent to campus.

In the interest of maintaining good relations with our neighbors, it is important that resident students limit parking to the designated ON CAMPUS parking areas. Resident student parking on city streets in the neighborhoods adjacent to campus is prohibited by the University. Vehicles in violation are subject to University sanctions including, but not limited to, UNH parking tickets.

*The University of New Haven is not responsible for damage to, or theft from, personal vehicles parked on university property.*

New students may obtain a main campus parking sticker for their cars or motorcycles at the Campus

Card Office or at the University Police Office located in the lower level of the Campus Bookstore. All cars must display a UNH parking sticker; vehicles parked in violation may be ticketed or towed. Detailed information on parking regulations, violations, and reporting of accidents is contained in the *Student Handbook*.

### University Police Office

The staff of the University Police Office, located in the lower level of the Campus Bookstore, are certified police officers who undergo continuous training and who have been trained in emergency medical procedures, first aid, and CPR. They conduct regularly scheduled campus patrols and work closely with local, state, and federal agencies to enforce the laws of the State of Connecticut, especially those most pertinent to campus safety and security. The University Police Office is fully staffed 24 hours a day.

### Career Development Office

The Career Development Office (CDO) provides a wide range of employment-related services to the entire university community, including undergraduates, graduate students, and alumni. We assist in the preparation of key documents: the resume, the cover letter, the thank-you letter. We give pointers on essential interview skills. Students can check our listings of local part-time positions, including some on-campus ones, throughout the school year. (The Financial Aid Office will help with information on college work-study.) Students may also review our internship listings for Connecticut and surrounding states. Students must consult their departmental advisor to obtain an internship. In addition, we maintain an extensive library of important information on various career choices as well as on requirements for graduate and professional programs and degrees.

Students should be alert to our ongoing advertisements. We sponsor frequent opportunities in the form of job fairs, visits, discussions, and interview sessions with expert representatives from business, industry, and government employers. Our best advice: Take advantage of our services as early as possible, even before you begin the actual job search. We welcome your visits to our office in 210 Kaplan Hall.

## Student Employment

During each academic year, employer representatives visit the campus to interview graduating University of New Haven students. While the CDO is not an employment service and does not guarantee jobs, it does maintain extensive listings of both full- and part-time positions to provide a common meeting ground for employers and prospective employees. Students will find this useful in locating part-time and full-time jobs while in school and employment following graduation as well. Alumni seeking positions are also encouraged to use the services of the office.

Employers wishing to list positions need only call or write, giving a description of the position available and other pertinent details. There is no placement fee charged for these services.

## Information

The CDO publishes updates of recruiter visits in *The Charger Bulletin* as well as information regarding Career Development events, the employment outlook for graduates, and job search hints. Career Development information is also provided in *Insight*, the UNH alumni publication.

## Cooperative Education

Cooperative Education (Co-op) is an academic support program that enables students to combine career-oriented, paid, full-time or part-time work experience with their college education. Co-op students benefit by being able to explore career interests firsthand, by gaining valuable work experience related to their majors, and by earning money to assist with their college expenses.

## How Co-op Works

Students should inquire about Co-op when they begin their degree programs. Work assignments start later, usually at the end of the sophomore year. The keys to a successful Co-op experience are flexibility and preparation. Co-op coordinators advise and counsel students in each academic area, helping students to

prepare resumes and develop interview skills.

The flexibility of the UNH Co-op program gives students a chance to schedule plans of study and work which fit their needs. Undergraduate students attend classes for the first two years of college, and they prepare for work assignments which start at the end of the sophomore year. Juniors and seniors alternate classes with co-op work which may last four or six months. Transfer students typically complete one semester on campus and may then enter the co-op cycle, provided that they have completed their sophomore year. Individual cases vary, and students should review their needs with Co-op coordinators.

The variety and number of co-op employers attest to their recognition that cooperative education is an effective way to identify and train future employees. Active co-op employers include: American Cyanamid, Black & Decker, Corometrics, Dow UT, Dictaphone, Pitney Bowes, Pratt & Whitney, Sikorsky, and Remington Products as well as state and federal agencies. Student assignments include computer programming, accounting, counseling, criminal investigation, and engineering. Students may live in university housing while doing work assignments in the greater New Haven area, or they may work with their Co-op coordinators to develop jobs closer to home.

Interested students will meet with a Co-op coordinator to review eligibility requirements and the plan of study for their degree program. Co-op plans vary, which makes it important for students in the College of Arts and Sciences and in the Schools of Business, Engineering and Applied Science, Public Safety and Professional Studies, and Hospitality and Tourism to take advantage of the individual attention their Co-op coordinators will provide. Students should contact the Dean's office of their college/school to be directed to the appropriate Co-op coordinator.

## Counseling Center

The Counseling Center offers services designed to help students with problems that may interfere with their academic, social, or personal activities. The services provided include confidential personal,



academic, and vocational counseling and testing, personality assessment, and educational assessment.

## Disability Services and Resources

The Disability Services and Resources Office is responsible for and committed to providing services and support that promote educational equity for students with disabilities, either temporary or permanent. The office provides assistance and information on issues of access and full participation for students with disabilities. Any UNH student with a disabling condition can benefit from these services. Referrals and inquiries concerning matters relating to students with disabilities and/or reasonable accommodations should be directed to this office.

The staff work with those who self-identify in the following categories:

- mobility/orthopedic disabilities
- specific learning disabilities
- attention-deficit disorders
- vision and hearing impairments
- head injuries
- psychological/emotional disorders
- chronic health-related disabilities
- speech impairments

Staff members serve as advocates, liaisons, and planners for ensuring access to academic, cultural, and recreational offerings of the campus and are available to students whenever questions or problems arise. The director assists the university's 504/ADA Compliance Officer with oversight of the university's compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA), and other government regulations. The director also handles student grievances, whether informal or formal, regarding allegations of discrimination based on disability.

In order to receive accommodations and/or services, a student is responsible for self-identifying as a student with a disability, submitting appropriate documentation, making a specific request for reasonable accommodations, and following established policies and procedures

for arranging accommodations each semester/trimester.

The Disability Services and Resources Office is located on the ground level in the rear of Sheffield Hall. The director can be reached at (203) 932-7331. The university's 504/ADA Compliance Officer can be reached at (203) 932-7199. TDD Number is (203) 932-7332.

## Evening Services

Evening Services is a "one-stop" office specifically designed for evening undergraduate students. It combines the functions of Admissions, Financial Aid, Records, and the Business Office while working closely with the Office of Academic Services to ensure a "user-friendly" environment for the evening undergraduate population. In addition, the Evening Services staff is available to meet student needs and answer questions regarding all UNH activities, including program advising.

The Accelerated Program, located in the office of Evening Services, offers degree programs for adult students enabling them to earn an associate's degree in as little as two years and a bachelor's degree in four, while still working full-time. Prior college work and transfer credit can reduce the time required for degree completion. All questions regarding degree offerings, admissions, and student advising, can be handled through this office.

The Evening Services and Accelerated Program office is located on the first floor of the Gatehouse.

### Measles and Rubella

**To All Students** (full-time undergraduate, part-time undergraduate day and evening, full- and part-time graduate): Students must provide documentation of two valid measles vaccinations. The first must have been given after 1/1/69, and that date must be after your first birthday. The second must have been given after 1/1/80. Also, a rubella vaccine must have been given after your first birthday. Blood tests (showing immunity) from a laboratory will also be accepted. It is the policy of the university to withhold registration each semester for non-compliance. Proper immunization information must be on file in the Health Services Office.

Hours of operation are Monday through Thursday from 9:30 am until 6:00 pm, and Fridays until 4:30 pm. You can reach staff members by calling 203-932-7361, fax: 203-931-6063, and email: [eveningservices@newhaven.edu](mailto:eveningservices@newhaven.edu).

## Health Services Center

The University Health Services Center is open to all university students without charge. Located on the ground level in the rear of Sheffield Hall, the center is staffed with two registered nurses and part-time physicians. The Health Services Center provides initial care for minor illnesses and injuries, as well as diagnosis, referral, and follow-up care for more serious conditions. Also provided are care and counseling in health-related issues. The Health Services Center coordinates the health insurance program sponsored by the university.

A part of the health program is a weekly women's clinic which takes place at the health center and covers gynecological problems, birth control, and sex-related issues.

One requirement of the center is that all students entering the Full-Time Division provide documentation of their medical and immunization history by completing the health form provided by the Undergraduate Admissions Office and returning it to the Health Services Center. All students who plan to live in Residential Housing must provide proof of having received a meningitis vaccine. These requirements are in compliance with the State of Connecticut Health Department's guidelines for immunization and disease control.

## International Services

Each year the University of New Haven admits students from many nations. These students, representing more than 60 different countries, bring an international dimension to the campus.

The International Services Office provides for the special needs and concerns of all international students. The office staff assists students with U.S. Citizenship and Immigration Services regulations; provides information on travel to and from the United

States; and advises students on academic, social, and cultural adjustment. The office also serves as a liaison between international students and the university community.

A wide range of programs has been developed, including publication of an international newsletter, special orientation events, information seminars, and an international festival. For more information, call 203-932-7475.

## Multicultural Affairs and Services

The office of Multicultural Affairs and Services works closely with students, faculty, and administrators in developing and implementing educational programs for minority students. The office also provides academic and personal advising for students to assist them in their growth and transition into the various facets of the university's environment.

The Office for Multicultural Affairs serves as a catalyst for building a support network between the community at large and UNH. Even though the major focus is on issues of Black, Hispanic, Asian, and American Indian students, all students are encouraged to take advantage of the office's financial, academic, and personal advising and are invited to participate in its various educational, social, and cultural programs.

A minor in Black Studies is offered by the College of Arts and Sciences and housed in the English Department. For information contact the chair of the English Department, Dr. Donald M. Smith.

## Residential Life

The character of residential living is often a good indication of the spirit and quality of life on campus. The goal of the University's residential life program is to provide a living/learning environment which promotes academic and personal growth and a sense of community among students. A student's on-campus living experience is an integral part of the educational process.

Students live in nine residence halls: three for freshman and six for upperclassmen, supervised by Resident Directors responsible for the administra-

tion of each hall. Resident Assistants (RAs) live on each floor and serve as peer advisors, role models, and initiators of activities and programs.

University housing is occupied on an academic year basis, and it is recommended that all freshmen and sophomores live on campus unless they live with a parent or an extended-family member. All resident students are required to purchase a university meal plan.

The Office of Residential Life maintains a limited listing of available off-campus housing. Students are responsible for any contract undertaken for such housing and should consider carefully the nature of that contract and the responsibilities incurred.

## University Dining Services

University Dining Services include the Marketplace Food Court and the Jazzman's Café, which are located in the Campus Center, and the Quad C-Store, located in Botwinick Hall.

Students may select from meal plans which include declining balance and board options. Purchasing a meal plan, which is highly recommended for all students, is required for all resident students. Detailed information on meal plans is available at the Dining Services Office.

## Student Activities

Being a student at the University of New Haven means having the best of two worlds: an active on-campus community and the city of New Haven. Students interested in cultural, intellectual, or social pursuit have a wealth of opportunities from which to choose.

The Student Committee on Programs and Events (SCOPE) works cooperatively with the Office of Student Activities to provide a wide variety of events each week. With an increase in the quantity and quality of activities over past years, theme weekends such as Spring Weekend, Family Weekend, and Homecoming Weekend have been supplemented by an ongoing activities calendar of weekly events. There are plenty of opportunities to socialize and interact with fellow students, faculty, and staff—whether by enjoying a band,

lecture, comedian, or magician; participating in a volunteer opportunity; or taking a bus trip to a regional theater or recreation center.

Students are also encouraged to develop their cultural and intellectual interests by participating in literary, artistic, and dramatic events. Visiting artists, play and concert productions, invited lecturers, forums, and panel discussions are among the variety of programs available to students. The University of New Haven is proud to have the Alliance Theatre in residence on our campus.

## Athletics / Intramurals / Recreation

Recognizing the importance of a broad range of physical and emotional outlets to a well-balanced college experience, the University of New Haven seeks to involve the student in various levels of active participation in games and sports, as well as to provide an opportunity for community and student support for its varsity intercollegiate program.

## Varsity Sports

The University of New Haven athletics program makes up one of the most respected and successful NCAA Division II programs in the country.

The university offers 15 varsity sports: baseball, men's and women's basketball, men's and women's cross country, men's indoor and outdoor track, men's golf, women's lacrosse, men's and women's soccer, softball, women's tennis, and men's and women's volleyball.

Students can also participate in cheerleading and the dance team throughout the school year. The Athletics Department coaching staff welcome all interested candidates and invite active involvement in support of our athletic programs.

The University of New Haven is a member of the National Collegiate Athletic Association, the Eastern Collegiate Athletic Conference, and the New York Collegiate Athletic Conference. UNH athletics have enjoyed national recognition over the years. The women's volleyball team has participated in 16 consecutive NCAA tournaments while baseball has reached

the NCAA tournament 25 times, including 15 World Series appearances. The UNH women's basketball team captured the 1987 NCAA National Championship title.

## Intramural Programs

Intramurals are an important part of the UNH athletics program. Students participate in a wide variety of sports and activities including 3-on-3 basketball, street hockey, 5-on-5 touch football, self-defense, Latin dance instruction, golf seminar, table tennis, and racquetball. You do not have to be an athlete to enjoy the benefits of the intramural program. Becoming involved with the intramural department is an excellent way to meet new people, stay physically active, and make the college experience at New Haven a memorable one.

## Athletics Facilities

The North Campus Athletics Complex consists of Robert B. Dodds Stadium (soccer and lacrosse), Frank Vieira Baseball Field, newly-resurfaced tennis courts, a softball field, two outdoor basketball courts and Charger Gymnasium (basketball and volleyball). Charger Gymnasium houses a full-size basketball court, a fitness center, a racquetball court, and locker/room shower areas for students and faculty. A valid university ID is required for admittance to the gymnasium. Hours are regularly scheduled for times when varsity team practices or games are not in progress.

## Clubs and Organizations

More than 40 university student clubs and societies serve interested students. Included are student chapters of professional societies, community service organizations, social groups, and special-interest clubs such as the International Student Association, the Black Student Union, and the Latin American Student Association. Each club and organization has a mailbox located on the top floor of Bartels Hall.

## Fraternities and Sororities

National and local service, social, and honorary fra-

ternities and sororities are active on campus. They sponsor programs such as banquets, game shows, the semiannual Bloodmobile, fundraisers to benefit charities, and numerous hours of community service.

## Off-Campus Activities

For those who want a change of pace from the college scene, the university's close proximity to the city of New Haven offers students many cultural opportunities. Musical entertainment include year-round performances of the New Haven Symphony, rock concerts at the Bridgeport Arena and The Meadowlands and local bands at many downtown clubs. Professional theater thrives in New Haven at Long Wharf Theatre, the Yale Repertory Company, and the Shubert. Some of the region's outstanding art collections can be seen on the Yale University campus.

On weekends the Connecticut shore, Cape Cod, the ski slopes of Vermont and New Hampshire, and New York City are just a car or train ride away.

## Publications

Student publications include *The Charger Bulletin*, the student newspaper, and *The Chariot*, the annual yearbook. Students may volunteer their services to these student publications by contacting the USGA Office (see below).

## Student Government

Separate undergraduate full, part-time, and graduate student councils have responsibility for initiating, organizing, and presenting extracurricular activities and acting as liaisons between students and university staff.

The Undergraduate Student Government Association (USGA) is a forum where undergraduate full-time students provide input to the administration to improve all aspects of undergraduate education at the university. Student-elected senators represent the voice of their constituencies at weekly USGA meetings.

Students are strongly encouraged to get involved in leadership positions within the student government and other clubs and organizations. The university

believes that leadership development is an integral part of all students' education. The USGA offices are located on the top floor of Bartels Hall.

The Evening Student Council is a board composed of students attending UNH evening classes. It has three primary objectives: (1) to promote the welfare of the evening student body, (2) to give counsel and encouragement to all evening students as well as to develop and encourage school spirit, and (3) to convey evening students' opinions to the administration and work with the administration in accomplishing student objectives.

Membership in the Evening Student Council is open to all undergraduate evening students enrolled in courses for credit. The council meets regularly, and all evening students are invited to participate. In addition to the standard elected officers, student relations and public relations chairs assist the social committee in planning a variety of special events each year.

## WNHU Radio

WNHU, the university's student-operated FM stereo broadcast facility, is operated by the Communication Department of the School of Business. WNHU broadcasts throughout the year on a frequency of 88.7 MHz at a power of 1,700 watts. This extracurricular activity, open to all undergraduate and graduate students, serves southern Connecticut and eastern Long Island with the best in music, news, and community affairs programming. The WNHU broadcast day consists of locally produced shows as well as various programs provided by several public networks.

Most WNHU programming, business, and engineering operations are performed by students in the university's full-time and part-time undergraduate and graduate divisions. The station will train all qualified students in their respective areas of interest.

## Campus Facilities

The university's 78-acre campus contains 26 buildings that offer students modern laboratory and library facilities, the latest in computer technology and equipment, an athletic complex, and residential facilities.

Located in West Haven, about 10 minutes from downtown New Haven, the main campus includes administration, library, laboratory, computer, and classroom facilities as well as the admissions and financial aid building, bookstore, student center, and residence halls. Recent additions to the main campus are two new residence halls, creating a residential quad area.

The South Campus includes Harugari Hall and South Campus Hall, the student records building. The North Campus is the site of the university's athletic fields and gymnasium.

Some of these facilities are described in subsequent sections of the catalog.

## Computer Facilities

The University of New Haven maintains many computer laboratories and teaching classrooms at various locations around the campus. The general access computer and Internet labs, open to all students at the university, are located on the first floor of Echlin Hall. During the undergraduate semesters, these labs are open:

Monday - Friday	8:30 a.m. to 10 p.m.
Saturday - Sunday	11:00 a.m. to 10 p.m.

The labs are open on an abbreviated schedule at other times during the year.

The general access lab provides students with word processing software, spreadsheet and database management software, SPSS statistical software, Pascal, C, C++, and other programming language compilers, and Internet connectivity. Laser printers are available for student use. The general access Internet lab is dedicated to providing students with access to email, World Wide Web, and other Internet protocols. The general access labs are staffed by a full-time Information Services Department staff member and several trained student assistants who are available to help anyone who has questions. The hardware and software available in the labs are continuously upgraded as computer technology changes.

Several schools and departments at the university maintain their own computer labs and teaching classrooms. The hours that these labs are open and the resources available are at the discretion of the individual school or department.

Computer facilities provided by UNH as of the Spring of 2004 are as follows:

School of Engineering and Applied Science,  
Buckman Hall 225 and 225a

School of Engineering and Applied Science Multi-Media Teaching Classroom, Buckman Hall 227

Tagliatela School of Hospitality and Tourism,  
Harugari Hall 114

School of Business Lab and Teaching Classroom,  
Dodds Hall 103

Department of Biology and Environmental Science,  
Dodds Hall 305

Department of Visual & Performing Arts/Philosophy,  
Dodds Hall 413

Department of Computer Science, Echlin Hall 208

Center for Learning Resources Tutorial Lab,  
Maxcy Hall 106

General Access Computer Lab, Echlin Hall 113

General Access Internet Lab, Echlin Hall 115

CLR Modular Computer Lab, T-7

Information Services Modular Computer Lab, T-7

## Marvin K. Peterson Library

The Marvin K. Peterson Library, named in honor of a former university president, was dedicated in 1974. It includes three floors of reading space, stacks, and reference areas. Information is made accessible through manual as well as electronic retrieval methods. Computers with Internet access and the Microsoft Office Suite are available for research purposes. Students and faculty can plug in their laptop computers to connect to the campus network at 165 ports available throughout the library's three floors.

The library's home page is available via the web at <http://library.newhaven.edu>. It is a gateway to information and services and includes the Online Public Access Catalog, the New Materials Acquisitions Lists, Library Guides, Interlibrary Loan Forms, full-text electronic databases, and a list of full-text electronic journals.

Materials are stored in a variety of formats, including online, print, audio, video, microform, and CD-ROM disks. Faculty and students in their offices, residence halls, or homes have access to electronic resources

through the "PROXY Connection" available on the library's homepage. UNH subscribes to many online electronic databases in all subjects. Additional resources, including many full-text sources, are accessed in online databases such as DIALOG, LEXIS/NEXIS, OCLC, ProQuest Direct, Expanded Academic Index ASAP, Engineering Village and Compendex Web, FirstSearch, CCH Online, GPO Access, WestLaw, Hoover's, Science Direct, Reference USA, Country Watch, GPO on Silverplatter, and IRIS. ABI/INFORM, PsycLIT, Newspaper Abstracts OnDisc, Dissertation Abstracts OnDisc, the National Trade Data Bank, Census of Population and Housing, Toxic Chemical Release Inventory, and County Business Patterns are some of the titles on CD-ROM.

The UNH library holdings include approximately 300,000 volumes on the main campus. The library subscribes to hundreds of journals and uses telefacsimile and electronic means to transmit articles and information between itself and other libraries across the country.

The library is a U.S. Government Documents Depository Library and selects approximately one third of the U.S. government yearly output to support UNH programs.

UNH students may borrow materials from the Albertus College Library. Students who obtain a borrowing card from a Connecticut public library may borrow from other public libraries in the state. As a member of OCLC, UNH has access through interlibrary loan to the holdings of the more than 45,000 member libraries' over 52 million records.

Students are assisted by professional reference librarians. One-on-one consultations are available to locate information for research papers and projects. Freshmen receive instruction in how to use a library. Subject-specific library orientations are available for upperclass and graduate students. Bibliographic instruction courses geared to international students are also provided.

Library guides, as well as selected instructional support resource materials, are provided; and a reserve collection is in place to support courses taught at UNH. Library Guides help facilitate access to information resources. Sample topics covered include Criminal Justice Resources, Dental Hygiene Resources, a Business

Information Guide, How to Find Connecticut Law, How to Find Literary Criticism, and a Style Sheet for Research Papers.

## Campus Store

The campus store sells all necessary texts, new and used, required for courses at the university. It also carries school supplies, greeting cards, imprinted clothing, gifts, candy, and a selection of newspapers and periodicals. A wide selection of software is available, priced at a substantial academic discount for currently enrolled students.

The campus store buys back many used texts throughout the year; a student ID is required. It also handles class ring orders and film processing for the campus community and will be happy to place special orders for any books.

Students who would like to have books and/or supplies shipped to their home or office may contact the bookstore at (203) 932-7030 or visit the bookstore website at <http://shop.efollett.com/htmlroot/store-home/universityofnewhaven501.html>.

## Campus Copy

Campus Copy is a full-service copy, typing, and print shop located in the basement of Maxcy Hall on the main campus. Campus Copy offers a variety of services at reasonable prices, including resume composition, word processing, desktop publishing, photocopying, and binding. Campus Copy is independently owned and operated. For more information, call (203) 931-9844.

## Bartels Hall

The newly renovated campus center provides a focal point for all student activities. Offering lounges, student offices, a large cafeteria and Jazzman's Cafe, and multiple meeting rooms, the facility has been designed to serve as a center for the student's non-academic college interests. Live entertainment and films are often presented in the evenings. Bartels Hall houses the offices of the Vice President for Student Affairs & Athletics, International Services, Multicultural Affairs, and Student Activities as well as the

Undergraduate Student Government Association groups.

## Office of University Advancement

The Office of University Advancement works with the university community to develop philanthropic support for enhancement of the university's programs, facilities, and endowment. Gifts to the university enhance student financial aid, faculty development, equipment, library resources, and other institutional opportunities for growth.

The generosity of corporations, foundations, parents, students, alumni, and friends contributes to the excellence of the University of New Haven.

## Alumni Relations

The Alumni Relations staff invite you to stay connected to UNH by enjoying the many activities and benefits sponsored by the university's Alumni Association. Committed to a lifelong relationship among alumni, the Association fosters friendships and professional networking opportunities and promotes a host of educational, social, and athletic events.

Benefits include career development services, the chance to audit courses at a reduced fee, use of the university's library, low-interest credit card privileges, discounts on home and auto insurance, and much more. In 2003 we proudly introduced **UNH Online**, an online directory and interactive community, to help alumni stay in touch with friends and network with other alums. The service is free to all UNH alumni and can be accessed through the alumni web page at [www.newhaven.edu/alumni](http://www.newhaven.edu/alumni).

Each fall, alumni are invited back to campus for Homecoming festivities. Throughout the year events include Alumni Cocktails and Networking, the Holiday Party, and our Scholarship Ball, which raises significant funds for student scholarships. Information about current activities is available through the website, our e-newsletter, and special mailings, including **Insight Magazine**. Please be sure to update your con-

tact information so that we may keep you informed of the latest membership events and benefits.

The Alumni Board of Directors, a valued university advisory group, oversees the Association and works to strengthen university ties by promoting communication within the extended UNH community. If you have suggestions for your Alumni Association, please email us at [alumni@newhaven.edu](mailto:alumni@newhaven.edu).

## Research and Professional Facilities

### Bureau for Business Research

The Bureau for Business Research offers access to databases for research on products, markets, competition, and international issues. In addition, the university's biannual, refereed academic journal, *American Business Review*, is published under the auspices of the bureau.

### UNH Center for Dispute Resolution

The Center for Dispute Resolution at the University of New Haven is a focal point for the interdisciplinary study and practice of conflict resolution. The Center offers conflict management services to individuals and to businesses, institutions, governmental agencies, and community organizations. Services include mediation, design of conflict management systems, consultation, and training. Through educational programs for students and the community at large, the Center also strives to advance the understanding and application of alternative means of dispute resolution, including mediation.

### Center for Family Business

The Center for Family Business (CFB) was founded in 1994 as a unique learning environment for family business members. Its mission is to help ensure the future and continuity of the family business, thus strengthening Connecticut's economy. The Center offers members a variety of programs which deal with

issues faced by family businesses, regardless of the nature of the business. We offer our members eight different major programs each year, held in venues in both New Haven County and Fairfield County. These programs feature some of the top speakers in the field of family business and allow attendees to learn from one another. CFB also features small-group forums which consist of members in complementary circumstances. These groups function as ad hoc advisory boards to their fellow members. Periodically, we also hold focused programs which appeal to particular segments of our membership. Additionally, we provide our members with newsletters and other family-business educational materials. In partnership with UNH, CFB is sponsored by the accounting firm of Bailey, Shaefer & Errato; MassMutual, one of the nation's largest life insurance and financial management companies; and Wiggin & Dana, a leading Connecticut law firm.

The Center for Family Business provides access to a national family-business network and to business programs and services, consultations, and seminars.

### Center for the Study of Crime Victims' Rights, Remedies, and Resources

The UNH Center for the Study of Crime Victims' Rights, Remedies, and Resources is maintained under the auspices of the School of Public Safety and Professional Studies. The Center will provide, and is in the process of developing, numerous initiatives to enhance the knowledge base on crime victims' rights and on services that assist crime victims through educational, training, and technical opportunities via the various academic disciplines and professional groups that study, advocate for, or serve victims.

These programs and services will be statewide, regional, and national in scope. They will include instructional programs; field and program evaluation research services; internships, fellowships, and visiting scholar programs; legal, legislative, and public policy analysis and advocacy; and publications, conferences, and symposia. Information is available through the director's office at the university.



## **Institute of Gastronomy and Culinary Arts**

The Institute of Gastronomy and Culinary Arts is housed in the Tagliatela School of Hospitality and Tourism. Features among its offerings is a program leading to national certification in food handling, as well as a certificate of mastery in basic techniques and theories of cooking. The Institute serves as a focal point for programs designed not only for UNH students earning academic credits, but also for food writers, restaurant owners, and hobbyist cooks. Information is available from the school office in Harugari Hall or on the UNH website.

# ADMISSION TO THE UNIVERSITY

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## Full-Time Admissions

Jane C. Sangeloty, BA, Director

Undergraduate Admissions

Call: (203) 932-7319

Toll-free: 1-800-DIAL-UNH, ext. 7319  
(1-800-342-5864)

The University of New Haven welcomes applications from men and women of all races, economic levels, religions, and geographic areas.

Students wishing to take any course in the university, whether or not they seek a degree, must first satisfy the admission requirements and follow the admission procedures specified below. In general, to be considered for admission, all applicants must have graduated from an accredited secondary school or passed the state high school equivalency examination.

Students should note that the different schools of the university may have additional admission requirements, discussed in detail in subsequent pages of this catalog.

You become a student of the University of New Haven only after you have completed the steps listed below under Admission Procedure, selected and registered for courses for your first semester, and made the appropriate tuition and fee payments.

### Admission Procedure:

#### New Full-Time Students/Freshmen

- Secure an application form from the Undergraduate Admissions Office of the university, from your high school guidance counselor, or online at [www.newhaven.edu](http://www.newhaven.edu).
- Submit the completed form with the non-refundable application fee.

- Request that your secondary school forward an official copy of your academic transcript directly to the Admissions Office. If you are currently attending an educational institution and will be sending us an incomplete transcript, it is your responsibility to send us your final transcript as soon as it becomes available.
- Arrange for results of Scholastic Aptitude Test (SAT) or American College Testing Program (ACT) examinations to be sent directly to the Undergraduate Admissions Office. Our SAT college code is 3663. Our ACT code is 0576.
- A personal essay is required. The essay is an opportunity for us to get to know you as a person, not just your grades and test scores. It also gives us an example of how you express yourself and demonstrates your ability to organize your thoughts. The personal essay should be between 250 and 500 words on a topic of your choice.
- Provide a minimum of one letter of recommendation.
- A decision on an application will not be made until we receive: a completed application and application fee, high school and college (if applicable) transcripts and admission test scores, student essay, and letter(s) of recommendation. If necessary, additional recommendations and/or a personal interview may be requested. The university requires all accepted students to submit a nonrefundable enrollment deposit in order to hold their placement with the incoming class. The deposit is due May 1 for the fall semester and January 2 for the spring semester.

*Please note: Further information on tuition, room and board, and other charges is located elsewhere in this catalog.*

### Admission Procedure: Full-Time Transfer Students

The university admits transfer students for both fall and spring semesters. To apply:

- Complete an undergraduate admission application, and return it to the Undergraduate Admissions Office with the nonrefundable application fee.
- Arrange to have official transcripts from all colleges/universities attended forwarded to the Undergraduate Admissions Office.
- An official copy of your secondary school transcript, including date of graduation, must also be submitted. A satisfactory General Equivalency Diploma (GED) is acceptable in place of a high school diploma.
- Students who have completed less than one full year (30 semester hours) of college-level work must submit official test scores of the Scholastic Aptitude Test (SAT) or American College Test (ACT). Our SAT code is 3663, and our ACT code is 0576. Students who have completed more than one full year of college-level work are not usually required to submit standardized test scores. However, the Admissions Office reserves the right to request this information if necessary. .
- In most cases, transfer students will receive a tentative transfer credit evaluation at the time of acceptance. To help expedite the evaluation procedure, we ask that you forward with your application materials a current catalog from all institutions attended.

## Admission Procedure: International Students

The university admits international students for both fall and spring semesters. Official academic transcripts from all institutions previously attended, including secondary school, must accompany the admission application. Applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL). A minimum score of 190 computer-based/ 520 paper-based is required. The university also accepts a minimum score of 5.5 on the International English Language Testing System (IELTS).

Students who have been educated in English-speaking systems may substitute the SAT or ACT for the TOEFL. Depending on their academic background, students transferring from accredited institutions within the United States may also be required to sub-

mit TOEFL scores. Verification of financial support also must accompany the admission application.

Academically qualified applicants who do not meet the English language proficiency requirements can choose to complete an intensive English program approved by the University of New Haven. The university has an agreement with the ELS Language Centers (ELS) [www.els.com](http://www.els.com) and Embassy CES [www.embassyces.com](http://www.embassyces.com) to provide intensive English training.

## Undergraduate Admission Policy

Students are admitted full-time (four-course or five-course, 12-15 credit enrollment and registration load) or part-time (up to 11 credits). Acceptances are customized, and students are placed according to their academic needs.

## Placement

Incoming students are placed in courses in English and mathematics according to their individual abilities as demonstrated through the university placement testing program or previous college records. Students whose major requires chemistry may be required to take a chemistry placement test.

Some students may be placed in courses designed to upgrade their skills in particular subject areas and prepare them for more advanced courses at the university.

## Part-Time Admissions

The part-time Evening Division provides the opportunity for both returning adults and traditional-age students to pursue specific program certificates and associate's or bachelor's degrees without the hours per week and financial constraints that full-time study requires. The degrees conferred by the university are identical for both full- and part-time students, with no distinction made for programs completed by part-time study alone.

Students enrolled in the part-time Evening Division may register for 1 to 11 credit hours per semester.

## Admission Procedure

- Complete an undergraduate admission application, and return it to the Undergraduate Admissions Office with the nonrefundable application fee.
- An official copy of your secondary school transcript must be submitted. A satisfactory General Equivalency Diploma (GED) is acceptable in place of a high school diploma.
- Arrange to have official transcripts from all colleges/universities attended forwarded to the Undergraduate Admissions Office.  
A students taking any course, whether for a degree or not, must meet admission requirements.

## Credit for Prior Learning

We recognize that many adult students have acquired knowledge through approaches other than formal coursework. A variety of procedures can measure and validate such achievement. Students should contact the Undergraduate Admissions Office for the latest information on crediting procedures.

Some commonly used procedures are:

- Transfer Credits
- College-Level Examination Program (CLEP)
- Proficiency Examination Program (ACT PEP)
- Advanced Placement (AP)
- Dantes Subject Standardized Tests (DSST)
- Servicemembers Opportunity College (SOC)
- Credit by Examination
- Modern Language Association Foreign Language Proficiency Tests (MLA)
- Military Service School Courses

# REGISTRATION

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## Full-Time Registration

Registration is the process of selecting classes each term. Registration includes faculty advising, a preliminary choice of classes, and fee payment. Final registration is not complete without these steps.

Students have assigned faculty advisors who provide guidance on academic matters and help students with the registration process. Normally, the advisor is the chair or coordinator of the student's major course of study or another faculty member designated by the chair.

There are two parts to registration: the completion of the registration forms and the payment of tuition. There may be a penalty fee for delaying either of these two processes beyond the end of the registration period and/or tuition due date.

Registration dates and procedures for currently enrolled full-time students will be posted in advance. A separate registration is required for each of the semesters, for summer sessions, for the winter intersession, and for the accelerated modules.

All new students who have paid the enrollment deposit will be mailed information about registration. Prior to the start of the fall and spring semesters, an orientation/registration program is held, at which time new students will select their courses.

Social Security numbers will be used on student records; students should be sure to bring their number when registering. Prospective students who do not have a U.S. Social Security number should apply for one before registration. Students from other countries who do not have U.S. Social Security numbers will be given a temporary number by the university; however, they are encouraged to apply for a U.S. Social Security number as soon as possible.

In conjunction with academic advisors, students are urged to plan their programs carefully before completing the registration forms, in order to avoid the need for requesting changes. Once the registration is completed, students must use signed drop/add cards to make changes.

**Please note:** No new full-time student will be permitted to register for classes until:

1. The nonrefundable enrollment deposit has been paid.
2. Tuition in full for the semester has been received. Students relying on financial aid to cover all or part of a semester's expenses must present evidence of the amount of money awarded. No new part-time student will be allowed to register for classes until tuition payment or financial aid arrangements have been made.

## Course Overload Restrictions: Full-Time Students

Full-time students who wish to register for more than 15 semester hours in any one semester must follow special procedures and guidelines.

If the total number of courses to be attempted is 6 and is in excess of the hours specified on the student's worksheet, the student must obtain written permission from his or her advisor and department chair and, in most instances, must have a cumulative quality point ratio of 3.20 or higher.

If the total number of courses to be attempted is more than 6, the student must obtain written permission from his or her advisor, department chair, and academic dean. Such students are required to have a cumulative quality point ratio of 3.20 or higher.

## Part-Time Registration

Students may register by mail prior to the announced deadline. A separate registration is required for each academic term students wish to attend. Auditors follow the same procedure and pay the same tuition and fees as students enrolled for credit.

The student completes the registration procedure by paying tuition and fees. There may be a penalty for delaying beyond the end of the registration period.

To avoid the need for changes, students are urged to plan their programs carefully before completing registration forms. Once the registration process has been

completed, a change of registration requires the use of drop/add cards.

### Course Overload Restrictions: Part-Time Students

Part-time students are restricted to a maximum of 11 credit hours in any given term or semester, including the combined sessions of summer school.

Students wishing to take more than 11 credit hours per term or semester must complete the Internal Transfer Form in order to change student status to that of a full-time day student. Full-Time Division tuition rates would then apply.

In some limited circumstances, part-time students nearing graduation may be allowed to exceed the 11 credit hour per term policy. Only students who satisfy the following criteria will be eligible:

1. 12 or more credit hours are needed for graduation, and successful completion of the registered courses in one term would enable graduation.
2. Only courses required for graduation are included.
3. Part-time status was continuously maintained during the previous semester.

Students must apply for this credit overload by obtaining the appropriate form from the office of the Undergraduate Registrar and securing the necessary approvals.

## Alumni Audits

Alumni who audit courses pay a reduced tuition but must be cleared through the Alumni Office before registering. Auditing courses at the reduced rate is limited to courses at or below the level of the degree earned by the student at UNH.

## Certificates

Students can take their first step toward an undergraduate degree by registering for certificates.

Each certificate is carefully designed as an introduction to a particular course of study. Later, students may choose to apply toward an undergraduate degree the credits they have earned.

Each certificate consists of a series of courses, usually 15 credit hours or more in a specialized area. A minimum of one-half of the credit hours must be completed in residence. Please contact the appropriate academic department or Nicolas Spina, Director of Evening Services and Accelerated Program at [nspina@newhaven.edu](mailto:nspina@newhaven.edu).

## Summer Sessions

Day and evening undergraduate courses are offered during the summer in a series of sessions ranging from four to eight weeks in length. The first session begins shortly after the close of the spring semester. Resident dormitory students may therefore continue their studies uninterrupted through the entire summer.

The university welcomes visiting students from other colleges and universities who wish to transfer summer course credits back to their institutions. Credits earned at the University of New Haven are generally accepted by other schools, but students are urged to consult with their home institutions for any special requirements or procedures for credit transfer.

University of New Haven students can attend one or more of the UNH summer sessions to lighten their study load during the regular academic year, to reduce the time required for a degree, to prepare for other courses, to make up courses, or to take additional work beyond that required for a degree and still complete a program on schedule.

A list of courses offered during the summer is available in March.

## Intersession Courses

A number of undergraduate courses are offered during the period between the fall and spring semesters. These courses blend both traditional and innovative methods of instruction, including team teaching, field trips, lectures, laboratory work, and research projects. A list of courses offered during Intersession is available in November.

# ACADEMIC REGULATIONS

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## Ways of Earning Credit

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- Transfer of Credit to the University
- Courses Available at Other Colleges
- Coordinated Courses
- Advanced Placement
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## General Policies

- Academic Honesty
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- Coursework Expectations
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## Graduation

- Graduation Criteria
- Residency Requirement
- Writing Proficiency Examination
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## Ways of Earning Credit

### Academic Credit

Academic credit is granted on a credit hour basis. In addition to successfully completing regular courses, students may earn credit by independent study, coordinated courses, crediting exams or CLEP exams, or transfer of previously awarded credit from other institutions. These methods are detailed in the following pages of this section.

### Transfer of Credit to the University

Students may transfer to the university after completing academic work at other institutions. Applications should be made to the Director of Admissions. If feasible, potential transfer students should visit the university and discuss their transfer credit situation with the chair or dean administering the program of interest. Normally, the university accepts credit from regionally accredited colleges on an equivalency basis. The regional institutional accreditation bodies in the U.S. are Middle States Association of Colleges and Schools, New England Association of Schools and Colleges, North Central Association of Colleges and Schools, Northwest Association of Schools and Colleges, Southern Association of Colleges and Schools, and Western Association of Schools and Colleges.

Students transferring from another institution must have at least a 2.0 quality point ratio based on a four-point scale. Credit is normally granted for those courses completed with at least a grade of C, or its equivalent. Credit is not awarded for pass/fail courses.

Credit transferred from a two-year institution is generally limited to 60 credit hours and restricted to freshman- and sophomore-level courses, unless otherwise approved in writing by the dean of the school in which the student seeks to enroll. Credit granted may be used for degree requirements if the transfer credit is for courses equivalent to the UNH requirements.

When a student's application is complete, a tentative analysis is made of transfer credit available. Final decisions on transfer credit are made by department chairs and must conform to school and university policies. Prospective students may be required to take qualifying or placement examinations for specific courses.

Plans of study for a University of New Haven degree should be agreed upon by both the transfer student and the department early in the first term of attendance in order to avoid course duplication and academic discontinuity.

For Transfer of Student Status, see following pages.

## Courses Available at Other Colleges

University of New Haven students interested in taking courses at other colleges and universities should discuss this matter directly with their departments and consult the statement of policy established by the undergraduate school in which they are enrolled.

## Coordinated Courses

In order to maintain continuity in a degree program, students are encouraged to use UNH Summer Sessions and Winter Intersession; however, courses taken by matriculated UNH students at regionally accredited institutions may be designated as "coordinated courses." Credit for such courses is accepted and posted on students' permanent records, and the grades are included in students' quality point ratios.

Credit for courses taken at a two-year institution is restricted to equivalent UNH courses at the freshman and sophomore levels. (Students with junior or higher standing at UNH may not take coordinated courses at two-year institutions.) Care should be taken in requesting coordinated course credit for courses given during intensive terms. It is UNH policy that intensive terms should span at least 15 meeting days.

Prior authorization for a "coordinated course" designation must be obtained from the department(s) housing the student's major and the related course at UNH. The appropriate form must be obtained at the Registrar's Office, approved, and returned to that office before the course begins. Normally, approval is granted only for those courses which are equivalent to courses offered at UNH, and/or standard courses in a given discipline unavailable at UNH because of frequency of offerings, cancellation, etc., or inaccessible to the student because of temporary residency at a distant location. Complete detailed instructions can be found on the Coordinated Course form.

Students must be continuously matriculated at UNH while taking a coordinated course. Approval for a coordinated course will become void upon withdrawal or dismissal of the student.

Students are responsible for securing an official transcript upon completion of their work. Official transcripts must be mailed directly to the Office of the Registrar at UNH.

## Advanced Placement

The university recognizes the program of advanced placement available to talented high school students through the College Entrance Examination Board. Students satisfactorily completing advanced placement courses in high school and the final examination prepared by the Educational Testing Service (ETS) may be given appropriate college credit if their courses are similar to those offered at the University of New Haven.

Educational Testing Service Advanced Placement examinations are graded from 1 to 5. Credit may be allowed when the grade earned is 3, 4, or 5. Students desiring to submit advanced placement courses for college credit should have all results of these courses and tests sent in with their application to the Admissions Office.

The University of New Haven accepts credit by examination from the College-Level Examination Program (CLEP) subject to academic department chair approval.

The passing percentile for CLEP and subject examinations is 50. Credit will be evaluated by the appropriate department chair.



## Credit by Examination

A student who has at least a 2.0 cumulative QPR and has independent knowledge of the content of an undergraduate course offered by the university may, with the approval of the appropriate department chair and dean, take a special crediting examination in lieu of taking the course.

Students are reminded that they must earn at least 30 semester hours through regular UNH coursework if they are to meet the residency requirements for graduation.

Students may not take crediting examinations during the first semester in which they are enrolled.

## External Credit Examinations

Learning which has been acquired through many traditional and nontraditional approaches can be measured and validated by objective procedures acceptable to the faculty of UNH. This learning must appropriately parallel the curriculum of the university in order to be awarded UNH credit.

The Admissions Office maintains a current listing of organizations which provide testing and other alternative credit procedures. The following list cites some of the more common sources:

**College-Level Examination Program (CLEP):** This testing program offers two types of examinations: (1) the general examinations in the five comprehensive areas of English composition, humanities, social sciences/history, natural sciences, and mathematics and (2) the subject examinations. The subject examinations range in value from three to six credits and are achievement tests in a wide variety of undergraduate college courses, primarily at the basic level. For information, contact CLEP, ETS, Princeton, NJ 08541.

**Proficiency Examination Program (ACT PEP):** This program may also be used to earn credits in certain academic areas. For information write ACT PEP Coordinator, ACT Proficiency Examination Program, P.O. Box 168, Iowa City, IA 52243.

**Dantes Subject Standardized Tests (DSST):** This is a program administered by Educational Testing Service (ETS) in conjunction with DANTEs. The examinations are available to all military personnel. For information contact the Base Education Services Officer. ETS has made these examinations available to civilians. Civilians should contact the Program Administrator, DSST, ETS, Princeton, NJ 08541.

**Servicemembers Opportunity College (SOC):** The University of New Haven is a member of the SOC Bachelor Degrees for Soldiers (BDFS) Network. This network is open to members of the armed services and their spouses. For information contact the Admissions Office or the Base Education Services Officer.

**Modern Language Association Foreign Language Proficiency Tests (MLA):** The MLA comprehensive tests are available in French, German, Italian, Russian, and Spanish. Undergraduate students may take Battery A of the examination only. Battery A includes speaking, writing, reading, and listening comprehension components.

**Military Service School Courses:** The university may also accept as transfer credit certain courses completed during in-service training. Veterans should request that official transcripts of in-service training be sent to the Admissions Office at the university.

**Army, Navy, or Coast Guard veterans should write to:** National Personnel Records Center, Military Personnel Records, 9700 Page Boulevard, St. Louis, MO 63132.

**Marine Corps veterans should write to:** Commandant, U.S. Marine Corps (Code DGK) Headquarters, U.S. Marine Corps, Washington, DC 20308.

**Air Force veterans should write to:** Community College of the Air Force, Maxwell Air Force Base, Montgomery, AL 36112.

Enrollees on active duty in the U.S. Armed Forces should arrange for DD Form 295 "Application for the Evaluation of Educational Experiences During Military Service" to be completed and forwarded to the

Admissions Office from the duty station. Veterans of any period of active service should provide the university with a copy of DD Form 214 or other notice of separation for each period of service. This may assist in identifying possible sources of academic credit.

### Advanced Study

Advanced study courses are offered to qualified students in the departments offering the degrees of bachelor of science or bachelor of arts. These courses may include a thesis, tutorial work, or independent study which permits the student to work intensively in areas of special interest.

### Independent Study

In all courses of independent study the student and an advisor must jointly file a project outline with the registrar within four weeks of the beginning of the course. This outline shall serve as the basis for determining satisfactory completion of course requirements.

Normally, independent study is restricted to no more than six credits and open only to seniors, juniors, and exceptionally qualified sophomores. Students must have at least a 3.0 quality point ratio.

Regularly scheduled courses (that is, those offered at least once every four semesters) are not normally acceptable as independent study.

### Field Experience

In all courses of field experience, including internships, practical theses, and work study, students will earn credit for the learning gained through the activity. The student and advisor must jointly file a project outline with the registrar within four weeks of the beginning of the course. This outline shall serve as the basis for establishing the mechanism by which the advisor will evaluate the learning to occur and thus for determining completion of course requirements. Please consult the academic deans to determine any restrictions.

## Academic Status and Progress

### Full-Time Students

Full-time student status is attained by registering for a minimum of 12 charge credits per semester, or equivalent term, on either a matriculated or non-matriculated basis. Such status is continued to a succeeding term provided a minimum of 12 credits are completed in the term of record. Completion is defined as receipt of a letter grade of A+ through D-, F, S, or U. Other letter grades do not signify course completion.

Full-time students are eligible for all daytime student activities and benefits and are subject to Full-Time Division tuition charges and other relevant fees. It is assumed that full-time students will select the great majority, if not all, of their courses from daytime course schedules, unless needed courses are unavailable during the day.

### Part-Time Students

Students who register for 1 through 11 charge credits during a semester maintain part-time status. Part-time status may be held by students attending UNH during the day or in the evening.

### Matriculation

Matriculation is the formal act of registering to study for a specific degree offered by the university. Matriculation is, therefore, not automatic. A student must request matriculation by seeking admission to a specific university degree program. Formal acceptance into a degree program shall constitute the granting of matriculation.

Students seeking credit to be transferred to another institution, or wishing simply to audit courses or to take them without working toward a degree, need not matriculate. Nonmatriculated students must register to take their chosen courses, however, and will be allowed to enroll in courses only as space permits. It is the student's responsibility to seek matriculation should he or she later decide to pursue a University of New Haven degree.

## Academic Worksheets

Generally, matriculating students are and remain subject to those requirements defined in the undergraduate catalog and listed on the academic worksheet in effect for the semester of initial enrollment.

If students change academic majors, they will be subject to the requirements of the catalog/worksheet in effect at the time of the change.

If students withdraw or are dismissed from the university and decide to return at a later date, they will be subject to the requirements of the catalog/worksheet in effect at the time of their return.

Part-time students are permitted a total of three semesters (consecutive or otherwise) of break in study during which they may continue on the original academic worksheet. After the three-semester limit has been reached, students will be subject to the requirements of the new catalog/worksheet in effect at that time.

If students initiate a leave of absence, they will continue on the same academic worksheet upon their return to the university. However, students who fail to return after the designated leave of absence period will be considered withdrawn students and subject to the catalog/worksheet requirements outlined above.

Students who begin their studies based on a catalog/worksheet which subsequently changes may request to use the latest worksheet for that major; however, students are not required to switch to the current worksheet when a change occurs unless they have been away from the university as described above.

## Class

In order to be classified as a sophomore, a student must have completed 27 credit hours in an approved program; a junior, 57 credit hours; a senior, 87 credit hours; a fifth-year student, 117 credit hours.

## Transfer of Student Status

Undergraduate students are able to change their student status according to the following procedure:

**Day to Evening transfer.** Full-time students who wish to become part-time students may do so by obtaining the Internal Transfer Form from the Registrar's Office. Upon approval, this form is then brought to the Registrar for processing and registration of courses.

Please note: Part-time students are generally restricted to taking courses in the evening and may not exceed 11 credit hours per term.

**Evening to Day transfer.** Part-time students who desire to take more than 11 credit hours per term must become full-time students. This process requires the student to obtain the Internal Transfer Form from the Registrar's Office. Upon approval, the form is then brought to the Registrar for processing and registration of courses.

## Major

Each matriculated student must designate a specific degree program, called a major. Major program requirements are detailed in the catalog under the relevant department listing. A minimum cumulative 2.0 QPR in major courses is required for graduation. See program requirements for further clarification of specific courses/requirements.

## Minor

Many baccalaureate programs may be supplemented by an associated minor program, which normally includes five or six courses. The university encourages students to augment their major program with an associated minor. Details can be obtained from the appropriate department.

A worksheet for the minor, developed by the appropriate department, must be submitted to the Registrar's office in order for a student to receive credit for the minor. A minimum of one half of the courses required for any minor must be completed in residence at UNH.

## Grading System

The following grading system, in use since September 1, 1987, applies except where otherwise specified, both to examinations and to term work. The

weight of a final examination grade is a matter individually determined by each instructor. See the Quality Point Ratio section below for additional information.

A+	-Excellent	= 4.3 quality points
A	-Excellent	= 4.0 quality points
A-	-Excellent	= 3.7 quality points
B+	-Good	= 3.3 quality points
B	-Good	= 3.0 quality points
B-	-Good	= 2.7 quality points
C+	-Fair	= 2.3 quality points
C	-Fair	= 2.0 quality points
C-	-Fair	= 1.7 quality points
D+	-Poor	= 1.3 quality points
D	-Poor	= 1.0 quality point
D-	-Poor, lowest passing grade	= 0.7 quality points
F	-Failure	= 0 quality points
AU	-Audit. Indicates course was attended without expectation of credit or grade. (0 quality points)	
I	-Incomplete. Indicates one of the following two possibilities:	
1.	Some work remains to be completed to gain academic credit for the course. An I is assigned in the first instance at the discretion of the instructor. This assignment shall not be automatic but shall be based upon an evaluation of the student's work completed up to that point and an assessment of the student's ability to complete course requirements within the allowed time limit. Work to remove an I must be performed within the 12 months following the last day of the semester in which the I is incurred or earlier if the instructor so requires. When such work is completed, the instructor will assign a final grade for the course.	
2.	The student has failed to complete unfulfilled academic assignments within the specified 12 months, and the grade of I has been entered on the student's permanent transcript. <b>No further opportunity to complete the course will be available to the student after this time.</b> (0 quality points)	

DNA -Did Not Attend. Indicates nonattendance in a course for which a student had previously registered but not officially dropped (0 quality points)

W -Withdrawal. Indicates withdrawal from the course after the first half of the semester or withdrawal from the university after the twelfth week of classes. The grade of W will not be assigned to any student who has taken the final examination in the course. (0 quality points)

S -Satisfactory. Given only in noncredit courses. (0 quality points)

U -Unsatisfactory. Given only in noncredit courses. (0 quality points)

## Grade Reports

Reports of the final grade in each subject will be mailed to the student soon after the close of each semester.

Grade reports may be withheld from students who have delinquent accounts with the Business Office, Campus Police, Library, Housing, Athletics, Health Services, or the Campus Bookstore.

## Quality Point Ratio

The academic standing of each student is determined on the basis of the quality point ratio earned each semester. The quality point ratio (QPR) is determined by using the quality points assigned to each grade a student earns.

The quality point value for each grade earned during a semester is multiplied by the number of credit hours assigned to that course as listed elsewhere in this catalog. The sum of these points is the total number of quality points earned during the semester.

This sum is divided by the number of credit hours attempted (hours from courses with grades of A+ through F) to obtain the quality point ratio.

The cumulative quality point ratio is obtained by calculating the quality point ratio for all courses attempted at the University of New Haven. Course grades of AU, DNA, I, S, U, and W are not calculated in the overall QPR since they carry no quality points.

See the “Grading System” section above for more information.

### Satisfactory Progress

For students matriculated in the Full-Time Division, satisfactory progress toward a degree is defined as successful completion of 24 credits applicable to that degree program during an academic year. This should include registration for at least 12 credits per semester and successful completion of at least nine credits per semester. “Completion” is defined as the receipt of a final letter grade (A+ to F) but not the receipt of a Withdrawal (W), Did Not Attend (DNA), or an Incomplete (I). “Successful completion” is defined as the receipt of a passing letter grade (A+ to D-). Decisions on student status are made by the Registrar.

Students are required to maintain a minimum cumulative quality point ratio in accordance with the following scale:

Quality point ratio of 1.50 for 3 to 30 credit hours attempted

Quality point ratio of 1.60 for 31 to 45 credit hours attempted

Quality point ratio of 1.70 for 46 to 60 credit hours attempted

Quality point ratio of 1.80 for 61 to 75 credit hours attempted

Quality point ratio of 1.90 for 76 to 90 credit hours attempted

Quality point ratio of 2.00 for 91 or more credit hours attempted.

### Dean’s List

The dean’s list honors students who demonstrate excellence in their academic performance. Full-time students who earn a quality point ratio of 3.50 or better in any one semester will be appointed to the dean’s list for that semester.

Part-time students who have accumulated a minimum of 14 credit hours of coursework at the university will automatically be considered for the dean’s list at the end of each semester. A cumulative quality point ratio of 3.50 or better is required.

### Probation and Dismissal

Failure to maintain satisfactory progress as defined previously will place students on academic probation for the following semester of enrollment. Students are automatically dismissed when they receive a third probation (or, if readmitted from a previous dismissal, any subsequent probation) or when their quality point ratio for any one semester is less than 1.0.

First-semester freshmen earning a quality point ratio less than 1.0 are automatically referred to the Academic Standing and Admissions Committee, which may specify conditions for continued enrollment. A notation of committee action shall appear on the student’s permanent record.

Students who fail to maintain the minimum QPR for satisfactory progress but are not dismissed are placed on academic probation. Probation serves as a warning that lack of improvement will eventually prevent satisfaction of graduation requirements. Because UNH is dedicated to helping students to be successful, probationary students are required to work with assigned academic skills counselors.

Students on probation are limited to four courses (13 credits) during the term of their probationary status. They may also be required to retake courses in which they performed poorly. The university may void a registration for more than four courses. Also, any courses above the four-course limit taken at another institution during a period of probation will not be accepted in transfer to UNH.

Academic probation of transfer students is determined in accordance with the same graduated, minimum cumulative quality point ratio scale as for non-transfer students as detailed above. In determining a transfer student’s academic standing, the student’s total semester hours completed—those transferred from other colleges plus those received at the University of New Haven—are applied to the minimum cumulative quality point ratio scale.

### Repetition of Work

A course which a student has completed may be repeated only with the consent of the chair of the department which offers the course. If a student

achieves a higher grade in the second attempt, that grade rather than the first will be used to compute the cumulative quality point ratio. However, both the higher and lower grades in the course remain on the student's permanent record.

When credit for a graded course previously attempted at UNH is earned through a method which does not carry a grade with a quality point value, the previous instance of that course will be removed from the cumulative QPR calculation. However, both instances will be recorded on the student's permanent record and transcript.

### Dismissal/Readmission Procedure

Students are dismissed from the university at the end of each semester or trimester on the basis of the criteria listed in "Probation and Dismissal." Notification is made by the Registrar via certified letter. This letter will specify the time span for appeal (normally five days) and the criteria for appeal.

Upon written submission by the student, an appeal will be heard by the Academic Standing and Admissions Committee. If the appeal has merit and is granted, the student will be so notified by the chair of the committee. The committee may require special arrangements or conditions to allow the student to continue. Satisfaction of such conditions is an obligation of the student.

If there is no appeal or if an appeal is denied, the student will be removed from any courses for which the student is registered that have not yet begun. The student may continue in any intersession or summer course which began before the date of dismissal but may not start any courses after dismissal is effective. Dismissal action will be noted on the student's academic transcript.

A third probation will result in dismissal from the university. The student will be allowed to complete any incomplete courses (subject to established rules and restrictions), and grades/credits earned will be transferrable to other institutions. However, the dismissal will remain irrevocable, not subject to appeal.

### Readmission

Application for readmission of students who have

been dismissed and who either did not appeal or whose appeal was denied normally will be considered only after the lapse of a semester and only when students provide evidence which indicates probable success if readmitted.

Unusual circumstances may permit earlier application if a student's dean and department chair successfully petition the committee to review the applicant's case.

Requests for readmission should be submitted in writing to the chair of the committee at least three weeks before the opening of the semester and should include evidence supporting the student's belief that he or she will succeed if readmitted.

A student who has been absent from the university for one or more semesters must submit a new application and pay another application fee. If the student has attended another college or university in the interim, an official academic transcript is required from that institution. Following the receipt of the above material, action will be taken on the application for readmission. Since the student is not matriculated at UNH during this period, no coordinated courses will be accepted. Upon successful readmission, students will register for classes for the first term of their return through the Undergraduate Admissions Office.

Readmission is not automatic. The committee reviews each application and makes a decision on acceptance, rejection, or conditional acceptance of students.

A student who is academically dismissed and readmitted by the Academic Standing and Admissions Committee may be prohibited from continuing with the academic program in which he or she was enrolled at the time of the dismissal. If the committee readmits the student to a new program, the student shall have the same automatic right to enrollment in that program as any other newly admitted student.

## Changes

### Dropping/Adding a Class

Students who wish to make a change in class schedule must complete a Drop Card or an Add Card or

both. These are available from the Registrar's Office. All adds and drops require the signature of the instructor and the student's advisor. In the case of part-time evening students, drops require the signature of the instructor only, although it is recommended that students consult with their advisors.

The last date to add classes is two weeks into the semester and is listed in the academic calendar. No classes may be added after this date. All changes should be completed prior to the second week of class so that students may be properly registered in the correct sections.

### Withdrawal from a Class

Students desiring to withdraw formally from a class may do so before the last day to drop courses as published in the academic calendar. Formal withdrawal removes the student's name from the class roll and removes the course listing from the student's record and transcript. The student must obtain a Drop Card from the Registrar's Office, complete it, sign it, and obtain the signature of the instructor and advisor. The card is then returned to the Registrar's Office.

Students withdrawing from a class after the last day to drop courses will receive a grade for the course as assigned by the faculty. The course and grade will appear on the student's grade report and transcript.

Filing a Drop Card does not qualify the student for cancellation of any university tuition or fee. Tuition refunds are subject to the refund policy outlined elsewhere in this catalog.

### Changing a Major

Students wishing to make a change in major or program must meet with the chair of the department into which they wish to transfer. In consultation with the student, the chair will prepare a change of major form and forward it to the Registrar's Office.

### Leave of Absence

Matriculated students may interrupt continuous enrollment by electing to take a leave of absence from the university for medical or personal reasons, to pursue a program of study at another institution, or to

engage in other off-campus educational experiences without severing their connection with the University of New Haven through withdrawal. Before taking a leave of absence, students are encouraged to discuss their particular situation with an academic advisor, the dean of their school, or a counselor in the Counseling Center.

The rules regarding leaves of absence are:

- All noninternational students must file for a leave of absence through the Registrar's Office; international students must initiate the leave of absence through the International Student Services Office.
- Students who are on university disciplinary probation are not eligible for a leave of absence.
- A student who has been dropped or dismissed from the university for disciplinary or academic reasons is not eligible for a leave of absence until properly reinstated.
- A student who has withdrawn as a degree candidate is not eligible for a leave of absence. If a student withdraws while on leave of absence, the leave is invalidated.
- Leaves are not required or granted for summer periods alone.
- Normally, leaves are not approved for a period longer than two semesters. Under special circumstances, a leave of absence may be approved for a maximum of four semesters or two years.
- If students wish to return later than the semester originally stated on the leave of absence form, they must apply through the Registrar's Office for an extension of the leave of absence not to exceed the maximum period as outlined above.
- A student who plans to enroll for coursework at another accredited institution during a leave of absence should review program plans with his or her academic department advisor to verify eligibility for receiving credit at the University of New Haven.
- Taking a leave of absence may affect a student's financial aid. All students receiving financial aid are encouraged to contact the Financial Aid Office before taking a leave of absence.
- Students who fulfill the conditions of an approved leave of absence may return to the university and register for classes without applying for readmission; such students may preregister for the semester

in which they plan to return.

- A student who does not apply for an extension or exceeds the maximum period but wishes to return to the university must be formally readmitted by the Undergraduate Admissions Office. Upon successful readmission, the student will register for classes for the first term of their return through the Undergraduate Admissions Office.
- All applications for leaves of absence after the twelfth week of classes must be approved by the Registrar before they are considered final.
- For leaves of absence completed during the first 12 weeks of the semester, the student's transcript will contain no record of courses attempted or grades received during that semester.
- Leaves of absence completed and approved after the twelfth week of the semester may result in the receipt of the grades for all courses in which the student is registered at the time of taking the leave of absence.

## Withdrawal from the University

Students desiring to withdraw from the university must complete the necessary form at the Registrar's Office and notify each of their instructors. It is the student's obligation to complete this formal procedure. Failure to do so leaves the student liable for all of the current semester's tuition and fees and may result in grades of F being assigned in the student's courses.

Formal withdrawal must be completed during the first four weeks of the semester in order to obtain any cancellation of tuition and fees (as described elsewhere in this catalog) unless there are clearly extenuating circumstances and a formal appeal is made through the Registrar's Office.

Formal withdrawal which is completed at any time during the first 12 weeks of the semester will assure that the student's transcript will contain no record of courses attempted or grades received during that semester.

Formal withdrawal which is completed after the twelfth week of the semester could result in the receipt of the grades for all courses in which the student is registered at the time of withdrawal. Students should note that formal withdrawal after the twelfth week cannot be regarded as complete unless, in addi-

tion to the above requirements, it has been approved by the Registrar.

Because of the serious ramifications of formal withdrawal from the university, students contemplating this action should discuss the matter with their advisor or a counselor as soon as problems are perceived.

## Transfer of Credit from the University

Credits may be transferred from the University of New Haven, a regionally accredited university, to any other college or university. If it is the policy of the other college or university, the student may be required to complete a letter of authorization allowing transfer of credit from the University of New Haven.

## General Policies

### Academic Honesty

The University of New Haven expects its students to maintain the highest standards of academic conduct. Academic dishonesty is not tolerated at the university. To know what it is expected of them, all students are responsible for reading and understanding the statement on academic honesty in the Student Handbook.

One of the most common forms of academic dishonesty is plagiarism, defined as the failure to cite properly the words **and/or the ideas** of another. Students are expected to adhere strictly to accepted academic standards of attribution in all of their work and should seek the guidance of their instructors if they have any questions in this regard.

Violation of university standards on academic honesty, including those on plagiarism, will be sufficient reason for an F in the course and may be reported to the Dean of Students. A second violation may be cause for suspension or expulsion from the university.

### Attendance Regulations

Every student is expected to attend all regularly scheduled class sessions. Specific course attendance guidelines are established by the academic departments or each individual faculty member.

From time to time, it may become necessary for the



university to compile attendance records for every course in order to meet the needs of regulatory agencies or accrediting bodies or for other purposes.

A maximum of two weeks of absences will be permitted for illness and emergencies. The instructor has the right to dismiss from the course any student who has been absent more than the maximum classes allowed. Please refer to the Student Handbook for further clarification of attendance requirements.

If a student is not properly registered with the university (see Registration section elsewhere in this catalog), he/she is not permitted to attend classes regularly or be a part of the course.

### Coursework Expectations

All full-time and part-time students are expected to spend at least two hours of time on academic studies outside of and in addition to each hour of class time. This expectation should be used by the student as a guide in determining how much time to spend on academic studies outside of class. It should also be used by the student, in consultation with the academic advisor, to help determine the student's course load each semester so that the course load matches the amount of time available for academic studies.

### Make-up Policy

Make-up examinations are a privilege extended to students at the discretion of the instructor, who may grant make-up examinations to those students who miss an examination as the result of a medical problem or a personal emergency. On the other hand, the instructor may simply choose to adopt a "no make-up" policy. If an instructor does choose to offer a make-up test, there are two options: 1) to use university proctors, if available, in which case the student must pay a make-up exam fee for regular semester examinations and for final examinations; 2) to make private arrangements to offer the examination, in which case the make-up exam fee is charged at the instructor's discretion.

## Graduation

### Graduation Criteria

Matriculated students are required to submit a peti-

tion for graduation in the term immediately preceding their anticipated commencement. Graduation petitions must be signed by the chair of the student's academic department prior to submission of the petition and graduation fee at the Bursar's Office. Petition forms, graduation fees, and due dates are published by the Registrar each term.

Graduation is not automatic. Petitions, once filed, ensure that a student's record will be formally assessed in terms of degree requirements and that it will be submitted to the faculty for final approval. A petition may be denied if graduation requirements are not met. If a petition is approved, a degree will be awarded for the appropriate commencement. Only those students who have successfully completed the graduation requirements listed below can participate in the commencement ceremonies.

A degree will be conferred by the Board of Governors when a student has satisfied all program requirements and met all university requirements by having:

1. successfully petitioned and paid all graduation fees;
2. earned a cumulative quality point ratio of no less than 2.0 in all courses applicable toward the undergraduate degree;
3. earned a cumulative quality point ratio of no less than 2.0 (or higher if required by an individual department) in all courses in the student's major field of study;
4. passed the university's Writing Proficiency Examination;
5. been recommended by the faculty;
6. met all financial and other obligations and conformed to any local, state, or federal law concerning graduation;
7. met the residency requirement of the university.

If a student does not meet all the requirements as outlined above prior to the commencement date, the diploma for the specific commencement date will be destroyed. It is the student's responsibility to refile and make payment for a new petition for a future commencement date.

### Residency Requirement

The residency requirement of the university is 30 credit hours taken at West Haven or at one of the uni-

versity's off-campus centers. This requirement applies to all degrees, undergraduate and graduate. Transfer credit, coordinated courses, credit by examination, CLEP, DANTES, or proficiency examinations do not fulfill the residency requirement.

To ensure depth of study, the residency requirement must include 12 credit hours of work in the declared major for an associate's degree and 18 such credit hours for a bachelor's degree. Exceptions may be granted only by the dean administering the major.

### Writing Proficiency Examination

Because the University of New Haven believes that good writing skills are essential for success, it requires all its undergraduate students to demonstrate such skills before it will confer a bachelor's degree.

All students must pass the university's Writing Proficiency Examination as a requirement for graduation. No student will be eligible to receive the BA or BS degree without passing this examination. All students must take this examination during the first semester after the completion of 57 credit hours. Failure to take the examination may preclude continuous registration.

The examination will consist of the writing of an impromptu theme on one of several topics of current interest. If the student's syntax, punctuation, and diction are in accord with the conventions of standard English and if the argument or exposition is clear and coherent, the student will pass. If the student's writing is found to be deficient in these respects, notice of the unsatisfactory performance on the examination will be sent to the student and to the student's academic advisor.

Students who fail the examination must take it again each subsequent semester in which they are enrolled until the examination is passed. Those who fail are encouraged to utilize the services of the Center for Learning Resources or retake E 105 Composition to help them to improve their writing proficiency. Passing E 105 and/or utilizing the Center for Learning Resources does not satisfy the university writing proficiency requirement. In no case shall the requirements for a four-year degree be completed unless the Writing Proficiency Examination has been passed.

### Honors

Academic honors are posted on the student's final transcript along with the name of the degree earned and the date the degree was conferred.

Honors are conferred upon candidates for graduation according to the following standards:

1. An associate's degree **With Honors** is awarded to students who have a quality point ratio of 3.25 for the credit hours specifically required for the degree program from which they are being graduated and who have taken 30 or more hours of required work at this university.
2. An associate's degree **With High Honors** is awarded to students who have a quality point ratio of 3.50 for the credit hours specifically required for the degree program from which they are being graduated and who have taken 30 or more hours of required work at this university.
3. The bachelor's degree **Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.50 who have taken 60 or more credit hours of required work at UNH and completed all the suggested courses within their curriculum.
4. The bachelor's degree **Magna Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.70 whose quality point ratio in all courses counting toward their major is at least 3.70, and who have taken 60 or more credit hours of required work at UNH and completed all the suggested courses within their curriculum.
5. The bachelor's degree **Summa Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.90 whose quality point ratio in all courses counting toward their major is at least 3.90, and who have taken 60 or more credit hours of required work at UNH and completed all the suggested courses within their curriculum.

In determining eligibility for degrees with honors, transfer credit and credits earned by crediting examination will not be considered. Only the cumulative quality point ratio for courses completed at the University of New Haven is considered in determining a student's eligibility for honors.

# TUITION, FEES, AND EXPENSES

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The tuition and other expenses listed in this section reflect the charges for the 2004–05 academic year.

Full-time students taking courses offered during both the day and /or the evening will pay the full-time tuition rate for the first 17 credits per semester.

Any student who is registered as a full-time day division student on the first day of the semester will be responsible for payment of full-time day division tuition for the entire semester, regardless of any subsequent dropping of credits or withdrawal from a course. Full-time day division students who plan to enroll for fewer than 12 credits in any given term must change their enrollment status to part-time prior to the first day of the term.

Students enrolled as full-time day division students who take 18 or more credit hours in a single term will be charged additional tuition for each credit hour over 17, unless the additional credits are required for that semester on the student's major worksheet.

## International Student Acceptance Fee

The international student fee is required of all international undergraduate and graduate students when they first enroll. It supports a variety of services and programs, cross-cultural workshops, community activities, international alumni programs, library subscriptions to international newspapers and magazines, and the International Services Office.

## Engineering Tuition Differential

Courses with the designations CE, CEN, CH, CM, CS, EE, EAS, IE, ME offered by the School of Engineering and Applied Science are charged an additional \$75 per credit hour tuition differential.

## Student Activity Fee

The student activity fee is distributed to various student groups by the Undergraduate Student

Government Association. It covers the cost of student-supported services such as the newspaper and radio station and helps defray the expenses of clubs, organizations, social activities, etc.

## Undergraduate Full-Time Day Division 2004–05

Application Fee . . . . . \$50  
Payable with student's application to the university; not refundable

Enrollment Fee, Not Refundable  
Commuter Students . . . . . \$200  
Resident Students . . . . . \$400  
Payable by all new and transfer domestic students.

Acceptance Fee . . . . . \$225  
Payable by all new international students upon notification of acceptance; not refundable.

## Tuition, 2004–05, Full-Time Students

	<u>Per Semester</u>	<u>Per Year</u>
New full-time students taking 12-17 credit hours	\$10,560	\$21,120
Returning full-time students taking 12-17 credit hours	\$ 9,900	\$19,800
Engineering Tuition Differential \$75 per credit hour.		
<i>New Full-Time Division students taking fewer than 12 credit hours, the tuition is \$704 per credit hour.</i>		
<i>New Full-Time Division students taking 18 or more credit hours, additional tuition for each credit hour over 17 is \$704.</i>		

*Returning Full-Time Division students taking fewer than 12 credit hours, the tuition is \$660 per credit hour.*

*Returning Full-Time Division students taking 18 or more credit hours, additional tuition for each credit hour over 17 is \$660.*

	<u>Per Semester</u>	<u>Per Year</u>
Student Activity Fee	\$158	\$316
Health Service Fees (Charged in fall semester.)		
Domestic Students	\$200	\$200
(prorated in Spring)		
International Students	\$650	\$650
(prorated in Spring)		
Technology Fee	\$ 30	\$ 60
Registration Late Fee . . . . .		\$ 25

**Late Payment Fees**

Assessed for failure to complete payment of tuition, meal plan or residence charge by due dates listed in the academic calendar. . . . . \$ 50  
*Additional fee of 1.5 percent per month on the unpaid balance after the first day of classes*

**Part-Time Evening Undergraduate Division 2004–05**

**Application Fee**

Payable with the student's application to the university, not refundable. . . . . \$ 50

**Tuition, 2004–05**

Part-Time Evening Division students taking up to 11 credit hours, per credit hour . . . . . \$375

Engineering Tuition Differential, per credit hour . . . . . \$ 75

**Technology Fee**

per semester . . . . . \$30  
 per undergraduate module . . . . . \$10

Registration Late Fee . . . . . \$15

Student Activity Fee, per term . . . . . \$10

**Tuition Late Payment Fee**

Fifty percent of the tuition for a Part-time evening student must be paid by the due date. . . . . \$25  
 The other 50 percent is due by the first week of class. After this, the student must pay 1.5 percent per month on the unpaid balance.

**Tuition for Summer Session and Winter Intersession**

All students pay in summer session and winter intersession courses, per credit hour . . . \$375

**Room Fees, 2004–05**

	<u>Per Semester</u>	<u>Per Year</u>
Undergraduate	\$2,760	\$5,520
Activity Fee	\$ 50	\$ 100
New Residence Hall Differential	\$ 250	\$ 500

Intersession (per week).....\$161.50

Summer (per week).....\$152.00

**Board Fees, 2004–05**

<u>Meal Plans</u>	<u>Per Semester</u>
Plan A (14 meals/week plus declining balance)	\$1,788
Plan B (10 meals/week plus declining balance)	\$1,723
Plan C (5 meals/week plus declining balance)	\$1,483

Note: Meal Plan A or B is mandatory for all resident freshman and sophomore students; Meal Plan A, B or C is mandatory for all resident junior and senior students.

## Other Fees

### Laboratory Fees

Payable each semester by students registering for courses requiring the laboratory fee as listed in the catalog. Nonrefundable fees are announced in printed course schedules in advance of each semester. (See also the engineering tuition differential described previously.)

### Make-up Test

Assessed when a student is permitted to make up an announced test. . . . . \$10

### Make-up Examination

Assessed when a student is permitted to take an end-of-semester examination at a time other than the scheduled time, except for conflicts caused by the examination schedule. . . . . \$15

### Co-op Program

Students participating in the university's cooperative education program pay a continuing registration fee for semesters during which they work.

Full time Co-op fee . . . . . \$100  
Part-time Co-op fee . . . . . \$75

### Crediting Exam

Assessed when a student is permitted to take a crediting examination for a 3-credit course. . . . . \$300

### Auditing a Course

Students pay the same tuition and fees for auditing a course as they pay when the course is taken for credit.

### Graduation

Assessed regardless of participation in exercises; no reduction will be made for nonattendance. The assessed fee includes a lifetime membership in the UNH Alumni Association. For

graduation in May, the fee and graduation petition are due no later than March 1 of the year of graduation; for awarding of degrees in August the fee and graduation petition are due by June 15; for January commencement, the fee and graduation petition are due before October 15 of the prior calendar year. Failure to meet the deadline date will result in a late charge of \$50 in addition to the normal graduation fee, to be paid if there is sufficient time to process the graduation petition. If processing is not possible, graduation will be postponed to the next award date. . . . . \$110

### Graduation Refiling/Diploma Replacement Fee

This fee is paid to refile for graduation if the student petitioned and failed to complete the requirements prior to the expected graduation date, or the fee is paid to replace a lost or damaged diploma. . . . . \$50

### Transcript of Academic Work

One free copy provided at graduation;  
all others, per copy . . . . . \$5

## Payments

Tuition, fees, and other charges are payable when due. Checks or money orders should be made payable to the University of New Haven. There is a penalty charge of \$20 per check for all checks returned by the payer's bank.

The university withholds all issuance of grades, awarding of diplomas, issuance of transcripts, and granting of honorable dismissal to any student whose account is in arrears.

The university offers deferred payment choices to help with education expenses. In partnership with Tuition Management Systems (TMS), the nation's top rated education payment plan provider, services provided include an interest-free monthly payment option that allows education expenses to be spread over 10 monthly

payments per year for an enrollment fee of \$65.

The enrollment fee includes toll-free and Internet access to education payment counselors and account information. In addition, low-interest loan counseling and information are available for those students and families who need loan assistance or for persons who find the monthly payment amounts to be too large.

Information and enrollment forms for TMS by calling 1-800-722-4867 or at [www.afford.com](http://www.afford.com).

Application for this plan must be made prior to the first day of each semester.

### Tuition Refund Policy

After a formal withdrawal request is initiated by undergraduate students, tuition is refunded or canceled according to the following scale:

<u>Date of Receipt of Withdrawal Request</u>	<u>Percentage Canceled</u>
1st week of semester	80%
2nd week of semester	60%
3rd week of semester	40%
4th week of semester	20%
After the 4th week	0%

A prorated refund, rather than a refund based on the above-mentioned scale, may be made in situations involving clearly extenuating circumstances such as protracted illness of a student. All appeals based on such circumstances must be made in writing and include documentation of the extenuating circumstances. Appeals are to be sent to the Directors of Counseling and Health Services; prorated refunds will be determined by the Committee on Withdrawals. All requests for refunds should be initiated before the close of the semester of withdrawal. Any student under the age of 18 must have the written consent of a parent or guardian indicating to whom any refund, if applicable, is to be paid in order to withdraw from the university.

### Summer Sessions and Intersession

In cases of withdrawal from a course or courses within the first week of each term, a refund of 50 percent of tuition is made. There is no refund of summer or intersession tuition after the first week.

The foregoing policy is intended to protect the university, which plans its expenses and bases its budget on full collection of tuition and fees from all registered students and assumes the obligation of supplying instruction and other services throughout the year.

### Residence Hall Fee and Withdrawal Policies

1. A \$400 nonrefundable enrollment fee is required of new students requesting on-campus housing. \$200 of this fee is applied to their damage deposit. A \$200 nonrefundable room selection fee, which is applied to the fall semester housing fees, is required of returning students.
2. Housing and meal plan fees are billed on a semester basis in June and December.
3. Each returning student is required to have on account a \$150 damage deposit, which is billed with the student's initial university invoice containing charges for housing. Students are then responsible for maintaining their damage deposits at the \$150 level while resident students. All new students will have a \$200 damage deposit on account.
4. An activity fee of \$50 is billed each semester.
5. All resident students are required to purchase a University Meal Plan.
6. **The housing agreement is binding for the 2004-05 academic year.**
  - a. Students who cancel their housing agreement for the 2005 spring semester and remain enrolled as full-time students for the spring semester will be billed for the spring semester housing fees.
  - b. Students who are leaving the University must withdraw from housing by January 7, 2005. **Failure to meet the withdrawal deadline of January 7, 2005 will result in a charge of \$100, which will be deducted from the student's damage deposit.**

Proper withdrawal includes:

- Notifying the Office of Residential Life in writing that the student is leaving university housing,

- Checking out with a Resident Director, and
  - Returning all keys to the Office of Residential Life.
- 7. Housing fees are non-refundable after August 29, 2004 and January 19, 2005.

The university reserves the right to make, at any time, whatever changes it deems necessary in admission requirements, fees, charges, tuition, faculty, instructors, policies, regulations, and academic programs prior to the start of any class, term, semester, trimester, or session. The university reserves the right to divide, cancel, or reschedule classes or programs if enrollment or other factors so require. All such changes are effective at such times as the proper authorities determine and may apply not only to prospective students but also to those who are already enrolled in the university.

# FINANCIAL AID

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Karen M. Flynn, BA, MA, Director

Christopher Maclean, BA, Associate Director

The University of New Haven offers a comprehensive financial aid program, with students receiving assistance in the form of grants, scholarships, student loans, and part-time employment. Funds are available from federal and state governments, private sponsors, and university resources. More than 70 percent of the university's full-time undergraduate students receive some form of financial assistance.

Most financial aid awards are based on an individual applicant's demonstration of need. Some funds are available on a merit basis for students who have exceptional academic records or athletic ability. Need-based awards are available only to U.S. citizens or eligible non-citizens.

Financial aid award decisions are made after careful consideration of a student's application for assistance. Eligibility for financial aid is based on financial need. Need is determined by subtracting the Expected Family Contribution (EFC), as determined by the federal "needs analysis" formula using the financial information provided on the Free Application for Federal Student Aid (FAFSA), from the Cost of Attendance. In calculating need, the Financial Aid Office attempts to consider all aspects of a student's financial circumstances and to meet the need of aid applicants through a "package" of assistance, generally including a combination of grants, loans, and employment.

Students interested in applying for financial aid are encouraged to do so as early as possible. New students must apply by March 15 for the fall semester and December 1 for the spring semester. Returning upper-class students must submit application materials no later than March 1. All students are encouraged to apply for aid as early as possible to ensure full consideration for available funds.

Applications completed after the deadline date will be considered on a rolling basis depending upon the availability of funds.

The following application materials must be completed and submitted by each financial aid applicant:

- **University of New Haven Financial Aid Application.** The application form must be completed fully and submitted to the Financial Aid Office.
- **Free Application for Federal Student Aid (FAFSA).** The FAFSA is required for application for financial aid from federal as well as state and institutional student financial aid programs. Students should list the University of New Haven on the form as one of the colleges authorized to receive this information. The UNH Title IV School Code is 001397. Approximately 4 weeks after the FAFSA is submitted to the Federal Student Aid Program you, will receive a Student Aid Report (SAR) directly from the U.S. Department of Education. Students may apply online at [www.fafsa.ed.gov](http://www.fafsa.ed.gov).
- **Tax Documentation.** Applicants must submit signed copies of both the student's and parent's complete federal income tax returns from the most recent tax year prior to the academic year. Tax forms must include all pertinent schedules. Students filing as independents on the FAFSA are not required to submit their parent's tax documentation.
- **Verification.** Federal regulations require that our office verify the accuracy of the information provided on the FAFSA by an applicant for federal financial aid. This process is called verification.

Other forms and documents may be requested from applicants as their aid applications are reviewed. Upon completion of the review of an application, the Financial Aid Office will notify an applicant of his or her eligibility for financial aid if selected.

## Financial Aid Refund Policy

When students are entitled to a refund as a result of withdrawal from courses, refunds of charges and



financial aid will be based on the institutional refund policy, as described in the academic policies section of the university catalog, and on the Return of Title IV Funds calculation, as required by Section 484B of the Higher Education Act. Federal regulations require that any unearned Title IV aid be returned to the program(s) that provided the funds.

## Return of Title IV Funds

A withdrawal requires the university to calculate the amount of unearned aid a student has received. The university must:

- Determine the student's official withdrawal date as documented in the Registrar's Office. The withdrawal date is used to determine the percentage of the payment period completed and therefore the amount of aid a student earned. Students who have completed more than 60% of the term are not subject to the federal calculation.

- Determine the amount of aid earned by the student. The university must calculate earned aid by multiplying the total aid disbursed or which could have been disbursed (excluding Federal Work study) by the percent of the payment period the student completed.

-If less aid has been disbursed than a student has earned, then a post-withdrawal disbursement must be made. The university will notify the student or parent in writing within 30 days of the withdrawal date that a post-withdrawal disbursement is available. The student/parent must respond within 14 days of notification in order to receive the funds. The student/parent may accept all or part of the post-withdrawal disbursement.

If more aid was disbursed than earned, then the university, the student, or both must return all unearned aid in a specific order :

- 1) Unsubsidized Stafford Loans
- 2) Subsidized Stafford Loans
- 3) Federal Perkins Loans
- 4) Federal PLUS Loans
- 5) Federal Pell Grants
- 6) Federal SEOG

- 7) Other Title IV assistance for which return of funds is required

Students are responsible for repaying all unearned aid a school is not required to return, as well as any balance created on their Bursar account by the application of the Title IV return of funds formula. The university will notify the student in writing within 30 days of determining an overpayment. Students must repay as follows:

- Loans: repayment according to terms of the loan
- Grants: repayment is 50% of unearned grant.

Students who owe Title IV grant repayments have 45 days to:

- Repay in full,
- Make arrangements to repay the university,
- Make arrangements to repay the U.S. Department of Education.

Students who fail to take action to repay will be reported to the Department of Education and National Student Loan Data System (NSLDS) immediately after the 45 day period has elapsed.

Additional information and examples of refund calculations are available in the Financial Aid Office.

## Academic Requirements for the Retention of Financial Aid Eligibility

Students must be making satisfactory academic progress *and* be in good academic standing in order to be eligible to receive financial aid.

Students receiving financial aid as full-time undergraduates must successfully complete a minimum of 24 credits during the academic year in order to maintain satisfactory progress; full-time students who attend for only one semester during the academic year must complete a minimum of 12 credits. Satisfactory academic progress for part-time students is defined as successful completion of all the credits for which financial aid was awarded.

"Successful completion" is defined as the receipt of a passing letter grade (A+ to D-), and does not include the receipt of an F (Failure), I (Incomplete), DNA (Did Not Attend), or W (Withdrawal). The requirements for good academic standing are described in the

“Academic Regulations” section of the catalog.

## Major Aid Programs

### Grants

**Federal Pell Grants** – The Pell Grant Program is a federal program providing grant assistance to low-income students. Grants for the 2004-05 academic year range from \$200 to \$4,050, with the student’s eligibility being determined by the U.S. Department of Education.

**Federal Supplemental Educational Opportunity Grants – (SEOG)** is a federal program to provide grant assistance to exceptionally needy students. Students are selected by the university to receive the grants.

**Connecticut Independent College Student Grant Program** – Funds provided by the Connecticut General Assembly are awarded to needy Connecticut residents attending the university.

**Capitol Scholarship Program** – Connecticut students who have finished in the top 20 percent of their high school class or who have scored 1200 or higher on their combined Scholastic Aptitude Test (SAT) may be eligible for the Connecticut Scholastic Achievement Grant. Students must obtain an application from their high school guidance office.

**University Grants-in-Aid** – University grants are made in all divisions on the basis of need.

**2004-2005 Presidential Scholarship** – Incoming full-time freshman students who have a combined SAT score of 1200 or above automatically qualify for a half-tuition scholarship. Awards will be renewed for up to three additional years as long as the student maintains a B+ (3.3) cumulative average, remains a full-time student, and makes satisfactory academic progress. The deadline is May 1.

**Academic Achievement Award** – Incoming full-time freshmen with good academic records may qualify for an academic scholarship. Awards will be renewed for

up to three additional years as long as the student maintains a B (3.0) cumulative average, remains a full-time student, and makes satisfactory academic progress.

**Presidential Scholarship for Transfer Students** – Incoming transfer students who have a minimum of 30 credits transferable to UNH or who hold an associate’s degree may qualify for an academic scholarship. Students may receive the award for a maximum of seven semesters as long as they maintain a B+ cumulative average and remain full-time students. The deadline is May 1.

**Athletic Grants-in-Aid** – Athletic grants are provided to students for participation in sports. Selection for the awards is made by the athletic department based on students’ athletic ability. Awards can range up to full tuition, room, and board. Athletic grants are available in the following sports:

<u>Men</u>	<u>Women</u>
Baseball	Basketball
Basketball	Cross Country
Cross Country	Lacrosse
Golf	Soccer
Indoor Track	Softball
Outdoor Track	Tennis
Soccer	Volleyball
Volleyball	

**Miscellaneous State Scholarships** – Students from other states may be eligible to apply for state scholarships which can be brought to Connecticut for attendance at the University of New Haven. Students should contact their state scholarship agencies for information.

**Donor Scholarships** – Many scholarship awards are available each year through the generosity of businesses, charitable organizations, and friends of the university. Scholarship funds are awarded from annual gifts from sponsors and from income from the university’s endowments.

## Loans

**Federal Perkins Loan Program** (formerly National Direct Student Loan Program) – Repayment on Perkins Loans begins six months after a recipient leaves school and carries a 5 percent rate of interest commencing with the start of repayment. Students are selected by the university to receive Perkins Loans.

**Federal Stafford Student Loan (SSL)** – The Stafford Student Loan is a federally subsidized loan program available on the basis of financial need to students enrolled at least half-time. The annual loan limits are as follows:

1st year undergraduate	\$2,625
2nd year undergraduate	\$3,500
3rd year through completion	\$5,500
Graduate students	\$8,500

The interest rate is variable and is subsidized by the federal government while the student is enrolled on at least a half-time basis. Repayment begins six months after graduation or withdrawal from college. Entrance and exit interviews must be conducted in person with all borrowers. The entrance interview must be conducted prior to the student's receiving the first student loan check. Exit interviews must be conducted prior to a student's graduation or withdrawal. Applicants must submit a complete financial aid application.

**Unsubsidized Federal Stafford Student Loan** – The Unsubsidized Stafford Loan is similar to the SSL listed above except that it is not based on financial need and there is no in-school interest subsidy. Combined Subsidized and Unsubsidized loans cannot exceed the annual loan limits stated above.

**Federal Parent Loans for Undergraduate Students (PLUS)** – The PLUS Loan Program is a federal program in which parents of dependent students are permitted to apply for up to the cost of attendance minus any financial aid. The interest rate is variable. Application forms and information on this program are available from the Financial Aid Office.

**Family Education Loan Program** – FELP is a low-interest loan program administered by the Connecticut Higher Education Supplemental Loan

Authority (CHESLA). Applicants may borrow from \$2,000 to the cost of education less aid per academic year at a fixed annual rate. Repayment can be extended up to 140 months, with the option of paying only interest while the student is enrolled in school. Applicants must be credit-worthy. For an application and further information call 1-800-252-FELP (in Connecticut) or (860) 522-0766.

## Student Employment

**Federal Work-Study Program-(FWS)** This is a federal financial aid program which provides employment opportunities for needy students.

## Alternative Financing Options

**University Seniors Program** – This program offers seniors age 55 or older an opportunity to take an undergraduate course at a reduced rate.

**Tuition Management Services (TMS)** – The TMS Plan offers a monthly system to pay for educational expenses through regularly scheduled payments over a 10-month contract. This plan carries an enrollment fee, but there are no interest or finance charges. Applications are available at the Financial Aid Office and the Bursar's Office. For further information, contact Tuition Management Services at 1-800-722-4867 or [www.afford.com](http://www.afford.com).

*The following scholarships are awarded at the discretion of the university and, unless otherwise noted, require no special application form.*

**Alumni Association Scholarships** – These merit-based awards support full-time day students with exemplary academic records.

**Amity Charitable Trust Fund** – An annual award is given from the income of this fund to a worthy, needy student. Preference is given to students from the greater New Haven area. The fund was made possible through the generosity of the Amity Club.

**Edmund M. Autuori Scholarship** – This is an endowed scholarship for accounting majors who demonstrate both financial need and scholastic ability.

**The Barn Sale Scholarship** – A scholarship is available each year for a deserving, upper-class disabled student. The award is made possible by an endowment established by the Barn Sale, Inc.

**Carmel Benevento Memorial Scholarship** – This award is made annually to a woman entering the university as a freshman. The award was established in memory of Carmel Benevento and is based on need and academic and creative ability.

**Roland & Margaret Bixler Scholarship** – This endowed scholarship is awarded annually. The scholarship was established by Mr. Bixler, who is a member of the UNH Emeritus Board, and his wife, who is co-founder of Friends of the UNH Library.

**Norman Botwinik Fund for Academic Excellence** – This endowed scholarship is awarded annually to an undergraduate who over a period of four years has demonstrated marked academic achievement. Mr. Botwinik is the former Chairman of the UNH Board of Governors.

**Bozzuto Charity Sports Classic Scholarship** – Income from this endowment provides for an annual award to a needy student.

**Clarice L. Buckman Scholarship Fund for Chemistry and Chemical Engineering** – An annual award is given to a junior majoring in chemical engineering or chemistry in recognition of achievement and demonstration of incentive.

**Coca-Cola Scholarship** – Established by the Coca-Cola Foundation, an award is made annually to an incoming freshman who attended the Connecticut Pre-Engineering Program (CPEP) at any established Connecticut college or university for at least two years. The scholarship is renewable over a five-year period.

**C. Cowles & Co. Scholarship** - This award is made annually to a Connecticut resident with financial need who aspires to a career in manufacturing.

**Aldo DeDominicis Foundation** – Scholarships are awarded annually to students majoring in the field of communications. Awards are based on financial need and academic achievement.

**Dr. Lawrence and MaryLou DeNardis Scholarship**-This award is made annually to a full-time undergraduate with financial need and academic achievement. Student selected may not be a recipient of the Presidential Scholarship.

**William DeSenti Scholarship** – An annual award is made to a needy student in the School of Engineering and Applied Science.

**Robert B. Dodds Scholarship** – This endowed scholarship is awarded annually to an engineering student. The fund was established by Mr. Dodds as his gift to the Fund for Engineering.

**Clarence Dunham Scholarship** – A merit-based award is made each year to a deserving student majoring in civil engineering. Selection is made by Civil Engineering faculty.

**Echlin Family Scholarships** – Several annual awards of \$2000 are made to needy business or engineering students. The awards are made possible through an endowment established through the generosity of John and Beryl Echlin.

**Eder Brothers Scholarships** – Annual awards are made to hotel/ restaurant management students. The awards are made possible by Eder Brothers, Inc., of West Haven, Connecticut.

**Lynn Ellis Endowed Scholarship** - Established in honor of Lynn Ellis, a former professor at the university, an award is made annually to a student in the School of Business with academic promise and financial need.

**Ernst & Young Scholarship** – An award is made each year from this endowment to a student majoring in accounting.

**Murray and Shirley Gerber Scholarship** - This award is made to students in the School of Business or Engineering based on their entrepreneurship and leadership abilities.

**James Jacob Gerowin Memorial Scholarship** – An award is made to a needy engineering student showing

academic promise. The award is in memory of James Gerowin of the Class of 1985.

**James Gesso Memorial Scholarship** – A memorial award is made annually to an aviation major with academic/extracurricular achievement.

**Anthony Giusto Scholarship** - This award given annually to a Connecticut resident studying Criminal Justice, is based on academic merit and financial need.

**William Randolph Hearst Scholarship** – This endowed scholarship is made possible through the generosity of the William Randolph Hearst Foundation. It is awarded annually to first-generation and minority students.

**Hershey-Frey Scholarship** – This endowed scholarship is available to students residing in the Naugatuck Valley. The award is funded through the generosity of the Paul H. Hershey Foundation and Mildred and John Frey.

**Paul Kane Memorial Scholarship** – An award is available each year to an active scholar-athlete, with preference given to a Hamden, Connecticut, resident. The award is made in memory of Paul Kane, a university alumnus who was killed in the service of his country.

**Nathaniel Kaplan Memorial Scholarship** – An award in memory of Nathaniel Kaplan, a former English professor, is made each year to a student who has been enrolled in the College of Arts and Sciences for at least two years. Student must demonstrate financial need.

**Peggy Leuzzi Memorial Scholarship** – An annual award is made in memory of Mrs. Leuzzi, a former employee of the university. A scholarship is provided to an incoming freshman woman and is made possible through the generosity of Joseph Macionus.

**Martin Luther King, Jr., Memorial Scholarship** – An annual award in honor of Dr. King is made to a deserving, needy student. Preference is given to minority students.

**Ahmed Mandour Memorial Scholarship** – An award is available each year to a junior or senior student majoring in economics enrolled as a part-time/evening

student. The award is made in memory of Dr. Mandour, a former dean at the university.

**Arnold Markle Scholarship** – An annual award is made to a criminal justice major in memory of Arnold Markle, former State's Attorney for the Judicial District of New Haven.

**James R McCormack Memorial Scholarship** - Established by Nancy and Kevin McCormack in memory of their son James, a student in the Fire Science program at the university, this full-tuition scholarship is awarded annually to a student enrolled in the Fire Science Program who demonstrates financial need. Applications for this scholarship are available in the Financial Aid Office.

**Arthur Moulton Memorial Scholarship** - Established by Evelyn and David Moulton in honor of Arthur Moulton, former president of the George Ellis Company, this full-tuition scholarship is awarded to a student in the School of Engineering who demonstrates excellent academic promise and financial need. Applications for this scholarship are available in the Financial Aid Office.

**Parents Association Scholarship** – This is an endowed scholarship funded by the UNH Parents Association.

**Virginia M. Parker Scholarship** – Each year Chi Kappa Rho sorority makes an award from this endowed scholarship to an undergraduate woman.

**H. Pearce Family and Friends Scholarship** – This endowed scholarship was made possible through the Pearce Family, longtime friends and supporters of the university. It is awarded to a resident of the State of Connecticut who demonstrates financial need and academic ability.

**Marvin K. Peterson-Evening Student Council Scholarship** – This scholarship was established in 1969 by the Evening Student Council of the University of New Haven to honor past President Marvin K. Peterson (1953-1973). The scholarship, awarded to undergraduate part-time/evening students, is entirely funded by the Evening Student Council.

**Rosazza Scholarship** – This fund was established in memory of Eugene Rosazza, an alumnus of the university, and is made annually to a needy student with an exemplary academic record.

**New Haven Wives of Rotarians** – An annual award from this endowment is made to a female student from the Greater New Haven area on the basis of academic achievement and financial need.

**Douglas D. Schumann Scholarship**–This endowed scholarship is awarded annually, on the basis of personal and academic integrity, to an engineering student who has completed his/her freshman year.

**Donald R. Scott Scholarship**–This scholarship is in memory of Donald R. Scott, former Chief of Campus Police at UNH, and is awarded jointly by the University of New Haven and the West Haven Black Coalition.

**Louis and Mary Tagliatela Endowed Scholarship**-This award is made annually to a junior or senior majoring in a field related to either the construction or the hotel industry and demonstrating financial need and academic merit.

**Unilever Scholarships** – Annual awards are made to minority engineering students with financial need.

**Dany J. Washington Scholarship**—This scholarship is in memory of Dany Washington, former Dean of Continuing Education at UNH, and is awarded to non-traditional adult students based on scholarship and leadership displayed in the university or community environment.

**Robert Wilson Scholarship**-Awarded annually to a freshman and renewable for up to three years providing a 3.0 GPA is maintained, this award is based on the following criteria: an African-American from New Haven County demonstrating financial need and high achievement in academics and other activities.

# COLLEGE OF ARTS AND SCIENCES

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Daniel Nelson, PhD, Dean

Robert Greenberg, PhD, Associate Dean

Gordon R. Simerson, PhD, Associate Dean

In the College of Arts and Sciences, a world of knowledge prepares students for their global tomorrows. Through the Liberal Arts, students gain multiple skills, open minds, and personal growth – all essential for the global marketplace. The College offers essential foundations in **science, the arts, government and international relations, mathematics, literature and writing, history, ethics**, and more. The College also is the home of many degree programs to launch you directly into your tomorrow in a career of your choosing.

In addition to serving as the center of the University's Core Curriculum, the College offers bachelor of arts, and bachelor of science degrees, and a number of associate's degrees and certificates. The College's graduate programs lead to the Master of Arts and Master of Science degrees, as well as a number of graduate certificates.

The College of Arts and Sciences and its highly qualified professors are deeply committed to real-life learning. We know that students' intellectual development and their sense of fulfillment are achieved not only in the classroom but also on campus and in the community.

Integral to students' experiences in the College of Arts and Sciences are opportunities to hear debates about critical national and international issues. Several times each semester, the College sponsors the

*Global Issues Symposia* that bring to UNH top names in diplomacy, politics, and public life to address world-wide concerns.

The College's intellectual excitement comes alive, too, with *IDEA&S*, a series of forums where faculty members speak informally to colleagues and students about current research, recent writing, or topics of wide interest. Such presentations are followed by lively discussion among students and faculty members. The College also publishes a semiannual peer-reviewed scholarly journal, *Essays in Arts & Sciences*, now in its 33rd year. A journal of critical and provocative thought, EAS brings prestige and international visibility to the College.

The College adds to New Haven's vibrant cultural environment. New Haven is a region with major libraries, museums and galleries, and superb theaters. At UNH, the College supports The Alliance Theatre—a resident company that is an outstanding collaboration among students, faculty, and community producing acclaimed dramatic and music performances. The Seton Gallery is a well-established university art gallery featuring, in addition to a permanent collection, a wide variety of renowned artists and sculptors at shows throughout the academic year.

For students, staff, and faculty, the College has developed *Arts @ Noon* events that several times each semester feature UNH talent in poetry, theatre, music, dance, and film. Through *Arts @ Night*, the College presents entertainment events on campus for UNH and public attendance, with performances in various musical styles, comedy, and dance.

## Programs and Concentrations

### Bachelor of Arts

Art  
 Chemistry  
 Communication  
 English  
     Literature  
     Writing  
 Graphic Design  
 History  
 Interior Design  
     Prearchitecture  
 Liberal Studies  
 Mathematics  
 Music  
 Music Industry  
 Music and Sound Recording  
 Political Science  
 Psychology  
     Community/Clinical  
     General Psychology

### Bachelor of Science

Biology  
     Premedical/Pre dental/Preveterinary Medical Biology  
     Biochemistry  
     General Biology  
 Biotechnology  
 Dental Hygiene  
 Environmental Science  
 Marine Biology  
 Mathematics  
     Computer Science  
     Applied Mathematics  
     Statistics  
 Music and Sound Recording  
 Nutrition and Dietetics

### Associate in Science

Dental Hygiene  
 General Studies  
 Graphic Design  
 Interior Design

## Graduate Programs

### Master of Arts

Community Psychology  
 Industrial/Organizational Psychology

### Master of Science

Cellular and Molecular Biology  
 Education  
 Environmental Science  
 Human Nutrition

### Graduate Certificates

Applications of Psychology  
 Geographical Information Systems  
 International Relations  
 Legal Studies  
 Mental Retardation Services  
 Psychology of Conflict Management

## Teaching as a Career

Students interested in earning a teaching certificate to qualify to teach at the elementary or secondary level may do so by entering the graduate program in education at UNH. This program also offers an internship.

## Minors

It is highly recommended that students working toward a degree in one area of study give serious thought to organizing their elective courses so as to receive a minor in a second discipline. A minor usually consists of 18 credit hours devoted to the study of either a group of courses on related subjects or a series of courses offered by one department.

Students interested in studying for a minor should consult with the chair of the department offering the minor. The minors are listed below:

Art  
 Bioengineering  
 Biology



Black Studies  
 Chemistry  
 Communication  
 English  
 Environmental Science  
 History  
 Mathematics  
 Multimedia  
 Music  
 Nutrition  
 Philosophy  
 Political Science  
 Psychology  
 Sociology  
 Theatre Arts

## Certificates

Students can take their first step toward an undergraduate degree by registering for one of the certificates offered by the College of Arts and Sciences. Each certificate is carefully designed as a concentrated introduction to a particular subject area and generally consists of courses totaling 15 to 18 credit hours. Later, students may choose to apply the certificate credits they have earned toward their undergraduate degree at the university.

## Certificates

Art  
 Graphic Design  
 Interior Design  
 Journalism  
 Public Policy

## University Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the core curriculum.

## General Policies in the College of Arts and Sciences:

- Each student will be assigned an academic advisor. Normally, the advisor is a member of the faculty in the major department for the student's degree program.
- A student may select a minor in a department other than the major department after consultation with the advisor or the appropriate department chair.
- To receive a degree from the College of Arts and Sciences, the student must be awarded his/her last 30 credits by the University of New Haven.
- A minimum of 120 semester hours is required for graduation.

## Coordinated Course Policy:

To implement the university's Coordinated Course Policy, the College of Arts and Sciences has adopted the following additional guidelines:

1. A student may take a maximum of two Arts and Sciences courses on a coordinated basis. The courses must be either (a) upper-division courses: that is, equivalent to 300- or 400-level courses at UNH or (b) courses required by the student's major program: that is, not Arts and Sciences elective courses.
2. Coordinated courses from two-year colleges will be accepted only for students who have freshman or sophomore status at UNH. A student who has completed a total of 57 credit hours cannot obtain consent for a coordinated course taken at a two-year college.
3. Any exceptions to the previously stated guidelines must be approved by the dean of the College of Arts and Sciences.
4. Students should note that in all cases they must seek approval before taking a coordinated course.

## BA, Liberal Studies

The BA in liberal studies serves students whose needs are not met by traditional university majors. The interdisciplinary nature of this program permits students to integrate courses from several departments for

the achievement of personalized educational goals. Those goals may be directed toward the realization of specific career objectives not met by an existing program. The liberal studies program also meets the needs of students who wish to develop a career focus and who to learn in a manner that emphasizes the interrelatedness of knowledge.

All students earning a bachelor's degree in liberal studies must complete the university's core curriculum requirements as part of the 120-122 credits required for the degree.

Students will also select a minimum of 16 focus area courses—that is, eight courses from two of the three focus areas listed below. The number of focus area courses within a field/department is a minimum of three and a maximum of six courses from any one discipline. Selection of 48 credits (or more) of courses from within these focus areas ensures a breadth of study within the liberal studies program.

## Focus Areas

### Humanities:

- Art
- Communication
- English
- History
- Music
- Philosophy

### Social/Behavioral Sciences:

- Black Studies
- Economics
- Political Science
- Psychology
- Sociology

### Mathematics/Science:

- Biology
- Chemistry
- Environmental Science
- Mathematics
- Physics

In consultation with the Arts and Sciences advisor,

students will develop a personal plan of study. Finally, as part of this plan, students will select a departmental advisor to assist in the development of an elective sequence of 39 credits (or fewer) to support their academic/professional goals. Students may choose their elective sequence from the areas of arts and sciences, business, engineering, hospitality/tourism, or public safety/professional studies. Ten 300-level or higher courses must be taken.

## AS, General Studies

The College of Arts and Sciences offers the AS in general studies to serve two different student populations. The first is the new or returning student who wishes a general liberal arts education for personal enrichment. The second is one who is undecided about career objectives and wishes to defer the choice of a major field.

Nearly half of the 61 credit hours required for the degree are free electives. This flexibility permits the student to take courses in a number of different fields prior to choosing a major. By judicious choice of electives, it is possible to transfer into majors in any of the schools in the university.

Students planning to transfer to four-year programs in the College of Arts and Sciences should note additional core requirements in science and mathematics, English literature, art, and social science, as well as special requirements in particular major programs.

### Required Courses

Students must complete 61 credit hours of courses to earn the associate's degree with a general studies major, including the courses listed below:

- E 105 Composition (cc)
- E 110 Composition and Literature (cc)
- HS 102 The Western World in Modern Times (cc)
- Plus* 1 mathematics course: M 109 *or* M 127 *or* higher (cc)
- 1 literature or philosophy course\* (cc)
- 1 art or music or theatre course\* (cc)
- 1 computer course\* (cc)
- 1 science course with laboratory\* (cc)

4 social science courses: EC 133, P 111, PS 121 and SO 113 (cc)

*cc*—Course which satisfies the University Core Curriculum requirements

\* —Courses chosen from the University Core Curriculum listing

## Department of Biology and Environmental Science

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**Chair:** Michael J. Rossi, PhD

**Professors Emeriti:** Burton C. Staugard, PhD, University of Connecticut; H. Fessenden Wright, PhD, Cornell University

**Professors:** R. Laurence Davis, PhD, University of Rochester; Charles L. Vigue, PhD, North Carolina State University; Henry E. Voegeli, PhD, University of Rhode Island; Roman N. Zajac, PhD, University of Connecticut

**Associate Professors:** Michael J. Rossi, PhD, University of Kentucky

**Assistant Professors:** Carmela Cuomo, PhD, Yale University; Eva Sapi, PhD, Eotvos Lorand University

**Instructor:** James Ayers, MS, Southern Connecticut State University

**Practitioners-in-Residence:** Norman Abell, DPM, Ohio College of Podiatric Medicine

### The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see “The Co-op Program,” which appears earlier in the catalog, or contact the Co-op coordinator for the College of Arts and Sciences.

## Biology

Biology provides one of the cornerstones of a liberal education by increasing knowledge and appreciation of oneself and of other living organisms in the eco- sphere. It is an active and exciting field leading to careers in drug discovery, medicine, and education. As a major, biology prepares the student for professional or graduate training or for technical and research positions in one of the health or life science fields.

### BS, Biology

Students earning a BS with a major in biology must complete 122-124 credit hours. Courses include the university’s core requirements and the course requirements for the particular biology concentration as indicated below.

### Concentration in Premedical/Pre dental/Preveterinary Medical Biology

This concentration gives the student the basic entrance requirements of virtually every U.S. college of medicine, dentistry, and veterinary medicine. Entrance into these colleges is highly competitive, and completion of the concentration does not guarantee acceptance into a medical, dental, or veterinary medical college. Graduates have gone on to pursue medical, dental, and veterinary medical degrees at such schools as Georgetown University, Tufts University, the University of Connecticut, Ohio State University, and the University of Tennessee. Students who complete the program but decide not to pursue a medical career are highly qualified to enter the workforce in one of the technically oriented research, health, or related life science fields. In addition to the university’s core requirements and seven free electives, the following courses are required:

BI 253-254	Biology for Science Majors with Laboratory I and II
BI 301	Microbiology with Laboratory
BI 308	Cell Biology with Laboratory
BI 311	Molecular Biology with Laboratory
BI 461	Biochemistry with Laboratory
BI 493	Evaluation of Scientific Literature

CH 115-116	General Chemistry I and II
CH 117-118	General Chemistry I and II Laboratory
CH 201-202	Organic Chemistry I and II
CH 203-204	Organic Chemistry I and II Laboratory
CH 211	Quantitative Analysis with Laboratory
HU 300	Nature of Science
M 117	Calculus I
M 228	Elementary Statistics
PH 103-104	General Physics I and II with Laboratory

*Plus* three of the following:

BI 303	Cells and Tissues with Laboratory
BI 304	Immunology with Laboratory
BI 305	Developmental Biology with Laboratory
BI 309-310	Vertebrate Anatomy and Physiology with Laboratory I and II
CH 221	Instrumental Methods of Analysis with Laboratory

### Concentration in Biochemistry

This concentration is most appropriate for students interested in a career in the rapidly growing fields of biotechnology and biomedical/pharmaceutical research or in pursuing an advanced degree in biochemistry or molecular biology. The program offers extensive hands-on experience in biochemical, cellular, and molecular techniques. Recent graduates are employed at Bristol-Myers Squibb, Protein Sciences, Bayer Corporation, Pfizer, U.S. Surgical, Neurogen Corporation, Cytotherapeutics, Curagen, and Yale University School of Medicine. In addition to the university's core requirements and seven free electives, the following courses are required:

BI 253-254	Biology for Science Majors with Laboratory I and II
BI 301	Microbiology with Laboratory
BI 304	Immunology with Laboratory
BI 308	Cell Biology with Laboratory
BI 311	Molecular Biology with Laboratory
BI 461	Biochemistry with Laboratory
BI 493	Evaluation of Scientific Literature
BI 501	Protein Biochemistry and Enzymology

BI 502	Biochemistry of Bioenergetics
BI 503	Nucleic Acid Biochemistry
CH 115-116	General Chemistry I and II
CH 117-118	General Chemistry I and II Laboratory
CH 201-202	Organic Chemistry I and II
CH 203-204	Organic Chemistry I and II Laboratory
CH 221	Instrumental Methods of Analysis with Laboratory
HU 300	Nature of Science
M 117	Calculus I
M 228	Elementary Statistics
PH 103-104	General Physics I and II with Laboratory

### Concentration in General Biology

This concentration gives the student a general over-view of the biological sciences. It is appropriate for the student with a broad interest in biology. In addition to the university's core requirements and six free electives, the following courses are required:

BI 253-254	Biology for Science Majors with Laboratory I and II
BI 301	Microbiology with Laboratory
BI 308	Cell Biology with Laboratory
BI 311	Molecular Biology with Laboratory
BI 461	Biochemistry with Laboratory
BI 493	Evaluation of Scientific Literature
CH 115-116	General Chemistry I and II
CH 117-118	General Chemistry I and II Laboratory
CH 201-202	Organic Chemistry I and II
CH 203-204	Organic Chemistry I and II Laboratory
HU 300	Nature of Science
M 117	Calculus I
M 228	Elementary Statistics
PH 103-104	General Physics I and II with Laboratory

*Plus* four of the following:

BI 259-260	Vertebrate Anatomy and Physiology with Laboratory I and II
BI 303	Cells and Tissues with Laboratory
BI 304	Immunology with Laboratory
BI 305	Developmental Biology with Laboratory
BI 320	Ecology with Laboratory
BI 510	Environmental Health

CH 221	Instrumental Methods of Analysis with Laboratory
EN 500	Environmental Geoscience

## BS, Biotechnology

The bachelor of science in biotechnology program is designed to prepare students to enter the growing biopharmaceutical and biotechnical fields. The program integrates courses in biochemistry, genetics, and cellular and molecular biology.

All students earning a BS with a major in biotechnology must complete 128 credit hours. Courses include the core requirements of the university, the required courses listed below, and elective courses.

### Required Courses

BI 253-254	Biology for Science Majors with Laboratory I and II
BI 301	Microbiology with Laboratory
BI 303	Cells and Tissues with Laboratory
BI 304	Immunology with Laboratory
BI 308	Cell Biology with Laboratory
BI 311	Molecular Biology with Laboratory
BI 461	Biochemistry with Laboratory
BI 493	Evaluation of Scientific Literature
BI 511	Molecular Biology of Proteins with Laboratory
BI 513	Molecular Biology of Nucleic Acid with Laboratory
BI 520	Bioinformatics
CH 115-116	General Chemistry I and II
CH 117-118	General Chemistry Laboratory I and II
CH 201-202	Organic Chemistry I and II
CH 203-204	Organic Chemistry Laboratory I and II
CH 221	Instrumental Methods of Analysis with Laboratory
HU 300	Nature of Science
M 117	Calculus I
M 228	Elementary Statistics
PH 103-104	General Physics I and II with Laboratory

## Environmental Science

Environmental scientists are employed by munic-

ipal, state, and federal agencies and by consulting companies and businesses both large and small. They work on such problems as wetland mapping and protection; watershed management; ground and surface water contamination; aquifer delineation and protection; marine resource management; crop and pest management; natural hazards; regulatory compliance; environmental health and safety; water, wastewater, and air treatment; and pollution prevention and remediation.

Usually, specialized training is necessary if one wishes to hold an administrative job at a high salary level. Our programs are designed to enable students to enter a graduate or specialty school to continue their education. Examples of advanced study include a graduate program in environmental science or engineering; a school of forestry, planning, or public health; a program in urban ecology or environmental geology; or even, with proper selection of electives, business or law school.

The BS degree program establishes a solid background in the biological and earth sciences, chemistry, physics, and mathematics in the first three years. In the fourth year students concentrate on advanced environmental science courses.

A combined five-year BS/MS program in environmental science is offered to students who have completed approximately 75 credit hours (five semesters) of undergraduate work, have at least a 3.0 grade point average, and are recommended by the department.

## BS, Environmental Science

### Required Courses

All students earning a bachelor's degree in environmental science must complete the core requirements of the university and the courses listed below:

EN 101	Introduction to Environmental Science
EN 102	Environmental Science Laboratory
EN 500	Environmental Geoscience
EN 502	Environmental Effects of Pollutant
BI 253-254	Biology for Science Majors I and II with Laboratory
BI 320	Ecology with Laboratory
BI 510	Environmental Health

- CH 115-116 General Chemistry I and II  
 CH 117-118 General Chemistry Laboratory I and II  
 CH 211 Quantitative Analysis with Laboratory  
 HU 300 Nature of Science  
 PH 103-104 General Physics I and II  
 with Laboratory  
 M 228 Elementary Statistics  
*Plus* 21 to 28 credit hours of biology, science, or  
 chemistry electives  
 CH 201-202 Organic Chemistry I and II, **and**  
 CH 203-204 Organic Chemistry Laboratory I and II  
 M 109 Intermediate Algebra and M 115  
 Pre-Calculus, *or* M 115 Pre-Calculus  
 and M 117 Calculus I, *or* M 117-118  
 Calculus I and II

*Plus* four electives

### BS, Marine Biology

This program is designed to prepare students to enter the rapidly expanding fields of resource management, environmental assessment and protection, biotechnology, and education related to estuarine, coastal, and marine environments. The level of experience required for an individual to contribute in these fields is not adequately satisfied by an undergraduate degree in biology or environmental science; therefore, individuals with specific, advanced, and focused training are needed. This program, with a strong, basic emphasis on the biological and chemical sciences, will prepare students for these fields.

#### Required Courses

All students majoring in marine biology must complete the core requirements of the university and the following courses:

- MR 101 Introduction to Marine Biology  
 MR 102 Seminar in Marine Biology  
 MR 200 Fundamentals of Oceanography  
 MR 260 Marine Vertebrate Zoology with  
 Laboratory  
 MR 300 Marine Ecology with Laboratory  
 MR 310 Marine Botany with Laboratory  
 MR 320 Marine Pollution

- MR 501-502 Senior Project in Marine Biology I & II  
 BI 250 Invertebrate Zoology with Laboratory  
 BI 253-254 Biology for Science Majors with  
 Laboratory I and II  
 BI 301 Microbiology with Laboratory  
 BI 320 Ecology with Laboratory  
 CH 115-116 General Chemistry I and II  
 CH 117-118 General Chemistry Laboratory I and II  
 CH 201-202 Organic Chemistry I and II  
 CH 203-204 Organic Chemistry Laboratory I and II  
 HS 102 Modern Western World  
 HS 108 History of Science *or*  
 HU 300 Nature of Science  
 M 115 Pre-Calculus  
 M 117 Calculus I  
 M 228 Elementary Statistics  
 PH 103-104 General Physics I and II with  
 Laboratory

*Plus* two of the following restricted electives:

- CH 221 Instrumental Methods with Lab  
 EN 533 Special Topics in Field Geology  
 EN 540 Introduction to Geographical  
 Information Systems  
 MR 330 Coastal Resources & Management  
 MR 331 Marine Conservation & Restoration  
 MR 410 Marine Aquaculture & Biotechnology  
 MR 420 Marine Biogeochemistry with Lab  
*Plus* one of the following:  
 BI 306 Genetics  
 BI 308 Cell Biology with Laboratory  
 BI 311 Molecular Biology with Laboratory  
 BI 461 Biochemistry with Laboratory

### Minor in Environmental Science

The minor in environmental science provides a useful background for students majoring in other areas who have concern for the environment. For example, students majoring in political science might well combine their program with a minor in environmental science. Another useful combination is an environmental science minor and a major in business administration or engineering.

For specific information concerning a minor in environmental science, please consult with the program coordinator.

## Minor in Biology

To minor in biology, students must complete the courses listed below. In some instances, an upper-level biology course can be substituted for general biology.

- BI 121-122 General and Human Biology with Laboratory I and II *or* BI 253-254 Biology for Science Majors with Laboratory I and II
- BI 261 Introduction to Biochemistry *or* BI 461 Biochemistry with Laboratory
- BI 301 Microbiology with Laboratory
- BI 308 Cell Biology with Laboratory
- BI 311 Molecular Biology with Laboratory

## Minor in Bioengineering

No rigid group of courses constitutes a minor in bioengineering. Students wishing to follow such a program should major in one aspect of engineering and take a minor (20 credit hours) in biology, or the biology major program may be combined with a minor or concentration in engineering. Students should consult with the particular engineering and biology department chairs before starting the program.

## Teaching Biology

Students interested in earning a teaching certificate in secondary education in biology may enter the graduate program at UNH. The BS in biology with a concentration in General Biology is the best choice for a major for those planning to teach at the secondary level, but other related majors are also acceptable. Please contact the Education Department for additional information.

# Department of Chemistry and Chemical Engineering

The department of chemistry and chemical engineering resides in the School of Engineering and Applied Science but offers the BA in chemistry degree program through the College of Arts and Sciences.

Please see the departmental listing in the School of Engineering and Applied Science section of the catalog for additional information, including a list of faculty members and details on other degree programs offered by the department.

## BA, Chemistry

This program is designed to provide a traditional liberal arts background with the basic requirements of a chemistry major.

### Required Courses

All students in the BA in chemistry program must complete 125 credit hours. Courses must include the university core requirements and the following:

- CH 115-116 General Chemistry I and II
- CH 117-118 General Chemistry I and II with Laboratory
- CH 201-202 Organic Chemistry I and II
- CH 203-204 Organic Chemistry I and II Laboratory
- CH 211 Quantitative Analysis with Laboratory
- CH 221 Instrumental Methods of Analysis with Laboratory
- CH 331-332 Physical Chemistry I and II
- CH 333-334 Physical Chemistry I and II Laboratory
- CH 341 Synthetic Methods in Chemistry
- CH 411 Chemical Literature
- CH 412 Seminar
- CH 501 Advanced Organic Chemistry
- CH 521 Advanced Inorganic Chemistry
- EC 133 Principles of Economics
- M 117-118 Calculus I and II
- M 203 Calculus III
- PH 150 Mechanics, Heat, and Waves with Laboratory
- PH 205 Electromagnetism and Optics with Laboratory

*Plus* 30 credit hours of electives

## BS, AS, Chemical Engineering

## BS, AS, Chemistry

## Minor in Chemistry

These programs appear in this catalog under the School of Engineering and Applied Science.

## Teaching Chemistry

Students interested in earning a teaching certificate in secondary education in chemistry may enter the graduate program at UNH. The BA or BS in chemistry is the best choice for a major for those planning to teach at the secondary level, but other related majors are also acceptable. Please contact the Education Department for additional information.

# Department of Communication

The department of communication resides in the School of Business. The BA in communication and the AS in journalism degree programs and the journalism certificate are offered through the College of Arts and Sciences. Please see the departmental listing in the School of Business section of the catalog for additional information, including a list of faculty members and details on other degree programs offered by the department.

The communication program at the university allows each student to develop interpersonal and mass communication competencies, skills, and awareness through a sequence of course offerings.

Internships are available in a number of regional businesses and nonprofit organizations and in both print and broadcast media.

More information about the bachelor's degree programs in communication is provided under the School of Business section in this catalog. Also included are course listings and information concerning communication as a minor field of study.

## The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program", which appears earlier in the catalog, or contact the

Co-op coordinator for the College of Arts and Sciences.

## BA, Communication

The University of New Haven offers a BA and a BS in communication.

The bachelor of arts degree program has a strong journalism and public relations concentration. In addition, interpersonal communication theory is emphasized, giving the student a broad background in all the elements of the communication field.

### Required Courses

All students in the BA in communication program must complete 121 credit hours. Courses must include the university core requirements and the following:

- CO 100 Human Communication
- CO 101 Fundamentals of Mass Communication
- CO 102 Writing for the Media
- CO 114 Production Fundamentals
- CO 205 Intercultural Communication
- CO 212 Television Production I
- CO 214 Elements of Film
- CO 300 Persuasive Communication
- CO 301 Communication Theory and Research
- CO 302 Social Impact of Media
- CO 306 Public Relations Systems and Practices
- CO 308 Broadcast Journalism
- CO 309 Public Relations Writing
- CO 420 Communication and the Law
- CO 500 Seminar in Communication Studies
- J 201 News Writing and Reporting
- J 311 Copy Desk

*Plus* three communication electives

*Plus* one history elective

*Plus* eight electives

## BS, Communication

The university also offers a BS in communication through the School of Business.

## Communication Certificates

The communication department offers certificates in journalism and mass communication. Students may choose to take these courses on a matriculated or non-



matriculated basis. For those who choose the nonmatriculated option, it is not necessary to apply to a degree program at the university. However, the credits earned may be applied toward the requirements for a degree program at a later date.

## Journalism Certificate

The program is designed to provide basic journalism skills in both print and broadcast media. This certificate may supplement students' experience or prepare them for other areas in their current field of work. All students are required to take 15 credit hours, including the following:

### Required Courses

- CO 102 Writing for the Media
- CO 309 Public Relations Writing
- J 201 News Writing and Reporting

*Plus* two courses from among the following:

- CO 302 Social Impact of Media
- CO 308 Broadcast Journalism
- J 202 Advanced News Writing and Reporting
- J 311 Copy Desk
- J 351 Journalistic Performance
- J 367 Interpretive and Editorial Writing

## Mass Communication Certificate

For information on the mass communication certificate, see the School of Business section of the catalog.

# Department of Dental Hygiene

Chair: Mark Kacerik, MS, RDH

Director: Sandra D'Amato-Palumbo, MPS, RDH

Assistant Professors: Sandra D'Amato-Palumbo, MPS, Quinnipiac College, RDH; Gwen Grosso, MS, University of Bridgeport, RDH; Mark Kacerik, MS, University of Bridgeport, RDH; Teal Mercer, MPH, University of Connecticut; Renee Prajer, MS, University of Bridgeport, RDH

The cornerstone of the UNH dental hygiene program is the bachelor of science degree. This program enables the student to be involved in dental hygiene coursework throughout all four years of the curriculum. The course of study integrates science prerequisites and general (core) education requirements with foundational and advanced-level dental hygiene courses. Graduates of the bachelor of science program will be prepared not only to seek employment in private dental offices but also to pursue employment in a variety of other health care settings such as dental hygiene and dental business/industry, nursing homes, centers for the developmentally disabled, hospitals, home health care agencies, correctional facilities, and community health centers. Bachelor of science degree students also have the knowledge and skills necessary to pursue education at the graduate level.

Students who wish to exit the program at the end of three years of study may earn an associate in science degree in dental hygiene. This program prepares graduates for necessary board examinations and employment primarily in the dental office setting. The associate's degree program integrates science prerequisite courses and foundational dental hygiene courses into a three-year curriculum. Graduates of the program are positioned to practice as dental hygienists and, if desired, complete the bachelor's degree by participating in one additional year of study.

In addition to the programs described above, UNH offers a dental hygiene degree completion program. This curriculum is designed for practicing dental hygienists who are graduates of associate degree programs. The degree completion program is designed to enable dental hygienists to transfer credits from an accredited dental hygiene program and utilize their academic and work experience as the basis for completing coursework leading to the bachelor of science degree.

## Admission Requirements

In addition to the general admission requirements for all prospective UNH students, it is recommended that applicants to the dental hygiene program demonstrate satisfactory performance in the sciences and mathematics. It is strongly recommended that applicants have completed both high school biology and chemistry with laboratory and two years of college pre-

paratory mathematics. An in-person or telephone interview with the department director or a faculty member is recommended; letters of recommendation supporting the student's ability to pursue a rigorous science-based curriculum and desire to contribute in the health care delivery system are strongly encouraged. Admission to the program is limited, and part-time study is available only during the first year of the curriculum. All students enrolled in the dental hygiene clinical course sequence must be full-time.

### Professional Accreditation and Licensure

The program in dental hygiene is accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the Commission on Recognition of Postsecondary Accreditation and by the United States Department of Education.

Students in the program are provided with application materials for the Dental Hygiene National Board Examination (written) and the Northeast Regional Board Examination (NERB/clinical). Both the National Board Examination and a clinical examination are required for program graduates to apply for dental hygiene licensure in Connecticut and most other states.

### BS, Dental Hygiene

Students earning a bachelor of science degree in dental hygiene must complete 126-128 credit hours. Courses must include the university's core requirements for bachelor degree students and the required courses listed below. Once students are enrolled in the dental hygiene clinical course sequence (DH 220, 240, 330, 350, 460), they must be enrolled in a full-time course of study.

#### Required Courses

CH 105	Introduction to General and Organic Chemistry with Laboratory
CS 107	Introduction to Data Processing
DH 105-110	Introduction to Dental Hygiene I and II
E 105	Composition
E 110	Composition and Literature

HS 102	The Western World in Modern Times
M 109	Intermediate Algebra <i>or</i> M 127 Finite Math
P 111	Introduction to Psychology
SO 113	Sociology
BI 121	General and Human Biology with Laboratory I
BI 215	Principles of Nutrition
DH 214	Oral Facial Structures
DH 215	Radiology
DH 220	Dental Hygiene Concepts I
E 230	Public Speaking and Group Discussion <i>or</i> CO 100 Human Communication
DH 240	Dental Hygiene Concepts II
BI 259/260	Vertebrate Anatomy and Physiology I and II with Laboratory
BI 261	Introduction to Biochemistry
BI 301	Microbiology with Laboratory
PA 308	Health Care Delivery Systems
DH 320	Pharmacology and Pain Management
DH 325	General and Oral Pathology
DH 327	Periodontology
DH 330	Dental Hygiene Concepts III
DH 342	Dental Materials
DH 350	Dental Hygiene Concepts IV
DH 423	Instructional Planning and Media
DH 438	Dental Hygiene Research
DH 455	Dental Hygiene Public Health
DH 460	Advanced Dental Hygiene Practice
DH 461	Oral Medicine
DH 462	Dental Hygiene Internship
DH 468	Dental Hygiene Senior Project

*Plus* one philosophy or literature elective; one art, music, or theatre elective; and one scientific methods elective

*Plus* two three-credit electives

### AS, Dental Hygiene

Students earning an associate in science degree in dental hygiene must complete 96-98 credit hours. Courses must include the university's core requirements for associate's degree students and the required courses listed below. Students enrolled in the dental hygiene clinical course sequence (DH 220, 240, 330,

350, 460), must be enrolled in a full-time course of study. Those students earning an associate's degree must enroll in the clinical course during the designated summer session.

### Required Courses

DH 105-110	Introduction to Dental Hygiene I and II
CH 105	Introduction to General and Organic Chemistry with Laboratory
CS 107	Introduction to Data Processing
E 105	Composition
E 110	Composition and Literature
HS 102	The Western World in Modern Times
M 109	Intermediate Algebra <i>or</i> M 127 Finite Math
P 111	Introduction to Psychology
SO 113	Sociology
BI 121	General and Human Biology with Laboratory I
BI 215	Principles of Nutrition
DH 214	Oral Facial Structures
DH 215	Radiology
DH 220	Dental Hygiene Concepts I
E 230	Public Speaking and Group Discussion <i>or</i> CO 100 Human Communication
DH 240	Dental Hygiene Concepts II
BI 259/260	Vertebrate Anatomy and Physiology I and II with Laboratory
BI 261	Introduction to Biochemistry
BI 301	Microbiology with Laboratory
DH 320	Pharmacology and Pain Management
DH 325	General and Oral Pathology
DH 327	Periodontology
DH 330	Dental Hygiene Concepts III
DH 342	Dental Materials
DH 350	Dental Hygiene Concepts IV
DH 455	Dental Hygiene Public Health
DH 460	Advanced Dental Hygiene Practice

*Plus* one art, music, or theatre elective

## Department of Economics

The department of economics resides in the School

of Business. Please see the departmental listing in the School of Business section of the catalog for information, including a list of faculty members and details on degree programs offered by the department.

### Minor in Economics

A total of 18 credit hours of work in economics is required for the minor in economics.

### Recommended Courses

EC 133-134	Principles of Economics I and II
EC 340	Microeconomic Analysis
EC 341	Macroeconomic Analysis

*Plus* 9 credits of advanced economics courses

## Department of Education

**Chair:** Shirley Wakin, PhD

**Professors:** Louise M. Soares, PhD, University of Illinois; Shirley Wakin, PhD, University of Massachusetts

**Assistant Professors:** Paulette L. Pepin, PhD, Fordham University; Judy Randi, EdD, Teachers' College of Columbia University

**Instructor:** Victoria Volonino, MEd, University of Missouri

**Lecturer:** John Ciochine, MA, Fairfield University

**Practitioner-In-Residence:** JoAnn Laskoski, MA, University of Connecticut

The Graduate Education Department prepares future elementary and secondary school teachers. The secondary school subject areas include English, Mathematics, Physics, General Science, Social Science, and Business. All students who are interested in pursuing a teaching career should contact the Education Department as soon as possible during their undergraduate career. Undergraduates may apply to be accepted into the Accelerated Entry Process. This process allows qualified undergraduates to earn a Bachelor's degree, a Master's degree, and CT certification in five years.

Future *secondary teachers* will be advised to have a

strong undergraduate major in the subject they wish to teach or in a closely related field. Future *elementary school teachers* will be advised to major in an academic subject with a broad range of electives that cover the academic subjects traditionally taught in elementary schools (e.g., English, Mathematics, History, and Science).

Students interested in the accelerated entry process will take their first Education course during their junior year. This course, ED 350, Introduction to Education, will provide students with an overview of the field of Education and will require a field component. This field component will place the undergraduate in a local school to work with school children under the direction of a classroom teacher. This experience will give undergraduates opportunities to observe professional teachers in their own classrooms.

Accelerated Entry Students may then continue with graduate Education courses in the spring trimester of their senior year (6 weeks before they complete their undergraduate degree). They will attend class one night per week while they are completing their bachelor's degree. Students will be required to take courses during the summer and, if they choose, will begin an internship the following September. This internship pays the tuition for the master's degree (but does not pay for student teaching). Students will finish all coursework and student teaching by July, approximately 13 months after receiving an undergraduate degree. Successful completion of all requirements will result in UNH's recommendation to the State Department of Education for CT certification. Once certified, students can apply to other states for their certification.

#### Entrance Requirements to the Accelerated Entry Process of the Graduate Education Department

Undergraduates must apply to the Education Department at the beginning of their junior year. Students must have:

- 3.0 GPA
- Passed Praxis I or have a total of 1100 on SATs
- Permission from their Department chair
- Passed the Writing Proficiency Exam by the end of their junior year.

## Department of English

**Chair:** Donald M. Smith, PhD

**Director of Freshman English:** Richard J. Farrell, MPhil

**Professors Emeriti:** Paul Marx, PhD, New York University; Douglas Robillard, PhD, Wayne State University

**Professors:** Srilekha Bell, PhD, University of Wisconsin; Robert D. Greenberg, PhD, Yale University; David E.E. Sloane, PhD., Duke University; Donald M. Smith, PhD, New York University; Brenda R. Williams, PhD, Washington University

**Instructor:** Stephen A. Listro, MS, Southern Connecticut State University, MFA, University of Miami

**Senior Lecturer:** Wesley J. Davis, MA, Southern Connecticut State University

**Lecturers:** Richard J. Farrell, MA, University of Virginia, MPhil, Yale University; Marianna M. Vieira, MS, University of Bridgeport, MA, State University of New York at Albany

An English major may choose the concentration in either literature or writing. Students in the literature concentration develop their analytic skills and critical ability by reading widely varied works in the English language: William Shakespeare to Walt Whitman, Jane Austen to Gwendolyn Brooks. The study of English and American literature provides a depth and breadth of liberal education as it also improves one's thinking, writing, and speaking. A major in literature is looked upon very favorably by admissions officers of law, medical, and dental schools. It is good preparation for graduate work in such fields as business, education, urban planning, social work, and public health. Employers in many areas of business, industry, and government seek college graduates with broad knowledge and the ability to communicate effectively.

In the writing concentration, students practice a variety of written language from the expository essay to business and technological applications to more cre-

ative forms. Some specific areas in which writing skills have immediate practical worth are journalism, advertising, public relations, sales training, and promotion. Many companies hire writers and editors for company periodicals and reports, equipment handbooks, and service manuals. Publishing houses provide employment, of many kinds and on many levels, for persons skilled in writing. For writers of proven ability, there are numerous opportunities to freelance for trade journals, newspapers, magazines, and other publications. An English major may also prepare for teacher certification at the elementary or secondary level.

### Foreign Language Study

While study of a foreign language is not required, it is strongly recommended that the student who majors in English know at least one foreign language. Knowledge of a foreign language makes one more sensitive to the use and meaning of words in one's own language. Furthermore, knowledge of a foreign language widens one's perspective and deepens one's understanding through the insights gained into another culture. Students who are considering graduate study certainly should be competent in at least one foreign language.

### The Literary Club

The English Department sponsors the university's Literary Club, which is open to all UNH students. Its aim is to further interest in the literary arts. The club's primary activity is publishing *The Elm City Review*, a journal of students' art and writing.

### Transfer Credit for Writing Courses

The English department automatically will award credit for freshman writing courses taken at an accredited American college or university if the courses are essentially the same as E 105 or E 110 and if the student received at least a "C." If the courses were taken at a foreign college, the student will have to demonstrate his or her proficiency in writing before credit will be awarded. In the latter case, the student should make an appointment with the secretary of the English department for the writing of a one-hour composition.

### The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the Co-op coordinator for the College of Arts and Sciences.

### BA, English

Thirty credit hours in English beyond the freshman level, with the restrictions indicated below, are required for a major in English. All English majors must take the university core curriculum and the following courses:

E 211 Early British Writers

E 213 Early American Writers

*Plus* HS 101 Foundations of the Western World  
and HS 353 Modern Britain

*Plus* 17 free electives

### Concentration in Literature

The literature concentration requires eight additional literature courses, at least one from Category I and at least two from each of the other three categories of upper-level English courses:

<u>Category I</u>	<u>Category II</u>	<u>Category III</u>	<u>Category IV</u>
E 201	E 202	E 217	E 214
E 290	E 212	E 281	E 218
E 323	E 353	E 392	E 260
E 341	E 356	E 395	E 275
E 371	E 390	E 477	E 394
	E 406-409		E 478

### Concentration in Writing

The writing concentration requires two additional literature courses, each from a different category of the above list, and six of the following writing courses:

E 220 Writing for Business and Industry

E 225 Technical Writing and Presentation

E 251 Narrative Nonfiction

E 267 Creative Writing I

E 268 Creative Writing II

- E 270 Advanced Essay Workshop  
E 480 Internship

### Teaching Language Arts

Students interested in earning a teaching certificate secondary education in language arts may enter the graduate program at UNH. The BA in English is the best choice for a major, but other majors are also acceptable. Please contact the education department for additional information.

### Minor in English

18 credit hours in literature and/or writing courses, selected by the student in consultation with the department advisor are required for the minor.

### Minor in Black Studies

The minor in Black Studies is an interdisciplinary program offered in the College of Arts and Sciences and housed in the Department of English. The minor consists of courses in English, history, political science, sociology, and world music. A student may minor in this program by completing 18 credit hours of courses selected from the following:

- E 217 African-American Literature I
- E 218 African-American Literature II
- HS 120 History of Blacks in the United States
- MU 112 Introduction to World Music
- MU 550 Studies in Urban Ethnic Music
- PS 205 The Politics of the Black Movement  
in America
- SO 221 Cultural Anthropology
- SO 315 Social Change
- SO 400 Minority Group Relations

Additional information is available from Dr. Donald M. Smith, chair of the English department.

## Department of History

Chair: Thomas Katsaros, PhD

Professors: Joseph B. Chepaitis, PhD, Georgetown University; Robert Glen, PhD, University of California, Berkeley; Thomas Katsaros, PhD, New York University

Associate Professor: Edmund N. Todd, PhD, University of Pennsylvania

History provides a framework for a liberal education. The study of human experience—failures as well as achievements—is the core of historical study. It gives insight into related disciplines in the humanities and social sciences and broadens the perspective of students in professional fields of business and engineering by revealing the complexity and interrelatedness of human experience.

History is also excellent preparation for a variety of careers in business, government, law, journalism, foreign service, and many other areas. Because of the great variety of professional programs at the University of New Haven, the student interested in history can combine this interest with highly technical professional training.

The department strives to meet its objectives by teaching not only content but critical and writing skills through reading, class presentations and discussion, research, and writing. Historical methodology is stressed in all advanced courses, and students take the history seminar in their senior year to sharpen their critical and analytic skills.

### Phi Alpha Theta

The University of New Haven has a chapter of the international honor society in history, Phi Alpha Theta, which is open to those students who have had 12 hours of history or more and have maintained an average of better than 3.0 in history courses and better than 2.9 overall. The university chapter of Phi Alpha Theta provides students and faculty with a social and intellectual experience beyond classroom work, offering films, speakers and roundtable discussions. Students not eligible for membership in the society are welcome to participate in all of the chapter's activities.

## BA, History

All students in the BA in history program must complete 122 credit hours. These courses must include the university core requirements and 36 credit hours of history courses, including those listed below. The balance of the program can be arranged in consultation with an advisor.

### Required Courses

HS 101 Foundations of the Western World  
 HS 102 The Western World in Modern Times

*Plus* either HS 211 United States History to 1865 and HS 212 United States History Since 1865 *or* HS 110 American History Since 1607 and any other United States history course excluding HS 211/212

HS 260 Modern Asia  
 HS 491 Senior Seminar

*Plus* one upper-division Asian history elective, two upper-division courses in European history, and one upper-division course in American history.

*Plus* two electives in history

## Minor in History

A total of 18 credit hours in history is required for a minor in history. These courses must include the two courses listed below and may include any other combination of four courses in history that supports the student's interests and needs.

### Required Courses

HS 101 Foundations of the Western World  
 HS 102 The Western World in Modern Times

# Department of Mathematics

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Chair: W. Thurmon Whitley, PhD

Coordinator of Pre-Calculus Mathematics:  
 Ali A. Jafarian, PhD

**Professors Emeriti:** Donald Fridshal, PhD, University of Connecticut; Joseph M. Gangler, PhD, Columbia University; Bruce Tyndall, MS, University of Iowa

**Professors:** Ali A. Jafarian, PhD, University of Toronto; Erik Rosenthal, PhD, University of California, Berkeley; Baldev K. Sachdeva, PhD, Pennsylvania State University; Ramesh Sharma, PhD, Banaras Hindu University, PhD, University of Windsor; James W. Uebelacker, PhD, Syracuse University; Shirley Wakin, PhD, University of Massachusetts; W. Thurmon Whitley, PhD, Virginia Polytechnic Institute and State University.

**Associate Professor:** Marc H. Mehlman, PhD, University of California, Riverside

The study of mathematics opens the door to a wide variety of career opportunities and academic pursuits. Mathematics is a major part of the framework of modern science and technology. Persons with strong mathematics backgrounds qualify for stimulating occupations in an ever-increasing number of fields, from private industry to government service.

The mathematics department offers a BA in mathematics. In addition, concentrations in computer science, statistics, or natural sciences leading to a BS degree are offered. Students who do not take the computer science concentration are encouraged to consider a minor in computer science to be better prepared for our technological society. Students majoring in other fields may minor in mathematics.

Mathematics students have direct access to university computing facilities via computer laboratories throughout the campus. Several modern computing languages are available. The most modern and up-to-date data processing packages as well as mathematical and statistical software packages have been installed and are utilized in instruction.

## Student Awards

Each year, the mathematics department awards to outstanding mathematics students free honorary memberships in the Mathematical Association of America and the Society for Industrial and Applied Mathematics.

In addition, the department annually awards the Bert Ross Mathematics Prize to the outstanding senior mathematics major. This award consists of a set of mathematics books and a certificate of achievement.

## The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the Co-op coordinator for the College of Arts and Sciences.

## Basic Courses Required for All Mathematics Majors

All students earning a bachelor's degree in mathematics must complete the university core requirements, the course requirements for their particular math program, and the basic math courses listed below:

- M 117-118 Calculus I and II
- M 203 Calculus III
- M 204 Differential Equations
- M 305 Discrete Structures
- M 308 Introduction to Real Analysis
- M 311 Linear Algebra
- M 321 Modern Algebra
- M 331 Combinatorics, *or*  
M 361 Mathematical Modeling\*
- M 338 Numerical Analysis
- M 371 Probability and Statistics I
- M 472 Probability and Statistics II
- M 491 Department Seminar

\*both are required for BS, Applied Mathematics concentration

## BA, Mathematics

This program is designed to provide students with a broad overview of mathematics and its applications, especially for students who wish to study pure mathematics or for those whose career objectives include mathematics education or the application of mathematics to such fields as business, economics, or the social sciences.

Students earning a BA with a mathematics major must complete a minimum of 124 credit hours. These courses must include the basic courses required for all mathematics majors, listed above, the university core requirements listed earlier, and the courses listed below:

### Required Courses

- CS 110 Introduction to C Programming I
- CS 210 Java Programming
- CS 226 Data Structures Using Collections
- PH 150 Mechanics, Heat, and Waves with Laboratory
- Plus* 6 credit hours of mathematics compatible with area of concentration, M 300 series or above

## Teaching Mathematics

Students interested in earning a teaching certificate in secondary education in mathematics may enter the graduate program at UNH. The BA in mathematics is the best choice for a major, but other majors are also acceptable. Please contact the Education Department for additional information.

## BS, Mathematics

Students interested in applied mathematics should pursue the BS degree. Within this degree program, the concentrations of computer science, natural sciences, and statistics are offered.

Students earning a BS with a major in mathematics must complete a minimum of 124 credit hours. These courses must include the basic courses required for all mathematics majors, listed above, the university core requirements listed earlier, and the courses listed below for one of the three concentrations.

## Concentration in Computer Science

This program is primarily for students interested in using computing techniques to solve mathematical problems in a wide variety of disciplines. In addition to the mathematics requirements, students take eight or nine courses in computer science designed to provide training in the structure of computer languages, computing machines, and computing systems.



Students in this program must complete a minimum of 124 credit hours. These courses must include the basic courses required for all mathematics majors, listed above, the university core requirements listed earlier, and the courses listed below:

#### Required Courses

CS 110 Introduction to C Programming I  
 CS 210 Java Programming  
 CS 226 Data Structures Using Collections  
 CS 326 Data Structures and Algorithms II  
 PH 150 Mechanics, Heat, and Waves with  
 Laboratory

Restricted CS or Math Elective

*Plus* 9-12 credit hours in computer science; 9-12 credit hours in mathematics, chemistry, or physics (the number of credits here depends on specific upper-level electives chosen)

#### Concentration in Applied Mathematics

This program is primarily for students whose mathematical interests are in the application of mathematics to such fields as physics, chemistry, operations research, and engineering. In addition to the courses listed below, students take five to seven courses in a single discipline of the natural sciences or engineering.

Students in this program must complete a minimum of 125-127 credit hours. These courses must include the basic courses required for all mathematics majors, listed above, the university core requirements listed earlier, and the courses listed below:

#### Required Courses

CS 110 Introduction to C Programming I  
 CS 210 Java Programming  
 CS 226 Data Structures Using Collections  
 PH 150 Mechanics, Heat, and Waves with  
 Laboratory  
 PH 205 Electromagnetism and Optics  
 with Laboratory

*Two* course science sequence

*Plus* 6 credit hours of mathematics compatible with area of concentration, M 300 series or above

#### Concentration in Statistics

This program is designed to provide students with a background in mathematical statistics. The mathematics courses required are basic courses necessary to enable a person to gain employment as a statistician in business or government or to pursue graduate study in statistics. These courses are also necessary for students wishing to pursue careers in the actuarial field.

Students in this program must complete a minimum of 124 credit hours. These courses include the basic courses required for all mathematics courses, listed above, the university core requirements listed earlier, and the courses listed below:

#### Required Courses

M 473 Advanced Statistical Inference  
 M 481-482 Linear Models I and II  
 CS 110 Introduction to C Programming I  
 CS 210 Java Programming  
 CS 226 Data Structures Using Collections  
 PH 150 Mechanics, Heat, and Waves  
 with Laboratory

*Plus* 12 credit hours in science, computer science, or mathematics

#### Minor in Mathematics

Students may minor in mathematics by completing six mathematics courses approved by the department. Those students contemplating a minor in mathematics should consult with the department as early as possible in their academic careers as to the choice and availability of courses

#### Required Courses

M 118 Calculus II  
 M 203 Calculus III  
 M 311 Linear Algebra

*Plus* 9 credit hours of upper-level mathematics courses which complement the major area of interest

#### Recommended Courses

M 204 Differential Equations  
 Any course in the M 300 series or above

# Nutrition and Dietetics

**Program Director:** Georgia Chavent, Assistant Professor, MS, Columbia University, RD, Medical College of Virginia

## BS, Nutrition and Dietetics

Nutrition and Dietetics professionals are well equipped to enter the health and wellness field. Managing the delivery of food and providing knowledge of healthy eating to hospital patients, physicians, athletes, executive chefs, food service managers, food scientists, or consumers of all ages are the essence of the dietetics field and offer exciting challenges for students to prepare themselves for varied and growing career opportunities.

The University of New Haven program in nutrition and dietetics is designed for the student seeking a career as a nutritionist or registered dietitian (RD). The program includes management, food, and clinical coursework that is granted approval status by the Commission on Accreditation for Dietetics Education (CADE) of the American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-5400. Students earning credits toward a dietetics degree may apply for Associate Membership in the American Dietetic Association.

Graduates of our program are providing food and nutrition services in their own private practices and to health care facilities such as teaching hospitals and extended-care facilities, community nutrition programs, child care centers, school lunch programs, nutrition teachers, corporate food companies, physicians' offices, and specialized programs for eating behavior and weight control.

Students who have earned a bachelor's or graduate degree in another discipline may apply credits toward a nutrition and dietetics degree or be eligible to receive a Verification Statement as nonmatriculated students authorizing their entry into a supervised practice program once they have completed the required dietetics courses. A minimum of six to eight courses must be taken at the University of New Haven.

The undergraduate Nutrition and Dietetics pro-

gram is also associated with the master of science program in human nutrition.

## Required Courses

A minimum total of 120 credit hours, including the university core curriculum, must be completed for the bachelor of science degree in nutrition and dietetics. The program includes the following specialty courses:

A	101	Introduction to Financial Accounting
BI	121-122	General and Human Biology with Laboratory I and II
BI	215	Principles of Nutrition
BI	259-260	Vertebrate Anatomy and Physiology with Laboratory I and II
BI	261	Introduction to Biochemistry
BI	301	Microbiology with Laboratory
BI	315	Nutrition and Disease
CH	105	Introduction to General and Organic Chemistry with Laboratory
CO	100	Human Communication
DI	150	Sports Nutrition(optional)
DI	200	Introduction to Food Science and Preparation
DI	214	Menu Planning
DI	216	Safety and Sanitation
DI	326	Principles of Dietetics Management
DI	330	Dietetic Practice in Today's Society
DI	342	Healthy Food Preparation
DI	405	Community and Institutional Nutrition
DI	450-455	Special Topics
DI	597	Dietetic Practicum(optional)
E	220	Writing for Business and Industry <i>or</i> E 230 Public Speaking and Group Discussion
MK	300	Principles of Marketing
PA	308	Health Care Delivery Systems

*Plus* one restricted elective

*Plus* five electives

## Minor in Nutrition

The minor in nutrition is highly desirable in today's health-conscious marketplace and offers an opportunity for students to study personal nutrition, healthy eating

for disease prevention or sports performance, food science, or cultural cuisine while strengthening their food preparation skills in the kitchen laboratory.

A total of 19 semester hours of nutrition and related coursework must be earned by a student to declare a minor in nutrition. This minor course of study has been approved by the Connecticut Division of Higher Education and includes the following three required courses:

BI 121 General and Human Biology with Laboratory I

BI 215 Principles of Nutrition

DI 342 Healthy Food Preparation

*Plus* any three of the following courses (or others) chosen in consultation with the Director of the Nutrition and Dietetics Program:

DI 150 Sports Nutrition

DI 200 Introduction to Food Science and Preparation  
*or* CA 200 Classical Techniques/Culinary Arts

DI 214 Menu Planning

DI 216 Safety and Sanitation

CA 304 Volume Food Production and Service

CA 307 Cultural Understanding of Food and Cuisine

BI 315 Nutrition and Disease

## Department of Philosophy

**Chair:** Joel H. Marks, PhD

**Professor:** Joel H. Marks,  
PhD, University of Connecticut

**Practitioner-in Residence:** David Brubaker, PhD,  
University of Illinois

The main attraction of philosophy always has been and always will be the intrinsic fascination of thinking about the “perennial questions.” Is there purpose in the universe or only random causation? Does human existence have meaning, or is it absurd? Are moral obligations real, or are they just social constructs? Is the mind anything more than the functioning of the brain? Are we capable of acting freely, or do we behave as nature dictates? Is reason the slave of the passions? Is it better to be Socrates dissatisfied than a fool satisfied?

But studying in this field also helps a person to develop skills that have wide practical application. Philosophy students practice logical thinking, analytical reading and listening, and precise writing and speaking. They also practice “thinking outside the box” and, hence, cultivate creativity, even humor, because their occupation is none other than the questioning of fundamental assumptions in all areas. Thus, philosophy has served as a useful background for people who went on to successful careers in diverse professions, such as computer systems programming, music, management, insurance, investment, marketing, film-making, publishing, real estate, technical writing, literary writing, government, human services, journalism, law, medicine, teaching, research... and stand-up comedy!

Philosophy courses at UNH examine the major world traditions of thought from ancient times to the present. Emphasis is placed on ethical inquiry, including the application of ethical thinking to our daily and professional lives.

### **Minor in Philosophy**

A student in this program must complete 15 credit hours, as follows:

**Required Courses**

PL 210 Logic

PL 222 Ethics

*Plus* at least three additional philosophy courses chosen in consultation with a philosophy advisor.

## Department of Physics

**Chair:** W. Thurmon Whitley, PhD

**Assistant Professors:** Matthew Griffiths, PhD,  
University of Edinburgh; Saion Sinha, PhD,  
University of Kentucky

Physics is concerned with the most basic aspects of our knowledge of the natural world. It is a subject in which experiment and theory evolve constantly to provide a precise and simple description of the physical phenomena around us in terms of a relatively small

number of physical laws and theories.

As a fundamental science, physics is at the root of almost all branches of science and technology. It has provided the microscopic basis for chemistry, has stimulated important developments in mathematics, is the basis of most branches of engineering and, during the past decade, has proved to be increasingly valuable to the life sciences.

Consequently, a basic knowledge of physics is excellent preparation for diverse careers: research in university and government laboratories, industrial research and development, applied science and engineering, biological and medical sciences, research in environmental problems, and teaching at all levels from the elementary school to the university. It also prepares students for careers in non-physics-related fields such as philosophy, business, and law.

The university does not currently offer a bachelor's degree program in physics. The department does, however, offer a minor in physics suitable for majors in any of the university's schools and departments. A physics minor is particularly valuable for students in chemistry, environmental science, biology, forensic science, fire science, or occupational safety as well as for any student planning to teach any science at the elementary or secondary level.

The physics minor requires a total of 20 credit hours of work in physics. Students should plan their minor in consultation with a faculty advisor in the physics department.

#### Required Courses for Physics Minor

- PH 150 Mechanics, Heat, and Waves with Laboratory
- PH 205 Electromagnetism and Optics with Laboratory
- PH 211 Modern Physics

*Plus* 9 credit hours of selected physics courses depending on the career interests of the student

## Department of Political Science

**Chair:** Natalie J. Ferringer, PhD

**Professors:** Lawrence J. DeNardis, PhD, New York University; Caroline A. Dinegar, PhD, Columbia University; James W. Dull, PhD, Columbia University; Natalie J. Ferringer, PhD, University of Virginia; Joshua H. Sandman, PhD, New York University

A major in political science provides the student with a foundation for a career in government on the local, state, national, and international levels; for a career in law; for graduate school programs in political science, international relations, and public policy; and for careers in the areas of campaign management, communication, public relations, and business. All political science and prelaw majors or minors should discuss career goals and educational objectives with a department advisor within one month of entrance into the program.

Further, advice on the Law School Admissions Test (LSAT) and the Graduate Record Examination (GRE) preparation courses, which our prelaw and graduate school-oriented students are urged to take, is available through the department.

Prelaw majors and minors in the department of political science have been especially successful in gaining entrance to law schools throughout the country.

The political science faculty grants the Rollin G. Osterweis Award for Excellence in Political Science to an outstanding political science student.

### BA, Political Science

All students in the BA in political science program must complete 121 credit hours. These courses must include the university core requirements and 48 credit hours of political science courses, including those listed below:

#### Required Courses

- PS 121 American Government and Politics
- PS 122 State and Local Government and Politics

- PS 241 International Relations  
 PS 243 International Law and Organization

*Plus* one of the following:

- PS 281, 282, 283, 285 Comparative  
 Political Systems

*Plus* one of the following:

- PS 304, 308, 309 Political Parties, Legislative Process,  
 The American Presidency

- PS 332 Constitutional Law

- PS 461 Political Theory: Ancient and Medieval

- PS 462 Political Theory: Modern and Contemporary

- PS 499 Senior Seminar I

*Plus* 18-21 hours of political science electives to be  
 chosen with the student's departmental advisor

### Minor in Political Science

The Department of Political Science offers several course clusters for students from other disciplines who wish to enhance their degree programs. The minor consists of 18 credit hours of political science courses, chosen with a departmental advisor. Several three-course clusters are suggested below for inclusion in the minor to address particular interests. In each case, nine additional credit hours are to be chosen in consultation with a departmental advisor.

#### American Government

- PS 121 American Government and Politics  
 PS 122 State and Local Government and Politics  
 PS 332 Constitutional Law

#### International Relations

- PS 241 International Relations  
 PS 243 International Law and Organization  
 PS 281-285 Comparative Political Systems  
 (at least one)

#### Legal Studies

- PS 230 Anglo-American Jurisprudence  
 PS 231 Judicial Behavior  
 PS 332 Constitutional Law

### General Political Science

Students whose needs are best served by a mixture of political science courses may construct an individualized minor in consultation with a departmental advisor.

One additional minor cluster is offered through the Institute of Law and Public Affairs as follows:

#### Certification in Public Policy

##### (Campaign Management)

A certificate in public policy is issued to students who complete 18 credit hours of courses in areas of public affairs designed to serve the student's intellectual and professional needs. An example is the program in campaign management.

#### Required Courses

- PS 121 American Government and Politics

*Plus* five of the following:

- PS 224 Public Attitudes and Public Policy  
 PS 340 Campaign Management: Procedures  
 and Operations  
 PS 341 Campaign Management: Structure  
 and Organization  
 PS 344 Campaign Management: Survey Research,  
 Polling, Computers  
 PS 346 Campaign Management: Financing  
 and Election Laws  
 PS 450 Campaign Management: Internship

Additional related elective courses may be selected with the approval of a departmental advisor

## Department of Psychology

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**Chair:** John H. Mace, PhD.

**Professors:** Robert J. Hoffnung, PhD, University of Cincinnati; Arnold Hyman, PhD, University of Cincinnati; Michael Morris, PhD, Boston College; Gordon R. Simerson, PhD, Wayne State University; Michael W. York, PhD, University of Maryland

**Assistant Professors:** Tara L'Heureux-Barratt, PhD, University of Connecticut; John H. Mace, PhD, City University of New York; Stuart D. Sidle, PhD, DePaul University;

**Practitioners-In-Residence:** Dennis McGough, PhD, Union Institute in Cincinnati; Danielle I. Moreggi, PhD, Pacific

Psychology faces the questions that are of most immediate concern to the individual: problems such as personal identity, the social context, normalcy versus deviance, and behavior change. As a science, psychology is devoted to the understanding, prediction, and control of behavior.

Our dedication to these goals requires that we study behavior from a number of viewpoints—developmental, social, physiological, abnormal—each fascinating in its own right. The student's attention is drawn also to the many settings in which behavior occurs, from the family to the laboratory, from the clinic to the marketplace. This great diversity ensures that the study of psychology will interrelate well with other courses in the humanities and sciences.

The undergraduate program in the department of psychology combines basic science and applications to prepare students for further professional training in psychology or for careers in human services delivery, law, education, business, and industry.

The program features a specialty concentration in community/clinical psychology for those students who have well-defined professional goals. The general psychology concentration permits students to tailor their preparation toward other specialty areas. Psychology majors are encouraged to broaden their preparation by taking courses or minors in sociology, political science, social welfare, management, computer science, criminal justice, mathematics, and biology.

The psychology major develops skills in design and analysis of research and effective communication through the study of statistics, experimental methods, psychological measurement, and psychological theory. Through involvement with behavior therapy and community psychology field work, the student can confront behavior problems in a more direct, practical fashion. The department feels that it is only through a

thorough grounding in basic skills and principles that students can effectively realize their goals.

The psychology program benefits from a psychology laboratory building on the main campus. The laboratory contains facilities for student and faculty research with human subjects. Specialized apparatus permits the study of human and animal learning, sensory capacities, social processes, and biofeedback control.

The University of New Haven also offers the master of arts degree in community psychology and industrial/organizational psychology as well as a graduate certificate in applications of psychology. For descriptions of these programs, see the Graduate School catalog.

## Psychology Club

Students in psychology have the opportunity to participate in the Psychology Club. Its purpose is to provide opportunities both to socialize and to develop students' interests in the science and profession of psychology. Throughout the year, the club sponsors guest lecturers and a variety of field trips. All students are welcome to join.

## Psi Chi Honor Society

Membership in the university chapter of Psi Chi, the national honor society, is open to students in the top 35 percent of their class who have completed at least nine credit hours of psychology with grades of B or better and who are making the study of psychology one of their major interests.

Graduating seniors also may nominate themselves for the annually-awarded McGough psychology prize.

## The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the Co-op coordinator for the

College of Arts and Sciences.

## BA, Psychology

The BA in psychology program requires the completion of 120 credits, 43 of which are required to complete the major.

### Required Courses

- P 111 Introduction to Psychology
- P 301 Statistics for the Behavioral Sciences
- P 305 Experimental Methods in Psychology
- P 306 Psychology Laboratory
- P 315 Human and Animal Learning
- P 341 Psychological Theory
- P 361 Behavioral Neuroscience

The required courses comprise 22 credit hours of the 43 required for the major. To complete the major, students must complete 6 credit hours of psychology restricted electives and one of the two 15-credit-hour concentrations described below.

The psychology restricted electives are selected by the student in consultation with the academic advisor. Suggested electives for the community/clinical concentration are P 316, P 321, P 331, P332, P 351, and P 370.

Psychology majors are required to take a number of courses in other departments, some of which satisfy university core curriculum requirements: BI 121 and BI 122 General and Human Biology I and II; M 127 Finite Mathematics; SO 113 Sociology; one literature and one philosophy elective, one of which must be from the core curriculum approved course list.

It should be noted that M 127, P 301, and P 305 constitute a sequence of courses incorporating computer use. Those courses satisfy the core curriculum computer literacy requirement and must be taken in that order.

### Concentration in Community-Clinical Psychology

- P 216 Psychology of Human Development
- P 330 Introduction to Community Psychology
- P 336 Abnormal Psychology

- P 350 Human Assessment
- P 375 Foundations of Clinical/Counseling Psychology

### Concentration in General Psychology

The general psychology concentration consists of 15 credit hours of psychology electives beyond the required courses.

### Minor in Psychology

Psychology, perhaps more than any other subject, relates closely to many other disciplines. A minor in psychology prepares you for graduate study in the field and can add another dimension to your studies in other programs at the university. A total of six courses is required for a minor in psychology.

### Required Courses

- P 111 Introduction to Psychology
- P 301 Statistics for the Behavioral Sciences
- P 305 Experimental Methods in Psychology

*Plus* 9 additional credits of psychology electives.

Exceptions to the requirements above can be made for students whose major programs contain required courses that are equivalent to P 301 and P 305 (such as CJ 251 and CJ 250). Such students may be permitted to substitute advanced psychology courses for P 301 and P 305. Exemptions will be granted on a case-by-case basis by the chairperson of the Psychology Department.

## Sociology

**Coordinator:** Alfred Bradshaw, PhD

**Associate Professor:** Alfred Bradshaw, PhD,  
Syracuse University

Sociology is the study of social life and the social causes and consequences of human behavior. Sociology's subject matter ranges from analysis of families, corporations, cities, and sports to that of sexuality, death, race, gender, and ethnicity as well as the impact of demographic and environmental policies and other social phenomena. The sociological perspective is

empirically grounded and sufficiently broad to be relevant to those considering careers in related fields such as research, governmental service, social work, personnel management, advertising, law, medicine, journalism, social gerontology, and hospitality and tourism.

The University of New Haven does not currently offer a major in sociology. For those students wishing to satisfy core or elective requirements, or for students who may wish to select sociology or social welfare as a minor, a selection of courses is offered.

### Minor in Sociology

A minimum of 18 semester hours is required for the minor in sociology. To complete the minor, six courses are required. Three of the courses are specified. They are:

#### Required Courses

SO 113 Sociology

*One of the following:*

SO 250 Research Methods

CJ 250 Scientific Methods in Human Services

P 305 Experimental Methods in Psychology

*One of the following:*

P 301 Statistics for Behavioral Sciences

M 228 Elementary Statistics

CJ 251 Quantitative Applications in Human Services

The remaining three courses must be sociology electives that meet with the approval of the Sociology chairperson.

## Department of Visual and Performing Arts

**Chair:** Guillermo E. Mager, PhD

**Professor Emeritus:** Elizabeth J. Moffitt, MA,  
Hunter College

**Professors:** Ralf E. Carriuolo, PhD, Wesleyan University; Michael G. Kaloyanides, PhD, Wesleyan University

**Associate Professor:** Guillermo E. Mager, PhD, New York University

**Assistant Professors:** John Arabolos, MA, Pratt Institute of Design; Nelson Bogart, JD, Benjamin Cardozo School of Law; Albert G. Celotto, M.M., Indiana University; Bernard J. Keilty, MA, Georgetown University; Christy A. Somerville, MA, California State University-Long Beach

**Instructor:** Todd Jokl, MA, University of Connecticut

**Practitioner-in-Residence:** Richard Blakin, Recording Studio Manager

## Visual Arts

**Coordinator:** Christy A. Sommerville, MA

Study of the visual arts provides an opportunity for self-realization and gives the individual a perception of his or her relationship to society. Foundational courses in the basics of two- and three-dimensional design, color, and drawing, plus work in such major disciplines as painting, sculpture, and the use of computers as a design tool, provide the student with the necessary vocabulary for effective visual communication.

Knowledge of the development of art throughout human cultural evolution from the cave era to present day is provided through studies in art history and the contemporary art scene. Thus, equipped with a working vocabulary of visual form and a sense of art history, students progress toward the goal of making a mature visual statement in their chosen fields.

University of New Haven art programs provide preparation for graduate study or career opportunities in fields related to art, graphic design, interior design, and architecture.

Students in all BA art programs listed below must complete at least 121 credit hours. These courses must include the core requirements for the university and the required courses as listed for each program.

### The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the



catalog, or contact the Co-op coordinator for the College of Arts and Sciences.

#### Basic Courses Required for Art Majors, BA

AT 105-106	Basic Drawing I and II
AT 201	Painting I
AT 211-212	Basic Design I and II
AT 213	Color
AT 231-232	History of Art I and II
AT 401-402	Studio Seminar I and II

#### Basic Courses Required for Art Majors, AS

AT 211-212	Basic Design I and II
AT 213	Color

### BA, Art

This program is designed to assist students in discovering their potential for creative expression in the plastic arts and the development of a personal idiom in disciplines of their own choosing including painting, sculpture, drawing, printmaking, etc. Acquisition of an effective visual vocabulary is promoted by foundational courses in two- and three-dimensional design, color, and drawing. Art historical studies provide perspective on art forms of the past.

The program prepares students for graduate study in art as well as for career opportunities in a broad spectrum of art and art-related fields.

#### Required Courses

Basic courses required for art majors, BA, are the following:

AT 101-102	Introduction to Studio Art I and II
AT 202	Painting II
AT 205	Ceramics I
AT 209	Photography I
AT 302	Figure Drawing
AT 304-305	Sculpture I and II
AT 315	Printmaking

*Plus* one art history elective and two art electives.

*Plus* seven electives

### BA, Graphic Design

Graphic design, the art of visual communication through words and pictures, is an expanding discipline in current society. Posters, publications, identity systems, graphs, diagrams, information design, signage, and exhibits are components of the visual environment in which we live. The graphic designer's duty is to bring clarity and visual aesthetics to communication through an understanding of theory, design practice, and technology.

The introductory courses in the graphic design program concentrate on basic design vocabulary, composition, color perception, drawing, introduction to the use of computers as a design tool, and photography. The junior and senior year curriculum focuses on typographic studies, illustration, critical analysis, problem-solving methodology, advanced computer projects and complex applied design projects, preparing the students for graphic design positions in design studios, corporations, and agencies, as well as for graduate studies in the field.

#### Required Courses

Basic courses required for art majors, BA, are the following:

AT 122	Graphic Design Production
AT 203-204	Graphic Design I and II
AT 209	Photography I
AT 221-222	Typography I and II
AT 309	Photographic Design
AT 315	Printmaking
AT 322	Illustration
AT 401-402	Studio Seminar I and II
AT 403-412	Selected Topics (one course)
AT 599	Independent Study (Graphic Design)
MK 307	Advertising and Promotion

*Plus* a course in computer design and a senior project

*Plus* five electives

### BA, Interior Design

Studies in the interior design programs are organized to focus on the technology of a built environment, programming, and three-dimensional composition. Students explore the relationship between interior

designers and their clients, the interaction between designers and architects, and methods of communication between designers and fabricators. In addition to interior design problems, students are given the opportunity to develop their studio art skills, CAD (computer-aided design) and other computer skills, and their presentation techniques. Core coursework includes architectural drawing, building construction, color theory, history of interior design, and textile design.

### Required Courses

Basic courses required for art majors, BA, are the following:

AT 216	Architectural Drawing
AT 233	History of Architecture and Interior Design
AT 302	Figure Drawing
AT 304	Sculpture I
AT 317	Interior Design
AT 322	Illustration
AT 331	Contemporary Art
AT 401-402	Studio Seminar I and II
CE 302	Building Construction

*Plus* courses in computer architectural drawing and architectural presentation techniques, topics in business practices, interior products and specifications, interior perspective and rendering techniques, lighting design, internship, independent study, and a senior project

### Recommended Electives

AT 203	Graphic Design I
AT 309	Photographic Design
MM 301	Introduction to Multimedia

### Concentration in Interior Design/Prearchitecture

The prearchitecture concentration provides a thorough preparation for students planning to enter a professional degree program at the graduate school level. It also provides architecturally oriented training for those who might wish to seek employment in this and related areas such as city planning or landscape design. Liberal arts, technological studies, and studio arts are

carefully integrated into a balanced curriculum. Students gain insight into the relationship between architects and clients, investigate the nature of building, and develop skills in presentation methods.

Coursework includes the history of architecture, architectural drawing, building construction, appropriate civil engineering studies, CAD (computer-aided design) and other computer skills, and studio art courses in color and design.

### Required Courses

Basic courses required for art majors, BA, are the following:

AT 216	Architectural Drawing
AT 233	History of Architecture and Interior Design
AT 302	Figure Drawing
AT 304	Sculpture I
AT 317	Interior Design
AT 322	Illustration
AT 331	Contemporary Art
AT 401-402	Studio Seminar I and II
CE 302	Building Construction
CE 403	City Planning
M 115	Pre-Calculus
M 117	Calculus I
PH 100	Introductory Physics with Laboratory

*Plus* courses in architectural drawing and architectural presentation techniques, CAD (computer aided design) drawing, topics in business practices, lighting design, internship, independent study, and a senior project

### AS, Graphic Design

#### Required Courses

Basic courses required for art majors, AS, are the following:

AT 122	Graphic Design Production
AT 203	Graphic Design I
AT 209	Photography I
AT 221-222	Typography I and II
AT 309	Photographic Design

*Plus* the university's associate's degree core

## AS, Interior Design

### Required Courses

Basic courses required for art majors, AS, are the following:

- AT 216 Architectural Drawing
- AT 233 History of Architecture and Interior Design
- AT 302 Figure Drawing
- AT 304 Sculpture I
- AT 317 Interior Design
- AT 322 Illustration
- AT 331 Contemporary Art
- CE 302 Building Construction

*Plus* the university's associate's degree core

### Minor in Art

A total of 18 credit hours of work in art is required for the minor in art. Students may take the courses listed below and any other combination of courses that fills their needs and interests.

### Recommended Courses

- AT 201 Painting I
- AT 211 Basic Design I *or* AT 212 Basic Design II
- AT 213 Color
- AT 231-232 History of Art I and II
- AT 304 Sculpture I *or* AT 305 Sculpture II

## Art Certificates

The art department offers certificates in graphic design and interior design. Students must complete 15 - 18 credit hours of required courses to earn a certificate. Students may choose to take these courses on a matriculated or nonmatriculated basis. For those students who choose the nonmatriculated option, it is not necessary to apply for admission to a degree program at the university. However, the credits earned may be applied toward the requirements for a degree program at a later date.

## Graphic Design Certificate

This certificate is designed for individuals employed in advertising, printing, photography, public relations, and marketing as well as for architects and those interested in entering the field of graphic design. Designed to broaden and update commercial art skills, the certificate courses emphasize layout, design, and the principles of effective design communication. All students are required to take 18 credit hours, chosen from the seven courses listed below:

### Required Courses (Choose 6)

- AT 105 Basic Drawing I
- AT 122 Graphic Design Production
- AT 203-204 Graphic Design I and II
- AT 211 Basic Design I
- AT 221-222 Typography I and II

## Interior Design Certificate

This certificate was developed for individuals seeking a professional knowledge of design and decorating skills applicable to both home and office decoration. All students are required to take 15 credit hours, chosen from the eight courses listed below:

### Required Courses (Choose 5)

- AT 105 Basic Drawing I
- AT 211-212 Basic Design I and II
- AT 213 Color
- AT 216 Architectural Drawing
- AT 233 History of Architecture and Interior Design
- AT 317 Interior Design
- CE 302 Building Construction

# Multimedia/Web Creation Studies

Coordinator: Guillermo E. Mager, PhD

Multimedia is the use of computers for the integration of graphics, animation, video, music, speech, and live presentation. Active markets for multimedia include (1) the Internet, where careers in web page creation and website management have grown exponentially in recent years; (2) business, where computer presentations have taken the place of slide shows; (3) education, where teachers and parents are finding new ways to present their material; and (4) the entertainment industry, with the ever-growing use of computers for special effects in games, music videos, and films.

Multimedia studies will enable graduates from programs in graphic design, music, education, business and many other disciplines to use the computer not only to generate traditional print materials but also to design interactive programs for use in websites, CD-ROMs, business presentations, games, and educational software.

The multimedia courses and the web page creation courses have been designed to allow students to use computer, audio, video, and graphic technologies to conceptualize and implement interactive interfaces in a comprehensive approach that includes the multimedia production process, the technology, and the aesthetic design.

## Minor in Multimedia/Web Creation

A total of seven courses (21 credits) is required to complete the minor in multimedia/web creation.

Required courses (9 credits):

MM 301	Introduction to Multimedia
MM 311	Advanced Multimedia <i>or</i> MM 312 Web Creation
MM 401	Multimedia Seminar

*Plus two of the following sequences (12 credits)\*:*

MU 311-312	Multitrack Recording I and II
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AT 203-204 Graphic Design I and II

CO 212-312 Television Production I and II

\* These courses must be taken outside the student's major area of study (for example, music majors may not use MU 311-312). Also, note that some of these courses have prerequisites.

# Theatre Arts

Theatre courses may be used to satisfy the arts core requirements. Refer to the latest class schedule bulletin to determine the specific courses permitted.

## Productions

The university community may take part in all departmental productions. Volunteers may act in productions as well as help with lighting, set, and costume design; set construction; publicity; and stage management. Participants need not be enrolled in theatre classes.

## Minor in Theatre Arts

Students may complete a minor in theatre arts by taking 18 credit hours in the theatre program. Three major productions are mounted each year by the department, with opportunities for students in performance, directing, and backstage work.

## Required Courses

T 131 Introduction to the Theatre

T 132 Theatrical Style

T 241 Early World Drama and Theatre

T 242 Modern World Drama and Theatre

*Plus* 6 additional credit hours in theatre arts, chosen from T 341 Acting, T 342 Play Directing, T 491 Production Practicum I, T 492 Production Practicum II, and T 599 Independent Study

# Music

## Coordinators:

2004-2005: Albert G. Celotto, MM

2005-2006: Michael G. Kaloyanides, PhD

Music courses may be used to satisfy the art core requirements.

The program in music is unique. Music is studied as a worldwide phenomenon, not defined simply in the western European art tradition. Students are encouraged to view music as a creation of all cultures and civilizations on both the folk and art levels, including our own urban and ethnic subcultures. Exposure to various music should lead students to specialization in a particular area as upperclasspersons.

Since music is a performing art, students are expected to reach a satisfactory level of proficiency in either a traditional western instrument or one central to the particular culture in which they choose to specialize.

A degree in music qualifies students for professions as performers, composers, music publishers, critics and journalists, teachers, curators, and librarians. Combining music with other fields, graduates may enter the fields of concert and ensemble management and sound engineering areas. There are, of course, countless performance opportunities for instrumentalists, vocalists, and composers. Vocations such as music publishing, recording sales and promotions, and music criticism and journalism are also available to graduates with a degree in music. Students may also pursue careers in music education, not only as teachers in schools and conservatories but also as curators and librarians.

## Performance/Practice and Recording Facilities

In addition to traditional performance and practice rooms, the following special areas have been equipped for the use of students enrolled in the music industry and sound recording programs.

### Studio A

The advanced recording technology classes take

place in our largest recording facility, which was designed to excel as both a teaching and a professional recording environment. The control room design offers comfortable seating for the students as well as providing an excellent view of the console and the rest of the equipment. Equipment includes a 24-track analog and two 8-track digital recorders for a total of 40 tracks; a 40-input/32 monitor console for a total of 72 inputs in mix mode; an Apple Macintosh computer running Digidesign's Pro-Tools system; an extensive selection of outboard (signal processing) equipment; and MIDI gear, including synthesizer, drum machine, and a sampler.

### Studio B

Multitrack recording and MIDI classes take place in a second recording facility with a 16-input/16 monitor console, a digital multitrack recorder, a computer with digital audio and MIDI sequencing capabilities, assorted signal processing equipment, and MIDI synthesizer and drum machine.

### Workstations

Our new digital mixing workstation contains two digital multitrack recorders, a digital mixing board, a computer with digital audio and CD recording capabilities, signal processing gear, and a DAT tape machine.

Smaller recording/mixing stations include 4-track tape recorders/mixers, synthesizers, and outboard (signal processing) equipment.

## BA, Music

The bachelor of arts in music is a dynamic program for the study of music within a liberal arts curriculum. It is distinctive in its treatment of music as a worldwide phenomenon. It is also flexible, allowing students to focus on performance or musicology.

Students focusing on performance are urged to take private instruction on an instrument or in voice each semester of enrollment. Seniors must present either a senior thesis or a senior recital to qualify for graduation. There are options in the senior year curriculum for courses appropriate for thesis or recital preparation.

All students majoring in the BA in music programs must complete 121-122 credit hours.

### Required Courses

Courses must include the core requirements of the university plus the following:

MU 111 Introduction to Music  
 MU 112 Introduction to World Music  
 MU 116 Performance (12 credit hours minimum)

MU 125-126 Elementary Music Theory with  
 Laboratory (if required)  
 MU 150-151 Introduction to Music Theory I and II  
 MU 175-176 Musicianship I and II  
 MU 201-202 Analysis and History of European Art  
 Music I and II  
 MU 501 Seminar in Advanced Research I *or*  
 MU 416 Advanced Performance  
 MU 502 Seminar in Advanced Research II *or*  
 MU 416 Advanced Performance

*Plus* music electives (6 credit hours)

*Plus* one literature elective

*Plus* eleven electives

### BA, Music Industry

The music industry program is offered to anyone interested in an exciting career in the fields of music management, arts administration, record production, promotion and sales, marketing, artist management, music publishing, and any other areas in the entertainment industry.

The program provides a unique balance of courses in the areas of music, sound recording and business as well as music industry. The music courses include such topics as music theory, musicianship, music history and performance. The sound recording courses include multitrack recording, digital audio and the use of computers in the recording studio. The business courses cover areas such as accounting, management and marketing.

The music industry courses, specifically designed for this program, cover topics such as record companies, contracts, music marketing and merchandising, recording studio management, music publishing,

copyright law and concert planning, promotion and management. Special emphasis will be given to career planning and development.

### Required Courses

Courses must include the university core requirements plus the following:

MU 111 Introduction to Music *or* MU 112  
 Introduction to World Music  
 MU 125-126 Elementary Music Theory with  
 Laboratory (if required)  
 MU 150-151 Introduction to Music Theory I and II

*Plus* the following:

MU 116 Performance  
 MU 175-176 Musicianship I and II *or* MU 201-202  
 Analysis and History of European Art  
 Music I and II  
 MU 211 History of Rock  
 MU 261 Introduction to the Music Industry  
 MU 301 Recording Fundamentals

MU 311 Multitrack Recording I  
 MU 312 Multitrack Recording II *or* MU 321  
 Sound Synthesis/MIDI  
 MU 361 Production, Promotion, and  
 Distribution  
 MU 362 Legal Issues, Copyrights, and Contracts  
 MU 461-462 Internship in the Music Industry  
 I and II

*Plus* music electives (6 credits)

A 101 Introduction to Financial Accounting  
 A 102 Introduction to Managerial Accounting  
 MG 115 Fundamentals of Management  
 MK 300 Principles of Marketing

*Plus* business electives (6 credits)

*Plus* five electives

### BA, Music and Sound Recording

The bachelor of arts in music and sound recording is a unique four-year degree program. Its development is based on the philosophy that musicians should have a working knowledge of the media through which their art is most often heard and that

sound recordists should have a working knowledge of the art form they are recording. Thus, the program is designed to instruct students in three inter-related areas: 1) music history, theory, and aesthetics; 2) musicianship; and 3) sound recording methodology and technique. Coursework includes 38 credits in arts and sciences, 36 credits in music, 15 credits in recording, and 34 credits in restricted and free electives, for a total of 123.

### Required Courses

Courses must include the university core requirements plus the following:

MU 111	Introduction to Music
MU 112	Introduction to World Music
MU 116	Performance (6 credit hours minimum)
MU 125-126	Elementary Music Theory with Laboratory (if required)
MU 150-151	Introduction to Music Theory I and II
MU 175-176	Musicianship I and II
MU 201-202	Analysis and History of European Art Music I and II
MU 211	History of Rock
MU 221	Film Music
MU 301	Recording Fundamentals
MU 311-312	Multitrack Recording I and II
MU 321	Sound Synthesis/MIDI
MU 401-402	Recording Seminar/ Project I and II
PH 100	Introductory Physics with Laboratory
PH 203	The Physics of Music and Sound with Laboratory

### BS, Music and Sound Recording

The bachelor of science in music and sound recording is similar to the bachelor of arts program in its philosophy and design but provides a stronger background in the science and technology of recording through classes in calculus, physics, and electrical engineering. Coursework includes 47 credits in arts and sciences, 36 credits in music, 15 credits in recording, 6 credits in electrical engineering, and 19 credits in restricted and free electives, for a total of 123 credits.

### Required Courses

Courses must include the university core requirements plus the following:

MU 111	Introduction to Music
MU 112	Introduction to World Music
MU 116	Performance (6 credit hours minimum)
MU 125-126	Elementary Music Theory with Laboratory (if required)
MU 150-151	Introduction to Music Theory I and II
MU 175-176	Musicianship I and II
MU 201-202	Analysis and History of European Art Music I and II
MU 211	History of Rock
MU 221	Film Music
MU 301	Recording Fundamentals
MU 311-312	Multitrack Recording I and II
MU 321	Sound Synthesis/MIDI
MU 401-402	Recording Seminar/Project I and II
EAS 230	Fundamentals and Applications Analog Devices
EE 235	Analog Circuits
M 117-118	Calculus I and II
PH 150	Mechanics, Heat, and Waves with Laboratory
PH 205	Electromagnetism and Optics with Laboratory

### Minor in Music

A total of 18 credit hours in music courses other than performance is required for the minor in music. A student's program should be planned in consultation with a member of the music faculty.

# SCHOOL OF BUSINESS

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**Julian Schuster, PhD, Dean**

## Vision Statement:

Our vision is to be recognized among the leading business schools in our region. We will establish a reputation for excellence in the development and delivery of practical and innovative approaches to contemporary business education.

## Mission Statement:

The mission of the School of Business is to provide high-quality, career-enhancing business education opportunities within an environment of life-long learning.

To accomplish this mission, our faculty and staff are committed to fostering an environment that both enables and encourages:

- a student-focused learning environment,
- academic excellence,
- a strong sense of ethical behavior and academic integrity,
- the creation and sharing of knowledge in a global environment,
- the balancing of business theory with its practical application, and
- an innovative learning environment that addresses the needs of both a diverse student body and the university community.

As the business environment becomes more complex, the School of Business provides relevant, well-balanced programs that prepare students to face the challenges of a dynamic world and to meet their responsibilities within a global society. These career-oriented programs employ current knowledge and techniques presented in a manner appropriate to the diverse backgrounds and experiences of our students.

Our interactive curriculum is designed to provide students with the tools to pursue a wide variety of professional, educational, and intellectual activities. In

addition to full-time students, many men and women who are enrolled are at the same time employed in various public and private organizations and are working toward their degrees on a part-time basis. This diversity creates a uniquely rich learning environment.

## **Programs**

### **Bachelor of Science**

Accounting  
 Business Administration  
     Management of Sports Industries  
 Business Economics  
 Communication  
 Finance  
 International Business  
 Management of Sports Industries  
 Marketing and Electronic Commerce

### **Associate in Science**

Business Administration  
 Communication

### **Certificates**

Journalism  
 Mass Communication

## **Graduate Programs\***

*\*See Graduate Catalog*

Master of Business Administration (MBA)  
 Executive Master of Business Administration (EMBA)  
 Master of Public Administration (MPA)  
 Master of Science (MS)  
     Health Care Administration  
     Labor Relations  
     Management of Sports Industries

## **Dual Degrees**

MBA/MS Industrial Engineering  
 MBA/MPA



## Graduate Certificates\*

\*See *Graduate Catalog*

## General Policies of the School of Business

- Each student will be assigned an academic advisor.
- A student may select a business major after consultation with the appropriate advisor.
- A student may select a minor after consultation with the advisor or the appropriate chair.
- No coordinated course credit or transfer credit will be accepted from two-year colleges for UNH juniors or seniors. Only 30 business credits may be transferred; generally, upper-level business courses will not be acceptable as transfer credits.
- To receive a degree from the School of Business, the final 30 credits must be earned at the University of New Haven.
- A minimum of 121 semester hours is required for graduation.
- All students enrolled in upper-level courses (designated as 300 or higher) must have junior standing and must have completed all prerequisites. There is one exception: upper-level communication (CO) courses may be taken prior to the junior year.

## University Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the university core curriculum. See the University Curricula section of this catalog for the list of requirements. It should be noted that, whenever possible, liberal arts and lower-division requirements should be completed by the end of the sophomore year.

## Accelerated Business Program

The School of Business offers Accelerated Program courses specifically designed for evening part-time working professionals. The Accelerated Program courses are scheduled in five modules throughout the academic year. All students must complete all prerequisites for courses prior to enrollment.

Evening students may register for Accelerated Program courses any time prior to the start of the

module, following the general procedures specified for Evening Students. For additional information about the Accelerated Program and its courses, please call Nick Spina at (203)932-7361 or 1-800-DIAL-UNH, ext. 7361.

## Common Courses for Business Programs

Students earning bachelor's degrees in School of Business programs must complete the basic business curriculum shown below, as well as the university core requirements and the course requirements for their chosen major.

### Required Courses

(for all majors except communication)

A	101	Introduction to Financial Accounting
A	102	Introduction to Managerial Accounting
BA	100	Leadership in the Business Community
CO	100	Human Communication
LA	101	Business Law and the Regulatory Environment
QA	118	Business Mathematics
EC	133-134	Principles of Economics I and II
EC	200	Global Economy*
QA	216	Probability and Statistics
QA	217	Advanced Statistics*
FI	313	Business Finance*
MG	310	Management and Organization*
MK	300	Principles of Marketing*
MG	550	Business Policy*

\* *Not required in the AS, Business Administration*

## Minors

It is highly recommended that students working toward a degree in one area of study give serious thought to organizing their elective courses so as to receive a minor in a second discipline. A minor usually consists of 18 credit hours devoted to the study of either a group of courses on related subjects or a series of courses offered by one department.

Students interested in studying for a minor should consult with the chair of the department offering the minor. The minors available in the School of Business are:

Accounting  
 Business Administration (for non-business majors)  
 Communication  
 Economics  
 Entrepreneurship (for business majors)  
 Finance  
 International Business  
 Marketing  
 Operations Management and Quantitative Analysis

## Department of Accounting

**Chair:** Robert E. Wnek, JD, LL., CPA

**Professors:** Stephen A. Moscové, PhD, Oklahoma State University; Robert E. Wnek, LL.M., Boston University School of Law, CPA

**Associate Professors:** Robert McDonald, MBA, New York University, CMA, CPA, CIA, CFA; Michael J. Roller, MBA, University of Connecticut, CPA

**Assistant Professors:** Alireza Daneshfar, PhD, Concordia University; Martin A. Goldberg, LL.M., New York University; Scott G. Lane, PhD, University of Kentucky

The accounting department is responsible for courses in accounting, business law, and taxation. While the study of accounting has its roots in economic theory, the courses emphasize practical application to real-world problems.

The study of accounting emphasizes the economic decision-making process as well as the principles and procedures used to produce the information required by decision makers. Accounting promotes an appreciation for not only the nature of accounting information but also the use of that information in the complex process of decision making by individuals, business firms, and government. The department of accounting at the University of New Haven seeks to serve the educational needs of those involved in all areas of accounting: public, private, or governmental.

There are many career opportunities for accounting students in the business world, government, and academia. Accounting professionals are needed by consulting firms, public accounting firms, and private industry as

well as by federal, state, and local governments. Because of the practical orientation, future business entrepreneurs can benefit the background obtained in the program.

The accounting department at the University of New Haven offers courses at the bachelor's and master's level. In addition, an educational opportunity is available to students who desire to meet the 150-credit-hour educational requirements necessary to take the Certified Public Accounting (CPA) Examination. These additional educational requirements may be taken at the graduate level, leading to an MBA degree.

Accounting students may select electives from other disciplines such as computer science, economics, and finance.

On the graduate level, a concentration in accounting is available to students enrolled in the master of business administration program. Graduate certificates are offered in accounting and taxation. Complete information is available in the Graduate School catalog.

### The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the Co-op coordinator for the School of Business.

### BS, Accounting

The accounting major is selected by students wishing to pursue a career in management accounting or in public accounting leading to the certified public accounting (CPA) license. The integration of business law, taxation, and finance into the program provides the student with the necessary academic background to meet the challenges of the accounting profession.

#### Required Courses

Students earning a BS in accounting are required to complete 121 credits, including the university core curriculum, common courses for business majors, and the courses listed below:

A 220 Intermediate Financial Accounting I

- A 221 Intermediate Financial Accounting II
- A 222 Intermediate Financial Accounting III
- A 223 Cost Accounting I
- A 331 Advanced Financial Accounting I
- A 333 Auditing and Reporting Principles
- A 335 Federal Income Taxation I
- A 336 Federal Income Taxation II
- A 350 Accounting Information Systems
- LA 112 Accounting Business Law

*Plus* two business electives

*Plus* three non-business electives

A 101-102 are the prerequisites for advanced accounting courses.

### Minor in Accounting

Requirements for the accounting minor include a total of 18 semester hours. Students must complete the following courses:

- A 101 Introduction to Financial Accounting
- A 102 Introduction to Managerial Accounting
- A 220-221 Intermediate Financial Accounting I & II

*Plus* two additional accounting courses with consent of the undergraduate accounting coordinator

## Department of Communication

**Chair:** Jerry L. Allen, PhD

**Professors:** Jerry L. Allen, PhD, Southern Illinois University at Carbondale; Marilou McLaughlin, PhD, University of Wisconsin; Steven A. Raucher, PhD, Wayne State University; Donald C. Smith, PhD, University of Massachusetts at Amherst

**Instructor:** Paul C. Falcone, MBA, University of New Haven

Students develop a comprehensive understanding of communication from interpersonal to mass communication while majoring in organizational communication, public relations, advertising, or mass communication (journalism, radio, television, film). This program blends theoretical concepts and skills, academic rigor, and hands-on experience to prepare stu-

dents for careers in business, the public sector, or the media—or for graduate study.

An active internship is a valuable complement to students' classroom studies. The department has internship contacts with regional and national businesses, public service organizations, and print and electronic media. Communication majors can gain additional experience through writing for *The Charger Bulletin* (the student newspaper), being on the staff at WNHU-FM (the campus radio station), doing programming for local television, and producing specialized film and video programs.

Some faculty members have received national and international recognition; and all faculty members do research, publish, and have practical experience in their communication specialties. Faculty and some students belong to such professional organizations as the International Communication Association; the Public Relations Society of America; the Eastern Communication Association; the National Association of College Broadcasters; the National Academy of Television Arts and Sciences; the National Academy of Cable Programming; the National Federation of Local Cable Programming; the American Film Institute; the Broadcast Educators' Association; the National Communication Association; the Association for Educational Journalism and Mass Communication; the Organization for the Study of Communication, Language, and Gender; the World Communication Association; and the International Listening Association.

Faculty in the department have served as editors and/or associate editors of more than a half dozen of the top-tier scholarly journals in the communication field.

In the interest of maximizing students' communication experiences as well as encouraging professional contacts and advancement, the department urges students to enter regional and national competitions in public relations, advertising, radio, television and film.

### Lambda Pi Eta

The department sponsors the Beta Kappa Chapter of Lambda Pi Eta, the national communication honor society. To receive honorary membership in this prestigious organization, students must have at least 45

university credits and at least nine credits in communication courses. They must have a 3.0 cumulative average and a 3.25 GPA in communication courses. Members become part of a national network of communication majors and may showcase their work at regional and national conferences.

## The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see “The Co-op Program,” which appears earlier in the catalog, or contact the Co-op coordinator for the School of Business.

## BS, Communication

### Required Courses

Students earning the BS in communication must complete 121 credit hours, including the university core requirements. Communication majors will take:

- CO 100 Human Communication
- CO 101 Fundamentals of Mass Communication
- CO 102 Writing for the Media
- CO 114 Production Fundamentals
- CO 205 Intercultural Communication
- CO 212 Television Production I
- CO 214 Elements of Film
- CO 220 Film Production *or*
- CO 203 Radio Production
- CO 300 Persuasive Communication
- CO 301 Communication Theory and Research
- CO 302 Social Impact of Media
- CO 312 Television Production II
- CO 420 Communication and the Law
- CO 500 Seminar in Communication Studies

*Plus a series of electives in the following areas:*

- Advertising
- Organizational Communication
- Media Performance
- Media Production
- News Writing
- Public Relations

These elective courses are designed for students with a wide range of interests. Such students may envision becoming communication consultants, television camera operators, broadcasters, journalists, producers of documentary films, business managers, lawyers, politicians, informed citizens, or researchers investigating the effects of communication on society and why people say what they say. It is the department's objective to assist students in the pursuit of these goals by providing them with a sound academic background.

## BA, Communication

For information on the BA in communication, see the College of Arts and Sciences section of this catalog.

## AS, Communication

Upon successful completion of the first two years of the four-year bachelor of science program in communication, students may petition to receive an associate in science degree with a major in communication. Students should consult with an advisor for specific information.

## Minor in Communication

A total of 18 semester hours of communication course credits must be earned in order for a student to declare the area of study as a completed minor. This work must include CO 100 Human Communication. The balance of the minor program is worked out in individual conference of the student and the communication department advisor.

## Communication Certificates

The communication department offers certificates in journalism and mass communication. Students must complete 15 credit hours to earn a certificate. Students may choose to take these courses on a matriculated or nonmatriculated basis. For those students who choose the nonmatriculated option, it is not necessary to apply for admission to a degree program at the university. However, if you are admitted, the credits earned may be applied toward the requirements for a degree program.

## Mass Communication Certificate

This program offers options in television production, radio production, writing for media, interpersonal communication, or a combination of radio/television and film. All students are required to take 15 credit hours, including the following:

CO 100 Human Communication  
CO 114 Production Fundamentals

*Plus* three other courses selected in consultation with an advisor

## Journalism Certificate

For more information on journalism certificate requirements, please refer to the College of Arts and Sciences section of this catalog, under the communication programs.

## Graduate Studies

The communication department offers a graduate concentration and certificate. Please consult the Graduate School catalog for more information.

# Department of Economics and Finance

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**Chair:** Steven J. Shapiro, PhD

**Professor Emeritus:** Ward Theilman, PhD,  
University of Illinois

**Professors:** Peter I. Berman, PhD, Johns Hopkins University; Phillip Kaplan, PhD, Johns Hopkins University; Joseph A. Parker, PhD, University of Oklahoma; Robert M. Rainish, PhD, City University of New York

**Associate Professors:** Edward A. Downe, PhD, New School for Social Research; John J. Phelan, PhD, George Washington University; Armando Rodriguez, PhD, University of Texas; Steven J. Shapiro, PhD, Georgetown University; Julian Schuster, PhD, University of Belgrade; Kamal Upadhyaya, PhD, Auburn University

**Assistant Professors:** Wentworth Boynton, PhD, University of Rhode Island; Sanja Grubacic, PhD, University of Connecticut; George M. Pushner, PhD, Columbia University, CFP; Mehmet Sencicek, BSBA, University of Nevada–Reno

Economics courses provide a basis for an understanding of economic structures, a wide range of domestic and international issues, and trends in the economic life of modern societies. These courses offer training in analysis of economic problems as an aid to the evaluation of economic policies.

Introductory courses are designed to provide the foundation of economic knowledge which all citizens in a modern complex society should have so that they may understand the decisions of individual economic units and the operation of a national economy as a whole.

Advanced courses are designed primarily for economics and business majors. They cover, in depth, specific economic topics. They also prepare students for economic research and management positions in financial institutions, individual organizations, government, or graduate study and teaching.

The department of economics has two major objectives: to function as a service department for other departments in the School of Business and the other schools of the university and to offer a specialized education to students majoring in business economics.

Students majoring in economics may choose either a bachelor of science in business economics or a bachelor of arts in economics.

Finance, as an area of study, is designed to promote an analytic appreciation of the financial system and the financial decision-making process in which society—through its individuals, business firms, and governments—is continually engaged.

In particular, the study of finance provides a structured analysis of the financial system and the financial decision-making process as determinants of the economic wealth of the individual, the business firm, and the nation. The study of finance enables the student to pursue the preparation required for a number of financial decision-making positions in government and industry, including the entire range of financial institutions.

## The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the Co-op coordinator for the School of Business.

## BS, Business Economics

The program in business economics is designed to prepare students for research or executive positions in business or government.

### Required Courses

Students earning a BS in business economics must complete 121 credit hours, including the university core curriculum, the common courses for business majors, and the following:

EC 340 Microeconomic Analysis

EC 341 Macroeconomic Analysis

*Plus* five advanced courses in economics

*Plus* three business electives

*Plus* four non-business electives

*Plus* one elective

## BS, Finance

### Required Courses

Students earning a BS in finance must complete 121 credit hours, including the university core curriculum, the common courses for business majors, and the following:

A 220 Intermediate Financial Accounting I

FI 329 Corporate Financial Management

FI 330 Investment Analysis and Management

*Plus* three of the following:

A 221 Intermediate Financial Accounting II

EC 340 Microeconomic Analysis

EC 341 Macroeconomic Analysis

FI 314 Principles of Real Estate

FI 325 International Finance

FI 327 Risk and Insurance

FI 341 Financial Decision Making

FI 345 Financial Institutions and Markets

*Plus* four business electives

*Plus* five non-business electives

## Minor in Economics

Eighteen credit hours of economics courses are required for a minor, including:

EC 133-134 Principles of Economics I and II

*Plus* four other advanced courses in economics

## Minor in Finance

Requirements for the finance minor include a total of 12 semester hours beyond the prerequisites. Students must complete the following:

FI 313 Business Finance

*Plus* three other finance courses selected in consultation with a finance advisor

# Department of Management

Chair: Abbas Nadim, PhD

Professor Emeritus: Lynn W. Ellis, DPS,  
Pace University

Professors: Abbas Nadim, PhD, University of  
Pennsylvania; Allen Sack, PhD, Pennsylvania State  
University

Visiting Professor: Leon B. Anziano, MS, Cornell  
University; Executive Management Program,  
University of Michigan

Associate Professors: Ronald Dick, EdD, Temple  
University; Gil B. Fried, JD, Ohio State  
University; Pawel Mensz, PhD, Systems Research  
Institute of the Polish Academy of Sciences; Judith  
Neal, PhD, Yale University; Anshuman Prasad,  
PhD, University of Massachusetts; Usha Haley,  
PhD, New York University

Assistant Professors: Dale M. Finn, PhD,  
University of Massachusetts; Robert Metchick,  
PhD, Rensselaer Polytechnic Institute

At this time in history, when all of society's systems—governmental, technological, societal, educational, industrial, and military as well as business—are becoming more sophisticated and complex, the need for skilled managers has never been greater. Today's managers must attend to global competition, delivery of quality products and services, and interaction with their internal and external environments. The management programs at UNH seek to provide students with the foundations of knowledge and skill necessary for moving to positions of responsibility in management. The study of theories and methods of analyzing decisions will prepare students for employment as well as sharpen the skills of those already holding organizational positions. The underlying concept is to combine adequate specialization with the integrative point of view required of the manager.

The department of management offers degree programs in the following areas: associate in science degree program in business administration and bachelor of science degree programs in business administration and management of sports industries, along with minors in business administration, management, and entrepreneurship.

### The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see “The Co-op Program” which appears earlier in the catalog, or contact the Co-op coordinator for the School of Business.

### BS, Business Administration

In order to function effectively in a variety of management situations, administrators should be conversant with all major areas of management. Moreover, they should have a thorough understanding of the interrelationships which exist among the various functional groups within organizations. This point of view is essential for managers who are to participate effectively with others in the administrative group and who are to administer activities in their areas of responsibility in the best interest of the entire organization.

### Required Courses

Students earning the BS in business administration must complete 121 credit hours, including the university core curriculum, the common courses for business majors, and the following:

- IB 413 International Marketing
- MG 331 Management of Human Resources
- MG 350 Management of Workforce Diversity
- MG 455 Total Quality Management
- MG 512 Contemporary Issues in Business and Society
- MG 515 Management Seminar

*Plus* five business electives

*Plus* four non-business electives

### Concentration in Management of Sports Industries

Within the BS in business administration program, a concentration in management of sports industries is available to meet the special interests of some students. Students taking the BS in business administration with this concentration complete 121 credits, including the university core curriculum, the common courses taken by all business majors, and the following:

- IB 413 International Marketing
- MG 120 Development of American Sports
- MG 230 Management of Sports Industries
- MG 235 Marketing and Public Relations in Sports
- MG 320 Sports Industries and the Law
- MG 331 Management of Human Resources
- MG 350 Management of Workforce Diversity

MG 455 Total Quality Management

MG 512 Contemporary Issues in Business and Society

MG 515 Management Seminar

*Plus* one business elective

*Plus* four non-business electives

### BS, Management of Sports Industries

The sports industry is one of the fastest-growing segments of our economy. As the industry expands, so does

the need for sports management specialists trained in business management skills and sensitive to the unique features of the sports enterprise. College graduates in sports management can pursue careers in professional sport franchises, coliseum and arena management, ski resorts, corporate fitness centers, college sport programs, sports media industries, sporting goods merchandising, and a wide variety of other sport-related areas.

Students earning the BS in management of sports industries complete 121 credits, including the university core curriculum, the common courses taken by all business majors, and the following specialized courses:

- MG 120 Development of American Sports
  - MG 230 Management of Sports Industries
  - MG 235 Marketing and Public Relations in Sports
  - MG 320 Sports Industries and the Law
  - MG 325 Sports Facility Management
  - MG 331 Management of Human Resources
  - MG 350 Management of Workforce Diversity
  - MG 430 Financial Management of Sports Industries
  - MG 475 Sport Event Management
  - MG 598 Internship
- Plus* two business electives  
*Plus* three non-business electives

### AS, Business Administration

Students earning the AS in business administration must complete 61 credit hours, including:

- A 101 Introduction to Financial Accounting
- A 102 Introduction to Managerial Accounting
- BA 100 Leadership in the Business Community
- CO 100 Human Communication
- CS 107 Introduction to Data Processing
- EC 133-134 Principles of Economics I and II
- LA 101 Business Law and the Regulatory Environment
- M 127 Finite Mathematics
- MG 115 Fundamentals of Management
- QA 118 Business Mathematics
- QA 216 Probability and Statistics

### Minor in Business Administration

(For Non-business Majors)

A total of 18 semester hours of business course credits must be earned in order for a student to declare the field as a completed minor area of study. The minor in business administration is open to non-business majors. The courses required for a minor in business administration are:

- A 101 Introduction to Financial Accounting
- BA 100 Leadership in the Business Community
- EC 133 Principles of Economics I *or*  
EC 134 Principles of Economics II
- LA 101 Business Law and the Regulatory Environment
- MG 115 Fundamentals of Management
- MK 300 Principles of Marketing

### Minor in Entrepreneurship

(for Business Majors)

The United States is comprised of two economies: big business and small business. Virtually all businesses begin as a small business initiated by an entrepreneur with an idea or vision. Ninety-five percent of all businesses in the United States are small businesses. Entrepreneurship and small business are dynamic and powerful interactive forces in these increasingly difficult economic times.

The University of New Haven offers a minor in entrepreneurship as a means of preparing students who will start a business, purchase an existing business, or join the family business after graduation. In addition, this minor may also provide an “intrapreneurship” foundation for students who aspire to work in big business.

This minor is a multidisciplinary approach to entrepreneurship that integrates the business disciplines with communication, negotiation, and presentation skills. Furthermore, the program links theory and practice by tying together the best academic developments with the most effective business approaches.

A total of 15 semester hours of business course credits must be earned in order for a student to declare the field as a completed minor area of study. The courses required for a minor in entrepreneurship are:



MG 317 Entrepreneurship and New Business  
Development

MG 327 Business Planning

MG 417 Managing an Entrepreneurial Venture\*

MG 517 Practical Field Studies

*Plus* one of the following electives:

FI 371 Structuring and Financing a New Business

MG 457 Family Business Management

MG 467 Franchising

\* *Students in the entrepreneurship minor will take  
MG 417 in place of MG 455.*

## Department of Marketing and International Business

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**Chair:** Ben B. Judd, Jr., PhD

**Professor Emeritis:** Robert P. Brody, DBA  
Harvard University

**Professors:** George T. Haley, PhD, University  
of Texas at Austin; Ben B. Judd, Jr., PhD,  
University of Texas at Arlington; Michael Kublin,  
PhD, New York University; David J. Morris, Jr.,  
PhD, Syracuse University

**Associate Professor:** Cheng Lu Wang, PhD,  
Oklahoma State University

**Assistant Professor:** Subroto Roy, PhD,  
University of Western Sydney

The disciplines of marketing and international business investigate business practices and strategies needed to attract customers and compete effectively in a free market system. Business is global. Therefore, both disciplines examine markets and competition from a global perspective. However, marketing places a greater emphasis on practices and strategies in the domestic environment while international business focuses more on multinational issues. Both programs have recently added coverage of the emerging impact of e-commerce on business practices.

The sequence of courses in both programs includes five required and two elective courses which culminate in an integrative capstone course. Students wishing to pursue internships are encouraged to use that experi-

ence as one of their electives. Normally, internships are scheduled during the senior year.

### The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the Co-op coordinator for the School of Business.

### BS, Marketing and Electronic Commerce

Marketing is the study of the processes for developing and distributing goods and services attractive to selected customer groups. These markets may include both consumer and organizational (industrial, governmental, or non-profit) groups. Understanding of these customers results from studies of psychological and sociological perspectives and from the use of research tools. Based on these understandings, competitive strategies and distribution channels can be devised to reach the desired customers more effectively. The emergence of e-commerce has substantially modified some of the existing strategies for understanding the customer and for managing channels of distribution.

#### Required Courses

Students earning a BS in marketing must complete 121 credit hours. These courses must include the university core curriculum, common courses for business majors, and the following:

MK 302 Organizational Marketing

MK 305 Consumer Behavior

MK 326 Overview of E-Commerce

MK 442 Marketing Research in the  
Global Environment

MK 515 Marketing Management

*Plus* two of the following:

IB 413 International Marketing

MK 307 Advertising and Promotion

MK 316 Sales Management

MK 321 Retail Management

MK 327 E-Commerce Consumer Applications

- MK 402 Marketing of Services
- MK 450 Special Topics
- MK 598 Internship
- MM 301 Introduction to Multimedia

*Plus* one business elective

*Plus* five non-business electives

*Plus* two electives

Transfer students with transfer credits in marketing major courses below the junior level must validate these credits by either passing a challenge examination or passing another major course at a higher level.

## **BS, International Business**

The study of international business is designed to prepare students for careers dealing with international trade at domestic and multinational corporations. Courses include coverage of international economic issues, research techniques, cross-cultural perspectives, and political issues. In addition to the required and elective courses specific to the major, students are encouraged to use as many as possible of their general electives for coverage of history and political science relevant to international trade.

### **Required Courses**

Students earning a BS in international business must complete 121 credit hours. These courses must include the university core curriculum, common courses for business majors and the following:

- CO 205 Intercultural Communication
  - FI 325 International Finance
  - IB 413 International Marketing
  - MK 442 Marketing Research in the Global Environment
  - IB 549 Global Business Strategy
- Plus* two of the following:
- EC 342 International Economics
  - HS 260 Modern Asia
  - HS 262 Modern Chinese History
  - HS 264 Modern Japanese History
  - HS 351 Russia and the Soviet Union
  - HS 446 Europe in the Twentieth Century
  - IB 421 Operation of the Multinational Corporation
  - IB 422 International Business Negotiations
  - IB 450 Special Topics

- IB 598 Internship
- MK 326 Overview of E-Commerce
- PS 241 International Relations
- PS 243 International Law and Organization
- PS 281 Comparative Political Systems: Asia
- PS 282 Comparative Political Systems: Europe
- PS 283 Comparative Political Systems: Latin America
- PS 285 Comparative Political Systems: Middle East

*Plus* one business elective

*Plus* three non-business electives

*Plus* four electives

## **Minor in Marketing**

(Non-business Majors)

### **Required Courses**

- MK 300 Principles of Marketing
  - MK 316 Sales Management
- Plus* three of the following:
- MK 302 Organizational Marketing
  - MK 305 Consumer Behavior
  - MK 307 Advertising and Promotion
  - MK 321 Retail Management
  - MK 402 Marketing of Services
  - MK 450 Special Topics
  - MK 515 Marketing Management
  - MK 598 Internship

## **Minor in Marketing**

(Business Majors)

### **Required Courses**

- MK 300 Marketing
- Plus* four of the following:
- MK 305 Consumer Behavior
  - MK 307 Advertising and Promotion
  - MK 316 Sales Management
  - MK 402 Marketing of Services
  - MK 442 Marketing Research in the Global Environment
  - MK 450 Special Topics
  - MK 515 Marketing Management

## **Minor in International Business**

(Non-business Majors)

Required Courses

EC 200 Global Economy

MG 310 Management and Organization

MK 300 Marketing

*Plus* two of the following:

CO 205 Intercultural Communication

IB 413 International Marketing

IB 421 Operation of the Multinational Corporation

### Minor in International Business

(Business Majors)

CO 205 Intercultural Communication

FI 325 International Finance

IB 413 International Marketing

IB 421 Operation of the Multinational Corporation

*Plus* one 400- or 500-level IB course

## Department of Public Management

Chair: Charles N. Coleman, MPA

Professor: Jack Werblow, PhD, University  
of Cincinnati

Associate Professor: Cynthia Conrad, PhD,  
University of Texas

Assistant Professor: Charles N. Coleman, MPA,  
West Virginia University

Public administration is no longer an undergraduate major. Courses, however, are offered for criminal justice and other majors.

## Department of Quantitative Analysis

Chair: William S.Y. Pan, PhD

Professor Emeritus: Warren J. Smith, MBA,

Northeastern University

Professors: Linda R. Martin, PhD, University of  
South Carolina; William S.Y. Pan, PhD,  
Columbia University

Associate Professor: Pawel Mensz, PhD, Systems  
Research Institute of the Polish Academy of  
Sciences

Assistant Professor: Jiajuan Liang, PhD,  
Hong Kong Baptist University

### Minor in Operations Management and Quantitative Analysis

The field of operations management is directly related to creation and delivery of the product in both service and manufacturing industries. The focus is on the operating end of the business where the resources (production capacity, human skills, and raw materials) are transformed into goods and services. Since every organization—from banks to fire departments, retail stores, hospitals, or manufacturing facilities—is built around its product(s), the need for related knowledge of operations management is unquestionable.

As pressures for quality, time-based competition and a more integrated approach to management increase, a minor in operations management and quantitative analysis will expand options and increase marketability for business students.

A total of 15 credit hours is required:

QA 216 Probability and Statistics

QA 217 Advanced Statistics

*Plus* three of the following:

A 223 Cost Accounting I

MK 470 Marketing Channels

QA 328 Quantitative Techniques in Management

QA 350 Quantitative Techniques

QA 380 Operations Management

QA 428 Forecasting for Decision Making

QA 480 Project Management

QA 598 Internship

QA 599 Independent Study

# SCHOOL OF ENGINEERING & APPLIED SCIENCE

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Zulma R. Toro-Ramos, PhD, Dean

Michael A. Collura, PhD, Associate Dean

Engineering and the applied sciences are dynamic professions that use knowledge, judgment, and creativity for solving some of the most important and interesting challenges of society. These challenges and the changing face of engineering will shape the world of the twenty-first century—a world of exotic materials, new sources of energy, staggering telecommunications and computing capabilities, cybernetic factories, and needed public works.

Few professions can match engineering for its challenge and excitement or for its essential spirit of play. This quality is true for each of the school's seven engineering programs—in chemical, civil, computer, electrical, general, industrial, and mechanical engineering—and also for its applied science programs in computer science and chemistry. The rewards of an engineering career include challenging tasks, social status, and appealing working conditions and compensation. All of these are in addition to the great satisfaction of seeing your accomplishments in the real world of engineered components and systems.

The mission of the School of Engineering & Applied Science (SEAS) is to prepare individuals for professional practice in diverse engineering areas, computer science, and chemistry. In addition, SEAS prepares individuals for lifelong education in their professional careers and for such formal post-baccalaureate education as their inclination and professional growth require.

As part of this preparation, students will become proficient in:

- the basic science, mathematics, and engineering skills required in their chosen profession

- the foundation principles of the major engineering disciplines
- design and synthesis
- using and integrating computer technology in the practice of their profession
- understanding and handling engineering problems from multiple disciplines
- considering the social, political, economic, and safety concerns and practices of a diverse community in developing their professional solutions
- written, oral, graphical, and multimedia communication
- working as a member of a team and leading a team
- considering legal and ethical issues related to their profession
- project management techniques for engineering applications.

The School of Engineering & Applied Science offers undergraduate programs leading to bachelor of science and associate in science degrees.

At the graduate level, SEAS offers programs leading to the master of science degree and graduate certificates. Detailed information about these graduate programs is in the Graduate School catalog.

## Professional Accreditation

The curricula leading to the bachelor's degrees in chemical, civil, electrical, industrial and mechanical engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). The bachelor's degree program in computer science is accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (CAC/ABET).

## Programs

### Bachelor of Science

Chemical Engineering  
 Chemistry  
 Civil Engineering  
 Computer Science & Information Technology  
 Electrical and Computer Engineering  
 General Engineering  
 Industrial Engineering  
 Mechanical Engineering

### Associate in Science

Computer Science

### Certificates

Computer Programming  
 Logistics

### Graduate Programs

Master of Science  
 Computer Science  
 Electrical Engineering  
 Environmental Engineering  
 Executive Engineering Management  
 Industrial Engineering  
 Mechanical Engineering

### Dual Degree

MBA/MS Industrial Engineering

### Graduate Certificates

Civil Engineering Design  
 Computer Applications  
 Computer Programming  
 Computing  
 Logistics  
 Quality Engineering

## Choosing a Major

A student may be accepted into the School of Engineering & Applied Science without declaring a major in a specific engineering discipline. Students who have chosen a major should follow recommend-

ed first-year program for the major. Students who are undecided about their choice of engineering major should choose the degree program General Engineering and follow the recommended first-year program. Those students wishing to complete an engineering degree program other than General Engineering are strongly advised to decide on their new program by the beginning of the sophomore year. Students interested in Chemistry or Computer Science are advised to choose that option in their first year.

All newly admitted students, including transfer students, are assigned a faculty advisor in the degree program of their choice. Students choosing General Engineering are assigned a faculty advisor by the Dean of the School.

## The Multidisciplinary Foundation for Engineering Programs

To operate effectively in today's workforce, engineers need to have a multidisciplinary perspective along with substantial disciplinary depth. The faculty of the School of Engineering & Applied Science at the University of New Haven have developed an innovative approach to achieve this perspective: the *Multidisciplinary Engineering Foundation Spiral*. This curricular model enables the needed mix of breadth and depth, along with the desired professional skills, by providing carefully crafted, well-coordinated curricular experiences in the first two years.

The *Multidisciplinary Engineering Foundation Spiral* is a four-semester sequence of engineering courses (EAS prefix), matched closely with the development of students' mathematical sophistication and analytical capabilities and integrated with coursework in the sciences. Students develop a conceptual understanding of engineering basics in a series of courses that stress practical applications of these principles. Topics in these courses include electrical circuits, fluid mechanics, heat transfer, material balances, properties of materials, structural mechanics, and thermodynamics. Unlike the more traditional approach, each of the foundation courses includes a mix of these topics presented in a variety of disciplinary contexts. A solid background is developed by touching key concepts at

several points along the spiral in different courses, adding depth and sophistication at each pass. Each foundation course also stresses the development of several essential skills, such as problem solving, oral and written communication, the design process, teamwork, project management, computer analysis methods, laboratory investigation, data analysis, and model development. Students will build substantial depth in some of the foundation areas in subsequent courses, while other topics may not be further developed, depending on their chosen discipline. Thus the foundation courses serve both as the basis for depth in disciplinary study and as part of a broad multidisciplinary background.

#### First Semester

CH 115 General Chemistry I  
 CH 117 General Chemistry I Laboratory  
 E 105 Composition  
 EAS 107 Introduction to Engineering  
 EAS 109 Project Planning & Development  
 FE 001 Freshman Experience  
 M 117 Calculus I

#### Second Semester

E 110 Composition and Literature  
 EAS 112 Methods of Engineering Analysis  
 EAS 120 Chemistry with Applications to Biosystems  
*or* Laboratory Science Course (a four-credit science course, with laboratory, specified by degree program)  
 EC 133 Principles of Economics I  
 M 118 Calculus II

During the sophomore year, engineering students begin taking courses in their chosen discipline, along with math, science, and additional multidisciplinary foundation courses.

### First Year Engineering Program

**Coordinator:** Jean Nocito-Gobel, PhD

**Faculty:** Representatives from all undergraduate programs in the school

The First Year Engineering Program prepares students for upper-level study in their chosen discipline through a combination of specialized advising, the first-year engineering curriculum, extracurricular activities, and workshops. Students learn about the contributions and attributes of various engineering and applied science disciplines to help them finalize their choice of a major area of study. Workshops and tutoring sessions help students meet the challenges of a rigorous academic program in engineering or applied science. Plant trips and guest speakers provide an exciting bridge to the industrial world beyond the classroom walls.

### University Core Curriculum

In addition to school and department requirements, students must fulfill all requirements of the university core curriculum. (See University Curricula section of the catalog.) Included within the core are requirements in the humanities and social sciences. See the section below under Humanities Electives for details.

### General Policy of the School of Engineering & Applied Science

The following definitions apply to all degree programs within the School of Engineering & Applied Science:

#### Transfer Credit

Transfer of credits for previous academic work is coordinated by the dean's office and assessed by program coordinators according to school policy, described in the document "Guidelines on Transfer Credit Awards." All transferred courses are the result of a determination of equivalence of course content and course level.

Transfer students whose previous academic work results in placement beyond the freshman year may be given the option of following the program worksheet in effect for upper-level students in the chosen major. Such a choice may shorten the time required to complete the degree program.

### Humanities Electives

Humanities and social science courses are intended to develop the competencies required of all SEAS professionals in creating socially, politically, economically, culturally, and aesthetically satisfying solutions to society's problems. Such courses also assist students in understanding the needs of and communicating options to the various constituencies which impact on and are affected by these societal problems and their solutions. Specific courses chosen must satisfy university core requirements.

### Mathematics Electives

These are courses from the mathematics department at the 300 or higher level. Faculty advisors should be consulted for recommendations on the most relevant mathematics electives for a student's career objectives.

### Technical Electives

Technical electives are upper-level courses directly pertinent to a student's major field of study. These electives must be approved by the student's faculty advisor and are usually chosen from engineering school courses. Faculty approval is important to ensure that students meet the prerequisite requirements.

### Design Electives

Design electives within each program are those upper-level engineering courses that incorporate substantial design activities. Suitable courses include a (D) following the course title. These courses may also be used as technical electives.

### The Co-op Program

Students in the School of Engineering & Applied Science may participate in the cooperative education program (Co-op), which enables students to combine practical, paid work experience in an activity associated with their professional degree program. This "earn while you learn" program combines experiential and academic preparation for a career. For further details see "The Co-op Program," which appears earlier in this catalog, or contact the SEAS co-op coordinator.

## Chemical Engineering

**Coordinator:** W. David Harding, PhD, PE

**Professors:** Michael A. Collura, PhD, Lehigh University; George L. Wheeler, Jacob Finley Buckman Professor of Chemistry and Chemical Engineering, PhD, University of Maryland

**Associate Professors:** Arthur S. Gow, III, PhD, Pennsylvania State University; W. David Harding, PhD, Northwestern University

### Jacob Finley Buckman Endowed Chair and Scholarships

The Jacob Finley Buckman Endowed Chair of Chemistry and Chemical Engineering was established in 1981 by Mrs. Clarice Buckman of New Haven in memory of her late husband, Jacob Finley Buckman, the co-founder of Enthone Corporation. The Clarice Buckman Scholarships are awarded to juniors and/or seniors majoring in chemistry or chemical engineering.

### Chemical Engineering Club

The Chemical Engineering Club has ties to the American Institute of Chemical Engineers (AIChE). It provides students the opportunity to socialize, meet chemical engineers working in the area, visit process plants, and get involved in community projects.

### Chemical Engineering

Chemical engineers are creative problem solvers. They apply the fundamental principles of chemistry, physics, mathematics, and economics to the solution of practical problems and to the search for new knowledge. Traditionally, chemical engineers develop, design, optimize, and operate processes which convert material and energy resources into new or improved products. It was practitioners of this discipline who developed the technological infrastructure for industries such as chemicals, petroleum products, plastics, textiles, pharmaceutical, and food processing.

Currently, chemical engineers are concerned with the critical areas of resource depletion, energy conservation, recycling, pollution prevention and control, hazardous waste management, improved control of processes, increased safety, and enhanced productivity. The major has also proven to be an excellent background for the study of law, medicine, or business.

### Mission and Goals

The mission of the Chemical Engineering Program is to prepare a diverse student body for entrance into the Chemical Engineering profession and for an evolving professional career. The following ten educational goals have been set to achieve the program's mission:

- Students can demonstrate the understanding of and an ability to apply concepts in basic science and mathematics and have a working knowledge of advanced chemistry.
- Students can demonstrate the ability to apply the concepts of balances, rate, and equilibrium relationship, and process/product/equipment analysis and design.
- Students can demonstrate the ability to effectively communicate technical ideas to a variety of audiences.
- Students can demonstrate proficiency in the use of computer tools typical of those used in the process industries for research, development, design, and operation activities.
- Students can demonstrate the ability to develop solutions to open-ended problems which achieve balance among competing constraints.
- Students can demonstrate the ability to think creatively and to extend their knowledge through independent learning.
- Students can demonstrate the ability to design and conduct experiments, analyze data obtained, assess overall results, and make recommendations regarding the outcome of their work.
- Students can demonstrate the ability to apply an engineering approach to the solution of problems.
- Students are aware that solutions to technical problems have wide-ranging effects on society. They can demonstrate the ability to incorporate consideration of such effects into their solutions.
- Students can demonstrate the ability to function as

an integral member of a multidisciplinary team.

Achievement of these goals is assessed by a variety of means, including course evaluations, exit surveys, alumni surveys, and employer surveys.

### BS, Chemical Engineering

The chemical engineering program is challenging and demands hard work, but for those genuinely interested, it develops the depth of knowledge required to embark on a fascinating and satisfying professional career in industry or government or to continue study at the graduate level. The BS in chemical engineering degree is accredited by the American Institute of Chemical Engineers (AIChE) and by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

The freshman year in chemical engineering is like that of the other engineering discipline, (see Multidisciplinary Foundation for Engineering Programs). Chemical engineering students take EAS 120, Chemistry with Application to Biosystems, during the freshman year.

The first chemical engineering course, taken in the sophomore year, is the beginning of a well-integrated sequence that builds on the multidisciplinary foundation. Each chemical engineering course contributes uniquely to the development of skills in problem solving, communication, computer usage, and engineering design. Several common themes weave throughout these courses, including safety, concern for the environment, and practical application of knowledge to real-world problems. A comprehensive laboratory experience contributes to these educational objectives through the use of modern, industrial-type data acquisition and control instruments and computers on pilot-scale process equipment. Comprehensive design projects in the senior year enable the student to synthesize and focus the entire curriculum. Several engineering or science electives allow flexibility in the program, to include areas of special interest.



**Required Courses**

(130 credits total including freshman year)

**Sophomore**

CH 201-202	Organic Chemistry I and II
CH 203	Organic Chemistry I Laboratory
CM 220	Process Analysis
EAS 211	Introduction to Modeling of Engineering Systems
EAS 213	Materials in Engineering Systems
EAS 224	Fluid-Thermal Systems
M 203	Calculus III
M 204	Differential Equations
PH 150	Mechanics, Heat and Waves with Laboratory
PH 205	Electromagnetism and Optics with Laboratory

**Junior**

CH 331-332	Physical Chemistry I and II
CH 333-334	Physical Chemistry I and II Laboratory
CM 310	Transport Operations I with Laboratory
CM 311	Chemical Engineering Thermodynamics
CM 321	Reaction Kinetics and Reactor Design
CM 410	Transport Operations II with Laboratory
EAS 230	Fundamentals and Applications of Analog Devices
EAS 232	Project Management and Engineering Economics

*Plus* one literature or philosophy elective and one social science elective

**Senior**

CM 401	Mass Transfer Operations
CM 420	Process Design Principles
CM 421	Plant and Process Design
CM 431	Process Dynamics and Control with Laboratory
EAS 415	Professional Engineering Seminar
HS 102	The Western World in Modern Times

*Plus* one art/music/theatre elective

*Plus* 9 credit hours of engineering or science electives

Students who wish to concentrate in a particular area should select a cluster of elective courses which match their interests. Examples of some popular clusters are:

**Biochemical Engineering Applications:**

BI 253	Biology for Science Majors with Laboratory I
BI 301	Microbiology
BI 461	Biochemistry

**Biotechnology Applications:**

BI 253	Biology for Science Majors with Laboratory I
BI 301	Microbiology
BI 308	Cell Biology
BI 311	Molecular Biology

**Environmental Engineering Applications:**

CE 315	Environmental Engineering
CE 404	Water and Wastewater Engineering
CM 521	Air Pollution Fundamentals

**Occupational Safety and Health Applications:**

SH 100	Safety Organization and Management
SH 110	Accident Conditions and Controls
SH 200	Elements of Industrial Hygiene
SH 400	Occupational Safety and Health Legal Standards

In some cases, students may wish to take courses beyond those required for the degree, to gain depth in an area of interest.

**Minor in Chemical Engineering**

Students who wish to earn a minor in Chemical Engineering should complete 6 courses in Chemical Engineering, including the following:

CM 201-202	Fundamentals of Chemical Engineering I and II
CM 301	Transport Phenomena Analysis
CM 310	Transport Operations I with Laboratory

*Plus* two additional chemical engineering (CM) courses.

# Chemistry

**Professors:** Michael J. Saliby, PhD, SUNY at Binghamton; George L. Wheeler, Jacob Finley Buckman Professor of Chemistry and Chemical Engineering, PhD, University of Maryland

**Associate Professors:** Arthur S. Gow, III, PhD, Pennsylvania State University; Pauline M. Schwartz, PhD, University of Michigan

**Assistant Professor:** Eddie Luzik, PhD, Bryn Mawr College

**Instructor:** Eddie Del Valle, MS, Pontifical Catholic University of Puerto Rico

## Jacob Finley Buckman Endowed Chair and Scholarships

The Jacob Finley Buckman Endowed Chair of Chemistry and Chemical Engineering was established in 1981 by Mrs. Clarice Buckman of New Haven in memory of her late husband, Jacob Finley Buckman, the co-founder of Enthone Corporation. The Clarice Buckman Scholarships are awarded to juniors and/or seniors majoring in chemistry or chemical engineering.

## Forensic Science and Chemistry Club

The program has a club that is a student affiliate of the American Chemical Society. The club is open to all students, and all chemistry majors and forensic science majors are encouraged to join. Club activities include field trips, community and university service projects, films, group discussions, and social activities.

## Chemistry

Chemists are concerned with the structure and analysis of matter and the changes that matter undergoes. Today's chemists are solving chemical problems and developing new substances with the increasing use of laboratory instruments. Many of these instruments are interfaced with computers for rapid data analysis and display.

Careers for chemists in today's market include the rapidly developing fields of instrumentation, computers, energy, environment, forensics, medicine, safety and health, pharmaceutical, product and equipment development, chemical engineering, plastics and polymers, synthetic fibers, industrial chemistry, technical sales and services, and management.

## Mission and Goals

The mission of the chemistry program is to prepare students from diverse backgrounds for careers as professional chemists for future study in graduate or professional school and for careers as professional chemists. Towards these ends, the program has the following educational objectives:

- to provide a strong background in theoretical chemical principles and laboratory practice
- to develop problem-solving and critical-thinking skills
- to develop the ability to communicate effectively
- to provide pertinent experience with chemical instrumentation.

The BS in chemistry program consists of most of the courses recommended by the American Chemical Society and provides a rigorous background well-suited to those students who will pursue graduate studies in chemistry. The program is also highly recommended for premedical students. The program contains six technical elective courses. By careful selection of courses, these electives allow the student to develop a cluster in a related field such as biotechnology, biochemistry, computer science, environmental studies, or an engineering field

Students majoring in forensic science may also earn a BS degree in chemistry by taking 12-16 credits in addition to those required for the BS degree in forensic science.

## BS, Chemistry

### Required Courses

Students majoring in chemistry must complete the following courses for a total of 123-126 credits:

**Freshman**

CH 115-116	General Chemistry I and II
CH 117-118	General Chemistry I and II Laboratory
CS 107	Introduction to Data Processing
E 105	Composition
E 110	Composition and Literature
M 117-118	Calculus I and II
PH 150	Mechanics, Heat, and Waves with Laboratory

**Sophomore**

CH 201-202	Organic Chemistry I and II
CH 203-204	Organic Chemistry I and II Laboratory
CH 211	Quantitative Analysis with Laboratory
CH 221	Instrumental Methods of Analysis with Laboratory
HS 102	The Western World in Modern Times
M 203	Calculus III
PH 205	Electromagnetism and Optics with Laboratory

*Plus* one computer science (CS) elective *or* an approved technical elective\*

*Plus* one social science elective

**Junior**

CH 331-332	Physical Chemistry I and II
CH 333-334	Physical Chemistry I and II Laboratory
CH 341	Synthetic Methods in Chemistry
HU 300	The Nature of Science

*Plus* two technical electives\*, one advanced chemistry elective, one literature or philosophy elective, one art/music/theatre elective, and a second social science elective

**Senior**

CH 411	Chemical Literature
CH 412	Seminar
CH 451	Thesis with Laboratory <i>or</i> advanced chemistry or chemical engineering course
CH 501	Advanced Organic Chemistry
CH 521	Advanced Inorganic Chemistry

CH 599 Independent Study *or* advanced chemistry or chemical engineering course

*Plus* one math/computer/biology elective and four technical electives\*

\* To be chosen in consultation with student's advisor

**Teaching Chemistry**

Students interested in earning a teaching certificate in secondary education in chemistry may enter the graduate program at UNH. The BS or BA in chemistry is the best choice for a major for those planning to teach at the secondary level, but other related majors are also acceptable. Students interested in teaching science at the middle school level need a variety of science courses, including chemistry. Please contact the education department for additional information.

**Minor in Chemistry**

Students minoring in chemistry must complete 23-24 credit hours, including the following courses :

**Required Courses**

CH 115-116	General Chemistry I and II
CH 117-118	General Chemistry I and II Laboratory
CH 201-202	Organic Chemistry I and II
CH 203-204	Organic Chemistry I and II Laboratory
CH 211	Quantitative Analysis with Laboratory
CH 221*	Instrumental Methods of Analysis with Laboratory

\* A CH 300-level or above course may be substituted for CH 221.

## Civil Engineering

Coordinator: Gregory P. Broderick, PhD

Professors Emeriti: M. Hamdy Bechir, ScD, Massachusetts Institute of Technology; John C. Martin, ME, Yale University

**Professors:** Agamemnon D. Koutsospyros, PhD,  
Polytechnic University; David J. Wall, PhD,  
University of Pittsburgh

**Associate Professor:** Gregory P. Broderick,  
PhD, University of Texas

**Assistant Professor:** Jean Nocito-Gobel, PhD,  
University of Massachusetts

Civil Engineering is about community service, development and improvement: the planning, design, construction, and operation of facilities essential to modern life. Civil engineers are problem solvers taking on the challenges of environmental pollution, traffic congestion, infrastructure rehabilitation, drinking water and energy needs, urban redevelopment, and community planning. They are at the forefront of technology, leading users of some of the most sophisticated high-tech products available (e.g., GPS and GIS systems, fiber-optic sensors, CAD systems, highly sophisticated, task-specific computer software, etc.) Innovation is paramount in the solution to most civil engineering projects.

### Mission and Goals

The mission of the civil engineering faculty is to provide a state-of-the-art/state-of-the-practice program designed to achieve the following four major educational goals:

- educate a new generation of civil engineers to meet the challenges, demands, and expectations of society
- cultivate, enrich, and promote scholarship, responsibility, and service among our graduates
- disseminate new knowledge
- nurture interdisciplinary education for solving the problems facing an ever-changing society.

In order to achieve this mission, the civil engineering program's objectives are to:

- provide educational experiences that prepare our students for professional practice of modern civil engineering in a global, societal and environmental context
- promote scholarship and problem-solving skills
- instill an understanding of the technical, economic, political, ethical, and humanistic dimensions of civil engineering projects

- prepare students to interact and communicate effectively in multidisciplinary fields
- instill the need and provide the educational foundation for lifelong learning
- encourage service to the civil engineering profession and to society through professional registration and community involvement.

To help achieve the educational goals and objectives presented above, the faculty of the civil engineering program in combination with the faculties of the School of Engineering & Applied Science at the University of New Haven have developed a new and innovative curriculum: the Multidisciplinary Engineering Foundation Spiral. It is an effort, during the first two years of study, to provide the student with a multidisciplinary engineering perspective. (See in-depth discussion under "Choosing a Major".)

The foundation engineering courses (EAS prefix) taken during the first two years of study serve both as the basis for depth in Civil Engineering study and as part of a broad multidisciplinary background. Each foundation course also stresses the development of several essential skills, such as problem solving, oral and written communication, the design process, teamwork, project management, computer analysis methods, laboratory investigation, data analysis, and model development. In the junior and senior years, the student is exposed to required and elective Civil Engineering coursework embedded with experiences in analysis, design, and professional issues, providing insight into five Civil Engineering subdisciplines: Structural, Geotechnical, Hydraulics-Water Resources, Transportation, and Environmental Engineering. The critical skills introduced during the first two years (i.e., problem solving, oral and written communication etc.) are further enhanced through a variety of pedagogical methods including laboratory reports, term projects, design assignments, oral presentations, and participation in American Society of Civil Engineers Student Chapter activities, as well as field trips to local civil engineering projects. Upper-level technical electives provide comprehensive exposure to current and emerging technologies in the various Civil Engineering subdisciplines. Aspects of professional and ethical Civil Engineering practice and service to the profession and society are cov-

ered to a finite degree in all upper-level courses and extensively in a required course, “Professional and Ethical Practice of Engineers.” Coursework culminates with a capstone design course that provides extensive exposure to “real-world” design problems faced within contemporary civil engineering professional practice. Humanities and social science courses are included at all levels of the curriculum.

The civil engineering program is enriched by a diverse student body which includes students of a wide range of ages, professional and nonprofessional experiences, and nationalities. Graduates of the program are encouraged to continue their education throughout their professional careers and to become registered professional engineers.

The Civil Engineering program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). A bachelor’s degree from an ABET-accredited institution is required to become a PE, a registered professional engineer. Accreditation is a testament to the quality of the Civil Engineering program here at the University of New Haven.

### Internship Requirement

The internship program is intended to enrich the academic experience of our undergraduate students, providing exposure to and participation in a working engineering environment. Each internship must involve a partnership consisting of the student, our faculty, and employers/organizations to provide each student intern with an optimal experience. A minimum of 300 hours performing relevant engineering duties is required prior to graduation. Students must complete 60 credit hours toward the bachelor’s degree in civil engineering before an internship is attempted.

The internship carries no credit for the degree; however, the requirement may be satisfied utilizing a co-op position, summer employment, and part-time or full-time positions that are approved by the student’s employer and by the department/internship coordinator as relevant to the goals of the internship experience. A waiver (or substitution) of the internship requirement may be granted for students who are employed in the field, subject to a formal review by the

department/internship coordinator. The student’s request for such a waiver must be initiated one year prior to the anticipated graduation date.

### Student Chapter of the American Society of Civil Engineers

At UNH, an active student chapter of the American Society of Civil Engineers (ASCE) sponsors technical lectures, field trips, and social activities that offer an opportunity for students to interact with practicing professionals. Membership is open to all civil engineering students in good standing.

### Chi Epsilon

Students with high academic standing are nominated annually for membership in Chi Epsilon, the national honor society for civil engineers.

### BS, Civil Engineering

Students must complete a total of 132 credit hours for a degree in civil engineering, including the engineering requirements for the freshman year listed earlier in this section, the university core requirements, and the internship requirement. Students are also required to earn a cumulative quality point ratio of no less than 2.0 in all civil engineering courses and technical electives. The required courses for the program are listed below:

#### Required Courses

The freshman year courses are the same as the common courses for the first year of the BS degree program in engineering described previously, with EAS 120 Chemistry with Applications to Biosystems with Laboratory required in the second semester of the freshman year.

#### Sophomore

- CE 203 Elementary Surveying
- CE 218 Civil Engineering Systems
- EAS 211 Introduction to Modeling of Engineering Systems
- EAS 213 Materials in Engineering Systems
- EAS 222 Fundamentals of Mechanics and Materials

- EAS 224 Fluid – Thermal Systems  
 M 203 Calculus III  
 M 204 Differential Equations  
 PH 150 Mechanics, Heat, and Waves with  
 Laboratory  
 PH 205 Electromagnetism and Optics with  
 Laboratory

### Junior

- CE 206 Engineering Geology  
 CE 304 Soil Mechanics  
 CE 306 Hydraulics  
 CE 309 Water Resources Engineering  
 CE 312 Structural Analysis  
 CE 323 Mechanics and Structures Laboratory  
 CE 398 Civil Engineering Internship  
 CE 408 Steel Design and Construction *or* CE 409  
 Concrete Design and Construction *or* CE  
 412 Wood Engineering  
 E 300 Writing Proficiency Exam  
 EAS 232 Project Management and Engineering  
 Economics  
 EAS 345 Applied Engineering Statistics  
*Plus* one social science elective and  
 one literature or philosophy elective

### Senior

- CE 301 Transportation Engineering  
 CE 315 Environmental Engineering  
 CE 327 Soil Mechanics Laboratory  
 CE 328 Hydraulics and Environmental  
 Laboratory  
 CE 407 Professional and Ethical Practice  
 of Engineering  
 CE 500-501 Senior Project I and II  
 HS 102 The Western World in Modern Times  
*Plus* 9 credit hours of Civil Engineering technical elec-  
 tives, of which 6 credits must be Civil Engineering  
 design courses, and one art/music/theatre elective

### Minor in Civil Engineering

Students are required to complete 18 credit hours of civil engineering courses for the minor. With the approval of the chair, engineering majors may substi-

tute other civil engineering courses for a minor. Students must fulfill all prerequisites for courses chosen.

### Required Courses

Six courses from the following list:

- CE 203 Elementary Surveying  
 CE 218 Civil Engineering Systems  
 CE 301 Transportation Engineering  
 CE 304 Soil Mechanics  
 CE 306 Hydraulics  
 CE 309 Water Resources Engineering  
 CE 312 Structural Analysis  
 CE 315 Environmental Engineering  
 CE 407 Professional and Ethical Practice  
 of Engineering

## Computer Science & Information Technology

**Acting Chair:** M. Ali Montazer, PhD

**Professor Emeritus:** Edward T. George, DEngr,  
 Yale University

**Professors:** Tahany Fergany, PhD, University of  
 Connecticut; Alice E. Fischer, PhD, Harvard  
 University; Roger G. Frey, PhD, Yale University;  
 M. Ali Montazer, PhD, University at Buffalo

**Associate Professors:** William R. Adams, PhD,  
 University of Connecticut; Barun Chandra, PhD,  
 University of Chicago; David Eggert, PhD,  
 University of South Florida; Norman Hosay, PhD,  
 University of Wisconsin

**Assistant Professor:** Elaine Sonderegger, EE,  
 Massachusetts Institute of Technology

**Lecturers:** Jacalyn Dieneshouse, MA, Columbia  
 University; Gregory Gibson, MS, University of  
 New Haven

Three undergraduate degree programs are offered: the Bachelor of Science (BS) and Associate of Science (AS) in Computer Science and the Bachelor of Science (BS) in Information Technology. The program's objectives are described below.

## BS, Computer Science

**Coordinator:** Alice E. Fischer, PhD

The bachelor's degree program in computer science is nationally accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (CAC/ABET).

The goals of the bachelor's degree program are to inform, challenge, and train our diverse student body for a constantly changing world of technology. A strong student will be prepared for graduate study in computer science. At graduation, every student should:

- have acquired a solid body of knowledge and understanding of computer hardware, software, and theory as defined by the Association for Computing Machinery (ACM) guidelines
- be able to communicate technical material in written English
- be able to design and implement a system for a real application
- have developed a professional level of skill in programming, both individually and as part of a team
- be ready for employment at a professional level in industry
- be aware of the legal and ethical issues that confront the field of computing
- know the rights and obligations of the practicing computing professional
- be prepared for lifelong learning in the field.

A typical initial job title might be applications programmer or software engineer. Later titles might be systems analyst, team leader, or software consultant. Areas of application range from database management to highly technical design projects.

The computer science program includes instruction in several programming languages and a strong base in mathematics. Intermediate courses include the study of systems, hardware, and theory. Advanced courses are available in various application areas. With the help of the advisor, each student will also choose some area of interest outside the computer science program and pursue a specialization in that field. It is often easy to extend this specialization into a minor in the selected field. Popular areas include mathematics,

engineering, business, social sciences, and multimedia.

### Required Courses

A total of 126 credit hours, including the university core curriculum, is required for the degree of bachelor of science in computer science.

#### Freshman

CS 110	Introduction to C Programming
CS 166	Discrete Mathematics for Computing
CS 210	Java Programming
EAS 107	Introduction to Engineering
E 105	Composition
E 110	Composition and Literature
FE 001	Freshman Experience (required for all first-time day division freshmen)
HS 102	The Western World in Modern Times
M 117	Calculus I
M 118	Calculus II
	One social science elective

#### Sophomore

CS 212	Intermediate C Programming
CS 214	Computer Organization
CS 215	Introduction to Databases
CS 226	Data Structures Using Collections
EE 155	Digital Systems I
M 203	Calculus III
	Two semesters of a laboratory science sequence
	One art/music/theatre elective
	One social science elective

#### Junior

CS 247	Networking Essentials and Technologies
CS 320	Operating Systems
CS 326	Data Structures and Algorithms II
E 225	Technical Writing and Presentation
E 300	Writing Proficiency Exam
EAS 345	Applied Engineering Statistics
	One computer science elective
	One laboratory science elective
	One literature/philosophy elective
	Two specialization electives

**Senior**

- CS 416 Social and Professional Issues  
in Computing
- CS 428 Object-Oriented Design
- CS 536 Structure of Programming Languages
- CS 547 Systems Programming
- CS 590 Internship

Two senior-level computer electives  
 One technical elective  
 One technical/humanities elective  
 Two specialization electives

In addition, or as part of the preceding requirements, each student must complete a substantial programming project and demonstrate familiarity with another programming language in addition to C.

**AS, Computer Science**

This two-year associate's program is designed for part-time students and for those who wish to enter the job market as soon as possible. All credits can be applied toward the BS degree in computer science. It is recommended, however, that students enroll in the bachelor's degree program, earning the associate's degree as a stepping-stone toward the BS in computer science. A total of 61 credit hours is required for the awarding of the AS in computer science.

**Required Courses****Freshman**

- CS 110 Introduction to C Programming
- CS 166 Discrete Mathematics for Computing
- CS 210 Java Programming
- EAS 107 Introduction to Engineering
- E 105 Composition
- E 110 Composition and Literature
- FE 001 Freshman Experience (required for all first-time day division freshmen)
- HS 102 The Western World in Modern Times
- M 117 Calculus I
- M 118 Calculus II

**Sophomore**

- CS 212 Intermediate C Programming
- CS 214 Computer Organization
- CS 215 Introduction to Databases
- CS 226 Data Structures Using Collections

- CS 247 Networking Essentials and Technologies
- EE 155 Digital Systems I

Two semesters of a laboratory science sequence  
 One social science elective  
 One art/music/theatre elective

**Minor in Computer Science**

Students may minor in computer science by completing 18 credit hours of computer science courses. Those considering a minor in computer science should seek guidance from the CS undergraduate coordinator as early as possible. Students must complete the following courses:

- CS 110 Introduction to C Programming
- CS 166 Discrete Mathematics for Computing
- CS 210 Java Programming
- CS 226 Data Structures Using Collections
- Plus* two CS Sophomore Electives

**Computer Programming Certificate**

This certificate is designed for individuals who require rapid entry into the job market as a computer programmer. Candidates do not need to matriculate into an associate's or bachelor's degree program at the university but may enroll directly as a student pursuing a certificate. Credits earned toward the certificate may be applied toward the requirements for a degree program at a later date. Students must complete 21 credit hours including the following courses:

- CS 110 Introduction to C Programming
- CS 166 Discrete Mathematics for Computing
- CS 210 Java Programming
- CS 212 Intermediate C Programming
- CS 226 Data Structures Using Collections
- Plus* two CS Sophomore Electives

**BS, Information Technology**

Coordinator: M. Ali Montazer, PhD

*The School of Engineering & Applied Science is seeking permission to introduce this program shortly. Our application for program licensure by the State of Connecticut Department of Higher Education is currently under review. Please consult the university website at <http://www.newhaven.edu/seas/it.html> for*



*information on when applications will be accepted for entry into the program.*

The goals of the bachelor's degree program in information technology are to inform, challenge, and train our diverse student body for a constantly changing world of technology. At graduation, every student should:

- have acquired a solid body of knowledge and understanding of current technical concepts and practices in the core information technologies
- be able to design effective and usable IT-based solutions and integrate them into a user's environment, both individually and as part of a team
- be able to assist in the creation of an effective project plan
- be able to communicate effectively and efficiently with clients, users, and peers, both orally and in writing
- demonstrate independent critical thinking and problem-solving skills
- have acquired a solid body of knowledge and understanding of computer hardware and software
- be sensitive to human/computer interface design issues
- be able to communicate technical material in clear written English
- be able to design and implement a system for real application, both individually and as part of a team
- be aware of the legal and ethical issues that confront the field of computing
- know the rights and obligations of the practicing computing professional
- be prepared for lifelong learning in the field.

This program consists of a common core that exposes students to a wide range of computing and technology topics, including the study of databases, hardware, networks, programming, and human/computer interaction. Advanced courses are selected from one of two tracks: Web and Database Development or

Network Administration and Security. A student also must complete a minor in another discipline. Suggested minors include criminal justice, business administration, marketing, international business, art, multimedia, and bioengineering.

Areas of application include webpage design and development, database administration and maintenance, and network development and administration. Typical initial job titles might be web developer, network technician, applications developer, biomedical computing technician, and network security technician. With several years of experience job titles might be website administrator, network administrator, database administrator, and security manager.

### **Required Courses**

A total of 120 credit hours, including the university core curriculum, is required for the degree of Bachelor of Science in Information Technology. Students must complete one of two tracks: Web and Database Development or Network Administration and Security. Substitutions for track courses are permitted with the advisor's approval.

#### **Freshman**

CS 107	Introduction to Data Processing
CS 110	Introduction to C Programming
CS 166	Discrete Mathematics for Computing
CS 210	Java Programming
EAS 107	Introduction to Engineering
EAS 109	Project Planning and Development
E 105	Composition
E 110	Composition and Literature
FE 001	Freshman Experience (required for all first-time day division freshmen)
M 115	Pre-Calculus
HS 102	The Western World in Modern Times

#### **Sophomore**

CS 214	Computer Organization
CS 215	Introduction to Databases
	One math or laboratory science elective
	One laboratory science elective
	One art/music/theatre elective
	Two minor electives

**Web and Database Development Track**

MM 301 Introduction to Multimedia

MM 312 Website Creation

EC 133-4 Principles of Economics I or II

*or***Network Administration and Security Track**

EE 155 Digital Systems I

EE 256 Digital Systems Laboratory

One social science elective

**Junior**

CS 247 Networking Essentials and Technologies

CS 350 Human-Computer Interaction

M 228 Statistics

CO 100 Human Communication

E 225 Technical Writing and Presentation

E 300 Writing Proficiency Exam

One social science elective

One literature/philosophy elective

Two minor electives

**Web and Database Development Track**

MK 300 Principles of Marketing

*or***Network Administration and Security Track**

CS 320 Operating Systems

**Senior**CS 416 Social and Professional  
Issues in Computing

CS 590 Internship

EAS 232 Project Management and  
Engineering Economics

One minor elective

One minor or restricted elective

One free elective

**Web and Database Development Track**

CS 441 Web Database Connectivity

MK 326 Overview of E-Commerce

Two restricted electives

*or***Network Administration and Security Track**

CS 445 Network Administration

IE 414 Engineering Management

CS 446 Introduction to Computer Security

Four credits of restricted electives

A restricted elective is any course at the 200 level or higher from math, science, engineering, or the student's minor area.

## Electrical and Computer Engineering

Electrical Engineering Coordinator: Ali M. Golbazi, PhD

Computer Engineering Coordinator: Darrell W. Harding, PhD

At the undergraduate level, the bachelor of science degrees in electrical engineering and in computer engineering are offered. A master of science in electrical engineering, with an option in computer engineering, is available at the graduate level.

Electrical and computer engineering encompasses many practical and diverse technologies, including electronics, electromagnetics, power, communications, control, microprocessors, computer systems, digital systems, signal and information processing, and fiber optics.

Electrical and computer engineers serve in many professional capacities which require a thorough understanding of the scientific principles that govern electrical phenomena. These activities often lead to new concepts and techniques and, sometimes, to the discovery of new phenomena. The technical complexity of the services or products provided by many companies requires personnel with the appropriate educational background.

**Mission and Goals**

The mission of these programs is to prepare students from diverse backgrounds for professional practice and continued growth in electrical and computer engineering.

To accomplish this mission, the following major educational goals have been set:

- to provide an education recognized within the profession

- to provide a broad-based educational experience
- to create, develop and deliver new and innovative knowledge
- to prepare graduates for employment in professional practice and/or graduate study.

The curriculum is designed to provide students with the skills and the basic scientific background needed to become proficient in today's technology and to keep abreast of future developments in the electrical and computer engineering profession.

The early part of the program emphasizes electrical and computer engineering skills that form the background for the upper-level elective and design courses. Physics, chemistry, mathematics, computer programming, basic engineering science, and general education courses supplement the required and elective electrical and computer engineering courses.

The upper-level electrical and computer engineering coursework provides areas of concentration for in-depth study. Students can choose additional technical electives from outside the area of concentration to provide more breadth of knowledge.

To influence our society's evolution, the electrical and computer engineer must acquire an understanding of our society, our cultural heritage, and the human condition. The engineer must communicate ideas to other engineers and to the public. The electrical and computer engineering program enables this via liberal and humanistic studies. The university core requirements allow students to expand their cultural and intellectual horizons by exposing them to the humanities and social sciences. Students learn written and oral communication skills in their core courses as well as in multidisciplinary engineering-science courses in freshman and sophomore years. Students apply these skills in their humanities and social science courses as well as in laboratory/design courses in their major.

An important feature of the electrical and computer engineering curriculum is the design experience. Our students develop the ability to analyze appropriate models, conduct empirical tests, gather relevant information, interpret empirical tests, develop appropriate models, develop alternative solutions, formulate problems, and synthesize in our laboratory sequence.

In gradual steps this sequence of courses takes the student from a well-structured laboratory experiment in the sophomore year to an open ended design project in the senior year in gradual steps. This allows students to gain practical experience in engineering design.

## Internship Requirement

The internship program is intended to enrich the academic experience of our undergraduate students, providing exposure to and participation in a working engineering environment. Each internship must involve a partnership consisting of the student, our faculty, and employers/organizations to provide each student intern with an optimal experience. A minimum of 300 hours performing relevant engineering duties is required prior to graduation. Students must complete 60 credit hours toward the bachelor's degree in electrical or computer engineering before an internship is attempted.

The internship carries no credit for the degree; however, the requirement may be satisfied utilizing a co-op position, summer employment, and part-time or full-time positions that are approved by the student's employer and by the department/internship coordinator as relevant to the goals of the internship experience. A waiver (or substitution) of the internship requirement may be granted for students who are employed in the field, subject to a formal review by the department/internship coordinator. The student's request for such a waiver must be initiated one year prior to the anticipated graduation date.

## Student Societies

The electrical and computer engineering programs sponsor a student section of the Institute of Electrical and Electronics Engineers. This organization supports visiting lecturers, educational workshops, field trips to surrounding industrial sites, and social events.

Eta Kappa Nu, the national honor society for electrical and computer engineers, is represented by the Zeta Rho Chapter at the University of New Haven. This society exists to honor superior students and to encourage high scholastic achievement.

## BS, Electrical Engineering

**Coordinator:** Ali M. Golbazi, PhD

**Professors Emeriti:** Gerald J. Kirwin, PhD,  
Syracuse University; Kantilal K. Surti, PhD,  
University of Connecticut

**Professors:** Bouzid Aliane, PhD, Polytechnic  
Institute of New York; Andrew J. Fish, Jr., PhD,  
University of Connecticut; Ali M. Golbazi, PhD,  
Wayne State University; Darrell W. Horning,  
PhD, University of Illinois; Bijan Karimi, PhD,  
Oklahoma State University; Daniel C. O'Keefe,  
PhD, Worcester Polytechnic Institute

The BS program in electrical engineering is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

Electrical engineering is concerned with the analysis, design, development, and operation of electrical and electronic systems. Examples of such systems include communication, fiber optics, data processing, power generation and distribution, control, and instrumentation. Digital circuits and computers are important integral parts of such systems and are widely used by electrical engineers in their design and development. The electrical engineer is also concerned with the devices that make up systems such as transistors, integrated circuits, rotating machines, antennas, lasers, and computer-memory devices.

### Program Objectives

The educational objectives of the electrical engineering program are to produce graduates who:

- can think creatively to formulate and solve electrical engineering problems
- can design electrical engineering systems, subsystems, or processes to meet performance, economic, safety and environmental specifications
- have an understanding of professional and ethical responsibility as it relates to the electrical engineering profession
- have a sufficiently broad foundation in electrical engineering to allow them to grow and develop with a rapidly changing technological environment

- apply effective writing, speaking and communication skills in professional presentations
- understand and apply the techniques, skills and tools of modern electrical engineering practice to analysis and design problems.

The bachelor of science in electrical engineering offers three upper-level concentration areas:

1. Communications—including communications systems, fiber optics, signal processing.
2. Control—including analog and digital control systems, fuzzy control.
3. Digital—including sequential logic design, computer architecture, microprocessors systems.

### Required Courses

Students must complete a total of 125 credit hours for a bachelor of science degree in electrical engineering, including the requirements for the freshman year listed earlier and the internship requirement. Humanities or social science electives must be selected to fulfill the core curriculum requirements of the university and ABET.

Technical elective courses in the BSEE program must be selected from upper-level offerings (third or fourth year) under the guidance and approval of the student's academic advisor. At least three must be electrical or computer engineering courses.

In the final year of study the student takes a senior design sequence, EE 457 and EE 458 that is spread over two semesters. In the first semester the student selects a topic and does a literature search and a preliminary design. In the second semester, the student completes the design, implements the project, and presents results.

### Freshman

CH	115	General Chemistry I
CH	117	General Chemistry I Laboratory
E	105	Composition
E	110	Composition and Literature
EAS	107	Introduction to Engineering
EAS	109	Project Planning and Development
EAS	112	Methods of Engineering Analysis
FE	001	Freshman Experience (required for all first-time day division freshmen)
HS	102	The Western World in Modern Times

- M 117 Calculus I  
 M 118 Calculus II  
 PH 150 Mechanics, Heat, and Waves  
 with Laboratory

#### Sophomore

- CS 110 Introduction to C Programming I  
 EAS 211 Introduction to Modeling of Engineering  
 Systems  
 EAS 230 Fundamentals and Applications of  
 Analog Devices  
 EE 155 Digital Systems I  
 EE 235 Analog Circuits  
 EE 256 Digital Systems Laboratory  
 EE 257 Analog Circuits Laboratory  
 M 203 Calculus III  
 M 204 Differential Equations  
 PH 205 Electromagnetism and Optics  
 with Laboratory

*Plus* one social science elective

#### Junior

- E 300 Writing Proficiency Examination  
 EC 133 Principles of Economics I  
 EE 247 Electronics I  
 EE 302 Systems Analysis  
 EE 320 Random Signal Analysis  
 EE 348 Electronics II  
 EE 349 Electronics Design Laboratory  
 EE 355 Control Systems  
 EE 371 Computer Engineering  
 EE 398 Electrical Engineering Internship

*Plus* one mathematics elective and one technical  
 elective

#### Senior

- EAS 232 Project Management and Engineering  
 Economics  
 EAS 415 Professional Engineering Seminar  
 EE 445 Communication Systems  
 EE 457 Design Preparation  
 EE 458 Electrical Engineering Design Laboratory  
 EE 461 Electromagnetic Theory

*Plus* three technical electives, one art/music/theatre  
 elective, and one literature or philosophy elective

### Minor in Electrical Engineering

A student may obtain a minor in electrical engineering by completing the following courses:

- EAS 230 Fundamentals and Applications of  
 Analog Devices  
 EE 155 Digital Systems I  
 EE 202 Network Analysis  
 EE 235 Analog Circuits  
 EE 256 Digital Systems Laboratory  
 EE 257 Analog Circuits Laboratory

*Plus* one of the following sequences:

- EE 247 Electronics I and EE 348 Electronics II  
*or* EE 371 Computer Engineering and  
 EE 356 Digital Systems II  
*or* EE 302 Systems Analysis and  
 EE 355 Control Systems

The student must fulfill the prerequisites for these courses.

Students contemplating either a minor or an associate's degree should consult with the department chair early in their program.

### BS, Computer Engineering

Coordinator: Darrell W. Horning, PhD

**Professors:** Bouzid Aliane, PhD, Polytechnic Institute of New York; Tahany Fergany, PhD, University of Connecticut; Alice E. Fischer, PhD, Harvard University; Roger G. Frey, PhD, Yale University; Ali M. Golbazi, PhD, Wayne State University; Darrell W. Horning, PhD, University of Illinois; Bijan Karimi, PhD, Oklahoma State University; Daniel C. O'Keefe, PhD, Worcester Polytechnic Institute

**Associate Professors:** William R. Adams, PhD, University of Connecticut; Barun Chandra, PhD, University of Chicago; Davis Eggert, PhD, University of South Florida; Norman Hosay, PhD, University of Wisconsin.

Computer engineering is concerned with design and implementation of digital systems such as computer systems, computer-based control systems, interfaces between digital and analog systems, interfaces between hardware and software, and control software for embedded computer systems. This program spans

the disciplines of both electrical engineering and computer science and can be described as bridging the area between the two.

Computers are used in almost every device or system manufactured today, from large multicomputer systems to cell phones and credit card reading devices. In addition, they are used in signal processing applications, speech recognition, medical imaging, and picture and data communication. The internet is possible in part because of advances in computing machines and data communication created by people working in the capacity of computer engineers. Careers for computer engineers are found in all phases of the production of these devices and systems, from design, manufacturing, and maintenance to marketing and sales.

### Program Objectives

Upon completion of the program, a graduate of the computer engineering program should be able to:

- demonstrate both hardware and software skills and understanding
- understand the design tradeoffs between hardware and software
- have an understanding of professional and ethical responsibilities
- apply effective writing, speaking, and communication skills in professional presentations
- design embedded real-time systems
- design and interface between a computer system and a digital communication system network
- design a processor and understand basic computer architecture and organization.

Design and problem solving are the central themes of this program. This engineering area uses the engineering and hardware approach of electrical engineering and the knowledge of computing structures and the algorithmic approach of computer science. The first two years of the program concentrate on basic science, mathematics, and engineering. The last two years are comprised of courses in digital systems, computer systems, networks, electrical systems, and design of software systems. There are three electives in the fourth year that give the student an opportunity to explore a hardware and/or software-oriented program. The final year has a senior design course spread over two semesters in

which the student designs a device, system, or software application. Depending on the student's interests, the project can be hardware-oriented, software-oriented or both. The program also has a general education component in communications, economics, and the humanities needed to create a well-rounded professional.

### Required Courses

Students must complete a total of 128 credit hours to earn a bachelor of science degree in computer engineering. Humanities or social science electives must be selected to fulfill the core curriculum requirements of the university, and students must complete the internship requirement.

Program core courses are advanced CS or EE courses that are considered to be in the area of computer engineering. The technical electives are any 300-level or above CS or EE courses that fit into the student's plan of study and are approved by the academic advisor.

In the final year of study the student takes a senior design sequence CEN 457 and CEN 458, that is spread over two semesters. In the first semester the student selects a topic and does a literature search and a preliminary design. In the second semester, the student completes design, implements the project, and presents the results.

The following list shows the sequence of courses that a student should follow to complete the program in four years.

#### Freshman

CH 115	General Chemistry I
CH 117	General Chemistry I Lab
CS 110	Introduction to C Programming I
CS 166	Discrete Mathematics for Computing
E 105	Composition
E 110	Composition and Literature
EAS 107	Introduction to Engineering
EAS 112	Methods of Engineering Analysis
FE 001	Freshmen Experience (required for all first-time day-division freshmen)
M 117	Calculus I
M 118	Calculus II
PH 150	Mechanics, Heat, and Waves with Laboratory

**Sophomore**

CS 210	Java Programming
EAS 211	Modeling Engineering Systems
EAS 230	Analog Devices
EE 155	Digital Systems I
EE 235	Analog Circuits
EE 256	Digital Systems Lab
EE 257	Analog Circuits Laboratory
HS 102	The Western World in Modern Times
M 203	Calculus III
M 204	Differential Equations
PH 205	Electromagnetism and Optics with Laboratory

**Junior**

CEN398	Computer Engineering Internship
CS 320	Operating Systems
CS 226	Data Structures Using Collections
E 300	Writing Proficiency Examination
EE 247	Electronics I
EE 302	Systems Analysis
EE 320	Random Signal Analysis
EE 356	Digital Systems II
EE 371	Computer Engineering
EE 410	Networking I
EE 472	Computer Architecture
EE 475	Embedded Systems, Interfaces, and Buses

**Senior**

CEN 457	Design Preparation
CEN 458	Senior Design Laboratory
EAS 232	Project Management and Engineering Economics
EAS 415	Professional Engineering Seminar
EC 133	Principles of Economics I
<i>Plus</i> three technical electives, one literature/philosophy elective, one social science elective, and one art/music/theatre elective	

**Minor in Computer Engineering**

A student may obtain a minor in computer engineering by completing the following courses:

CS 166	Discrete Mathematics for Computing
CS 226	Data Structures Using Collections
EAS 230	Fundamentals & Applications of Analog Devices

EE 247	Electronics I
EE 155	Digital Systems I
EE 256	Digital Systems Lab
EE 371	Computer Engineering I

## General Engineering

Coordinator: Ronald W. Wentworth, PhD

**Faculty**

The General Engineering program leading to the bachelor's degree is administered through the office of the Dean of the School of Engineering & Applied Science, with an oversight committee of faculty. All of the faculty of SEAS constitute the faculty for this degree program.

**BS, General Engineering**

The bachelor of science in general engineering (GE) is a degree program designed for those interested in a career involving general engineering knowledge without the prescribed requirements of a specific engineering discipline. It provides complete flexibility for a student to combine engineering with any other undergraduate discipline within the university, such as studies in:

- business
- liberal arts
- computer science
- sciences
- teaching and education
- other UNH programs.

It also provides the opportunity for including elements of two different engineering disciplines in one degree program.

Job opportunities depend on the combination selected and include:

- engineering and technical services
- technical management and sales
- engineering-related business activities
- music
- science-related activities
- computer-related activities
- technical writing

- medical services
- education.

### The Degree Program

The bachelor's degree program in General Engineering requires completion of 121 credit hours. Students can use the various electives (including Engineering electives) to focus on an area of interest within SEAS or may combine engineering with other areas. Faculty of the School of Engineering & Applied Science are currently revising the course requirements of the General Engineering program to fully implement the new Multidisciplinary Engineering Foundation curriculum. This will affect the entries listed below as Required Engineering Courses and Electives. Please see the UNH website or contact the Dean's office for the latest requirements.

### Undecided Option

Students who wish to earn an engineering degree in a designated discipline (CE, CEN, CM, EAS, EE, IE, or ME), but who are undecided about choice of discipline, should start the general engineering (GE) program and change majors to one of the specific degree programs when they have decided on an engineering specialization. Making a choice by the end of the first year of study will result in a smooth transition.

### Required Courses

#### Freshman Year

Common First Year Engineering Program

#### Sophomore Year

PH 150 Mechanics, Heat, and Waves with Lab

PH 205 Electromagnetics and Optics  
with Laboratory

M 203 Calculus III

HS 102 The Western World in Modern Times

LA 101 Business Law and the Regulatory  
Environment

Required Engineering and Elective Courses (4)

#### Junior Year

E 225 Technical Writing and Presentation

E 300 Writing Proficiency Exam

EAS 345 Applied Engineering Statistics -or-

Social science elective

Art or music or theatre elective

Required Engineering and Elective Courses (6)

#### Senior Year

HS 306 Modern Technology and Western Culture,

*or* HU 300 The Nature of Science

EAS 415 Professional Engineering Seminar

Literature or philosophy elective

Required Engineering and Elective Courses (7)

## Industrial Engineering

**Coordinator:** Ronald N. Wentworth, PhD

**Professors Emeriti:** Joseph A. Arnold, MS,

Southern Connecticut State College; William S. Gere, Jr., PhD, Carnegie-Mellon University

**Professors:** Ira H. Kleinfeld, EngScD, Columbia

University; M. Ali Montazer, PhD, State

University of New York at Buffalo; Alexis N.

Sommers, PhD, Purdue University; Ronald N.

Wentworth, PhD, Purdue University

Three degree programs are offered in the industrial engineering area: the bachelor of science in industrial engineering, the master of science in industrial engineering, and the dual-degree program leading to the MBA/MSIE. Graduate certificates in logistics and in quality engineering are also offered.

### Mission and Educational Objectives

Tracing its lineage to the creation of the university in 1920, when one of the two original program offerings was called "Industrial Arts," the Industrial Engineering program defines its mission as being successful as a premier provider of undergraduate and graduate degrees in industrial engineering. This mission includes recruiting a diverse student body; providing state-of-the-art education; and interacting with employers to insure that graduates are ready, willing, and able to contribute to their chosen professions in service organizations, manufacturing, the military, government, transportation, commerce, health care, and numerous other fields.

The program accomplishes its mission by preparing industrial engineers, people who engineer processes and



systems that improve quality and productivity in any workplace setting. The program's objectives are to produce graduates who:

- are career-ready and capable of pursuing graduate studies
- can communicate their ideas effectively
- can successfully interact with team members and others
- are professionally and ethically responsible.

The program combines strong theoretical foundations in science, mathematics, probability and statistics, human factors/ergonomics, humanities, and social sciences with industrial engineering and computer applications in order to improve effectiveness in virtually all industries and economic sectors, including manufacturing, transportation, service, and government. Graduates will be prepared to address issues of operational design, process and product quality, methods improvement, and facilities design.

## Student Chapter of IIE

Students are encouraged to join, at a reduced membership fee, the student chapter of the Institute of Industrial Engineers (IIE). The student chapter is affiliated with a local senior chapter of IIE, enabling students to develop a sense of the practice and direction of the profession.

## BS, Industrial Engineering

Industrial engineering is one of the most flexible and diverse of all engineering disciplines, providing a broad view of the complex interrelated activities necessary to produce a product or service efficiently in a competitive market. Through selection of elective courses, an industrial engineering student can specialize in a broad range of areas applicable to manufacturing and service industries, including quality control, ergonomics, work design, operations research, production control, facilities planning, logistics, and manufacturing.

Industrial engineering is concerned with the design, evaluation, and improvement of human/machine systems, processes, and methods, considering such factors as economics, safety, the environment, and ethics. The skills imparted and insights developed in the grad-

uates are intended to be useful for professional practice in a wide spectrum of manufacturing industries; in transportation; in insurance and service industries; and in government, retail trade, and commerce. Expertise in industrial engineering is presently highly sought, as the joint concern for productivity and quality improvement is manifested throughout the national and global economy. Industrial engineers are among the most upwardly mobile of those in the engineering profession by virtue of their training and expertise. Many industrial engineers have attained top management positions in a variety of industries.

Our program provides a broad engineering background during the first two years. In the last two years, students are required to take an ensemble of courses which are designed to shape their expertise in industrial engineering. These include courses in manufacturing, robotics, quality control, production, facilities planning, operations research, ergonomics, and simulation modeling.

Industrial engineering has extensive laboratory facilities in support of its academic program. These include laboratories in human factors/ergonomics, manufacturing engineering, work design, facilities planning, computer-aided design and computer-aided manufacturing (CAD/CAM), and robotics.

The program in industrial engineering is the only one of its kind offered in Connecticut. It is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

### Required Courses

Students earning the bachelor of science in industrial engineering (BSIE) must complete 127 credit hours, including the university core curriculum. The program also includes three credit hours of internship or a technical elective which is chosen in consultation with the student's advisor for relevancy and content. Internship refers to project work related to industrial engineering with local industries. Under the umbrella of BSIE, students have the option of choosing a concentration in manufacturing systems, quality systems, computer systems, or information systems. The latter two concentrations consist of courses from the electrical and computer engineering

and computer science programs. The BSIE curriculum is as follows:

#### Freshman Year

CH 115	General Chemistry I
CH 117	General Chemistry I Laboratory
E 105	Composition
E 110	Composition and Literature
EAS 107	Introduction to Engineering
EAS 109	Project Planning and Development
EAS 112	Methods of Engineering Analysis
EAS 120	Laboratory Science for Engineers <i>or</i>
BI 121	General and Human Biology
EC 133	Principles of Economics I
FE 001	Freshmen Experience -(required for all first-time day-division freshmen)
M 117	Calculus I
M 118	Calculus II

#### Sophomore Year

EAS 211	Introduction to Modeling of Engineering Systems
EAS 213	Materials in Engineering Systems
EAS 222	Fundamentals of Mechanics and Materials
EAS 230	Fundamentals and Applications of Analog Devices
EAS 232	Project Management and Engineering Economics
IE 243	Work Design
M 203	Calculus III
M 204	Differential Equations
PH 150	Mechanics, Heat, and Waves with Laboratory
PH 205	Electromagnetism and Optics with Laboratory

#### Junior Year

E 225	Technical Writing and Presentation
E 300	Writing Proficiency Examination
IE 304	Production Control
IE 344	Human Factors Engineering
IE 346	Probability Analysis
IE 347	Statistical Analysis
IE 348	Manufacturing Processes

*Plus* one social science elective, one literature or philosophy elective, and two concentration electives

#### Senior Year

EAS 415	Professional Engineering Seminar
HS 102	The Western World in Modern Times
IE 402	Operations Research
IE 414	Engineering Management
IE 435	Simulation and Applications
IE 436	Quality Control
IE 443	Facilities Planning
IE 498	Internship <i>or</i> a technical elective

*Plus* one art/music/theatre elective and two concentration electives

#### Concentrations

Students may choose to concentrate in any of the following:

##### Manufacturing Systems

IE 437	Metrology and Inspection in Manufacturing
IE 448	Advanced Manufacturing Engineering Operations
IE 460	Computer-Aided Manufacturing
IE 465	Robotics in Manufacturing

##### Quality Systems

IE 311	Quality Assurance
IE 407	Reliability and Maintainability
IE 408	Systems Analysis
IE 437	Metrology and Inspection in Manufacturing

##### Computer Systems

EE 356	Digital Systems II
EE 371	Computer Engineering
EE 472	Computer Architecture
EE 475	Embedded Systems, Interfaces and Buses

##### Information Systems

CS 210	Java Programming
CS 214	Computer Organization
CS 215	Introduction to Databases
CS 247	Network Essentials and Technologies

Students who do not wish to adopt a concentration will have to complete four 300-level or higher courses (totaling at least 12 credits) in industrial engineering. In special cases, courses from other engineering disciplines and computer science may be taken with the

approval of the program coordinator.

## Minor in Industrial Engineering

Students enrolled in degree programs in the School of Engineering & Applied Science may take a minor in industrial engineering by completing 18 credit hours of industrial engineering courses. The coursework for the minor consists of the following required and elective courses.

### Required Courses

IE 243 Work Design  
 IE 304 Production Control  
 IE 346 Probability Analysis  
 IE 347 Statistical Analysis

### Elective Courses

Two 300 or higher level industrial engineering courses (6 credits) chosen with the approval of the student's advisor.

## Logistics Certificate

Logistics is a discipline which has become critical to the efficient development and operational support of complex, costly systems. Its subdivisions include customer requirements planning, design-to-cost concepts, configuration control, life-cycle analysis, transportation and distribution, reliability and field support networks. Modern logistics is the science which ensures that needs are met when they occur, at a reasonable resource expenditure. UNH offers the following undergraduate certificate as well as a graduate certificate in logistics.

The undergraduate certificate sequence consists of five 3-credit courses followed by a 1-credit capstone logistics seminar. This course sequence provides students with a working knowledge of logistics and covers topics included in the Certified Professional Logistician examination of the Society of Logistics Engineers. These undergraduate-level courses are designed for professionals who either do not hold a college degree or who earned degrees in non-technical fields of study. Prerequisite courses in mathematics, computer science, economics and statistics may be needed by students who lack appropriate educational background.

The six-course series required for the logistics certificate includes:

LG 300 Defense Sector Logistics  
 LG 310 Introduction to Logistics Support Analysis  
 LG 320 Reliability and Maintainability  
         Fundamentals  
 LG 410 Life Cycle Concepts  
 LG 440 Data Management in Logistics Systems  
 LG 490 Logistics Seminar

## Mechanical Engineering

**Coordinator:** John J. Sarris, PhD

**Professor Emeritus:** Thomas C. Warner, Jr., MS,  
 Massachusetts Institute of Technology

**Professors:** Carl Barratt, PhD, Cambridge University; Oleg Faigel, PhD, Moscow Textile Institute; Konstantine C. Lambrakis, PhD, Rensselaer Polytechnic Institute; Ismail Orabi, PhD, Clarkson University; Stephen M. Ross, PhD, Johns Hopkins University; John J. Sarris, PhD, Tufts University; Richard M. Stanley, PhD, Yale University

**Associate Professor:** Samuel D. Daniels, PhD,  
 Boston University

Mechanical engineering represents a wide diversity of pursuits including the analysis, design, and testing of machines, products, and systems essential to everyday life—everything from doorknobs, tennis rackets, and fishing reels to power plants, skyscrapers, and automobiles. Mechanical engineers work in a variety of fields such as aerospace, utilities, materials processing, transportation, manufacturing, electronics, and telecommunications.

### Mission and Goals

The mission of the mechanical engineering program is to graduate professionally competent and responsible students who can meet industry's current and future needs in the general area of mechanical engineering.

In order to achieve its mission, the mechanical engineering program must ensure that its graduates:

- apply knowledge in mathematics (through multivariate calculus and differential equations, with

familiarity with statistics and linear algebra)

- apply knowledge in science (chemistry and calculus-based physics, with depth in physics)
- apply knowledge in engineering, including the formulation and solution of engineering problems
- use techniques, skills and tools (contemporary analytic, computational and experimental) necessary for modern engineering practice
- design, conduct and analyze results of experiments
- actively participate in teams, including multidisciplinary teams
- communicate effectively
- accomplish design and realization of thermofluid and mechanical systems, components, and processes
- understand professional and ethical ramifications of engineering solutions within the context of modern society
- cultivate lifelong capacity for learning.

Recognizing current knowledge-base demands on graduating engineers and responding to input from the program's stakeholders, mechanical engineering has embraced the concept of a multidisciplinary foundation to discipline-specific education (for details, see the description under School of Engineering & Applied Science). Thus, the BSME curriculum was adjusted to include, mostly in the first two years, a sequence of nine newly created (EAS prefix) foundation courses,

Mechanical engineering classes are kept small (rarely more than 20 students) and are taught almost exclusively by full-time faculty. Experienced practitioners from industry may also contribute their expertise in selected courses. Faculty and students work with industry in research and design projects. The Alternative Energy Vehicle Project is one that brings mechanical and other engineering students together in an effort to build and race a nonpolluting, practical, low-cost vehicle.

The BSME program has been nationally accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET) for 35 years.

With help from the student's faculty advisor, several options for concentration are available for a student to pursue. Restricted and technical elective courses

may be selected which offer the opportunity for further learning in areas such as fluids, energy, design, heat transfer, numerical analysis and computers, aerospace sciences, and control systems.

#### Academic Performance

Mechanical engineering majors who complete their first twelve credits of ME-prefixed engineering courses with a cumulative average for these courses of less than 2.0 will have their academic records reviewed by the entire ME faculty on a regular basis. An ME-prefixed course may not be taken more than twice unless permission is granted by the program coordinator.

An undergraduate student already enrolled at the University of New Haven who wishes to transfer to Mechanical Engineering will normally be expected to satisfy the standards of the program for admission by transfer.

The coordinator of mechanical engineering reserves the right not to award transfer credit for technical courses taken at any institution more than ten years prior to a student's matriculation in the Bachelor of Science degree program in Mechanical Engineering at the University of New Haven, if it is determined that knowledge acquired in those courses is either lacking or obsolete.

Exceptional students having an overall average of 3.50 or better may join the Delta Zeta Chapter of the Pi Tau Sigma honorary fraternity, which provides the opportunity for closer relations with faculty and other prominent individuals in the field for the purpose of further professional development, involvement in faculty research, and varied social and intellectual activities.

#### Practicum

It is recognized in the mechanical engineering program that on-the-job experience as an undergraduate student is a valuable tool in launching a successful professional career. It is desirable, then, for mechanical engineering majors to spend some time prior to graduation performing engineering-related duties at a manufacturing company, consulting firm, technical organization, government agency, or some other appropriate setting.

Interns are required to complete a minimum of

300 hours of practical experience in an area or technical project closely related to mechanical engineering. The requirement may be satisfied through appropriate co-op work experience, part- or full-time employment, a summer job, an apprenticeship or volunteer work at any time during a student's undergraduate studies. Registration, proof of compliance or a request for waiver must be submitted to the department only after completion of 75 credit hours toward the BSME degree. The practicum is graded on a Satisfactory/Unsatisfactory basis and carries no academic credit.

#### Student Chapter of ASME

Membership in the American Society of Mechanical Engineers student section is open to all mechanical engineering students in good standing and provides the opportunity for field trips to local industrial plants, attendance at technical presentations, social activities, and access to interesting professional literature.

## BS, Mechanical Engineering

#### Required Courses

Students earning the bachelor of science in mechanical engineering are required to complete 126 credit hours, including the university core curriculum.

#### Freshman

In addition to the common first-year courses listed under the School of Engineering & Applied Science, mechanical engineering students take the Mechanical Engineering Skills Workshop. This one-hour-per-week workshop familiarizes mechanical engineering students with basic practices in a laboratory environment, including safety considerations, design planning, layout, fabrication, and the use of basic measuring equipment and devices to test and verify a design. The workshop is offered in the Spring semester and is graded on a Satisfactory/Unsatisfactory basis. The workshop carries no academic credit.

Laboratory Science for mechanical engineering students is EAS 120 or a four-credit biology course.

#### Freshman

CH 115 General Chemistry I

CH 117 General Chemistry I Laboratory  
 E 105 Composition  
 E 110 Composition and Literature  
 EC 133 Principles of Economics I  
 EAS 107 Introduction to Engineering  
 EAS 109 Project Planning and Development  
 EAS 112 Methods of Engineering Analysis  
 FE 001 Freshmen Experience (required for all first-time day division freshmen)  
 M 117 Calculus I  
 M 118 Calculus II  
 ME 001 Mechanical Engineering Skills Workshop  
*Plus one lab science elective*

#### Sophomore

EAS 211 Introduction to Modeling of Engineering Systems  
 EAS 213 Materials in Engineering Systems  
 EAS 222 Fundamentals of Mechanics and Materials  
 EAS 224 Fluid-Thermal Systems  
 M 203 Calculus III  
 M 204 Differential Equations  
 ME 201 Engineering Graphics  
 PH 150 Mechanics, Heat, and Waves with Laboratory  
 PH 205 Electromagnetism and Optics with Laboratory  
*Plus 3 credits of an art/music/theatre elective*

#### Junior

E 300 Writing Proficiency Examination  
 EAS 230 Fundamentals and Applications of Analog Devices  
 EAS 232 Project Management and Engineering Economics  
 HS 102 The Western World in Modern Times  
 ME 300 Rigid Body Dynamics  
 ME 305 Engineering Thermodynamics  
 ME 308 Applied Elasticity  
 ME 315 Mechanics Laboratory  
 ME 321 Incompressible Fluid Flow  
 ME 330 Fundamentals of Mechanical Design (D)

*Plus* 3 credit hours of a restricted ME elective (ME 344 or ME 438) and 300 hours of practicum.

### Senior

EAS 415 Professional Engineering Seminar

ME 404 Heat and Mass Transfer

ME 415 Thermo/Fluids Laboratory

ME 431-432 Mechanical Engineering

Design I (D) and II (D)

*Plus* 3 credit hours of a restricted ME elective (ME 422 or Energy Conversion), 3 credit hours of a literature or philosophy elective, 3 credit hours of a design elective (D-designated ME course), 3 credit hours of a technical elective\*, 3 credit hours of an engineering/mathematics analysis elective\*, 3 credit hours of a social science elective.\*

\* *Must be chosen in consultation with the student's advisor*

The BSME program as previously described includes two required stems of coherent course offerings: 1) Thermo/Fluid Systems, comprising EAS 211, EAS 224, ME 305, ME 321, ME 404, ME 415, and a restricted ME elective (21 credits) and 2) Mechanical Systems, comprising EAS 213, EAS 222, ME 308, ME 315, ME 330, and a restricted ME elective (21 credits). It should be noted that the required capstone design sequence ME 431- 432 (6 credits) may be taken in either of the above stems. Also, technical and design electives are offered periodically in both thermo/fluid and mechanical systems, and the practicum experience could be in either one or both of these areas.

### Minor in Mechanical Engineering

Students wishing to minor in mechanical engineering must complete the following courses with a minimum QPR of 2.0.

EAS 222 Fundamentals of Mechanics and Materials

EAS 224 Fluid-Thermal Systems

ME 201 Engineering Graphics

ME 300 Rigid Body Dynamics

ME 305 Engineering Thermodynamics

ME 321 Incompressible Fluid Flow

# THE TAGLIATELA SCHOOL OF HOSPITALITY AND TOURISM

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## Julian Schuster, PhD, Interim Dean

The Tagliatela School of Hospitality and Tourism offers courses and programs in two fields: Hotel and Restaurant Management and Tourism and Hospitality Administration. These programs are an integral part of the school. The Tagliatela family has been associated with excellence in hospitality throughout the State of Connecticut. As owners of the prestigious Old Saybrook Point Inn, a perennial Four-Star resort, they represent the finest standards in the hospitality profession. The University of New Haven and the Tagliatela family invite you to participate in our challenging and rewarding programs.

The school is dedicated to academic excellence through study, teaching, and research in the fields of hospitality within a global framework.

The school provides a strong foundation for professional careers and seeks to prepare graduates for leadership, professional excellence, and lifelong learning. In accordance with the University of New Haven's mission, the curriculum is designed to strengthen the student's ability to manage, to communicate, and to reason in a diverse and complex workplace. Graduates furnish the managerial talent needed by hotels, resorts, spas, private clubs, restaurants, governmental tourism agencies, destination management firms, and corporate travel companies.

Our students are educated to think; to make decisions; to solve problems; to be creative, flexible, committed, and passionate; and to see change as an opportunity, not a threat. Such skills create a desire within people to achieve, to lead, and to find new solutions to old problems.

The school's programs provide three key elements: substantive knowledge essential to the profession, skills and abilities necessary to apply professional knowledge to the field, and values relevant to lifelong professional success.

## Undergraduate Programs

### Bachelor of Science

Hotel and Restaurant Management  
 Hotel and Restaurant Management  
 with Tourism Concentration  
 Tourism and Hospitality Administration

### Associate in Science

Hotel and Restaurant Management  
 Certificate  
 Hotel and Restaurant Management

## Graduate Program

Master of Science in Hospitality and Tourism

## Academic Policies

All required courses, including the university core curriculum, must be completed, and courses identified as the "major courses" must be completed with a grade of C (2.0) or better. A lower grade requires that the student to repeat the course in a future semester. Although the school offers summer courses, students should not rely on them to meet graduation requirements.

To assure academic success, students are required to maintain a cumulative quality point ratio (QPR) of 2.50 or higher. Failure to demonstrate satisfactory progress toward a degree in the Tagliatela School of Hospitality and Tourism will cause a student to be placed on probation or suspended. If the QPR is not elevated to 2.50 by the end of the following full semester (spring/fall), a student will be suspended from the school for one semester.

## Experiential Policies

The Tagliatela School of Hospitality and Tourism is committed to providing a holistic, student-focused educational environment in which future hospitality leaders can develop. Excellence in academic preparation is strengthened by the school's innovative approach to engaged learning through practicum, internship, and cooperative education experiences. The school has established professional partnerships with leading industry corporations/entrepreneurs to provide professional development opportunities for students as part of their undergraduate studies. Therefore, in addition to academic requirements, the Tagliatela School of Hospitality and Tourism requires 1200 hours of acceptable work experience/employment in the hospitality industry. This field experience will be evaluated qualitatively as well as quantitatively and must be consistent with the student's career aspirations. The field experience requirement may be satisfied during the school year or in summers. International students may apply for work permits after completing nine months of full-time study at the University of New Haven.

## Practicum

The practicum experiences require the student to successfully complete 600 hours of professional experience for an associate's degree and 1000 hours of professional experience for the bachelor's degree. The field experience requirement (400 AS/800 BS) requires the student to secure a paid position, with an approved employer, in a location of the student's choice and carries no academic credit. The community service requirement (100 AS/200 BS) requires students to engage in service learning and leadership initiatives. Students will develop and coordinate community service programs of their choice throughout their tenure as undergraduates. The practicum will require an assessment by the supervisor and a student report/business plan on the activity.

## Internship

The internship requirement (400 hours for a BS) is an approved and supervised experience and is valued at three academic credits. Students participate in an internship experience after having completed the required coursework and prior to graduation. The internship consists of a full-time position (40 hours per week) for a minimum of 10 weeks at an approved site. Ordinarily, students are not permitted to take additional courses or be employed outside the internship experience. The internship must take place in a setting that is related to the degree, major area of emphasis, and career goals of the student and must be agreed to by the major advisor. Credentialed faculty under the direction of the Associate Dean will administer the internship.

An internship is included in the program for several reasons. It serves as an integral component of the formal education process. This experience, following academic coursework, provides the practical experiences for the student entering the hospitality and tourism industry. Entry into the hotel, restaurant, culinary, private club, or tourism fields requires qualified experience on the part of the applicant. The internship often serves as a steppingstone to employment and assists the student in professional networking that may lead to employment opportunities immediately or at a later date.

## Student Professional Organizations

Students are strongly encouraged to seek opportunities to develop professionally beyond the formal structure of academic requirements. The Tagliatela School of Hospitality and Tourism supports student's affiliation with national societies and associations. A student membership in extracurricular activities provides a rubric for networking, leadership development, and self-motivated improvement. The school's primary organization—the Hospitality, Tourism, and Culinary Students Association—provides numerous special-interest sections to facilitate the broad expectations of an international student population. In addition, hospitality students are encouraged to seek other leadership positions here on campus and contribute as citizens to the surrounding municipal communities.



## Eta Sigma Delta Honor Society

Eta Sigma Delta is the local UNH chapter of a national society that recognizes hospitality, tourism, and culinary arts students for outstanding academic achievement, meritorious service, and demonstrated professionalism. To be eligible for membership, a student must be officially declared as a hospitality major, have completed 50% of the credit hours required for graduation, have completed at least one year of coursework at the University of New Haven, and have a minimum 3.2 cumulative QPR. Inducted students are encouraged to participate in community and university service activities.

## Placement

Students in the Tagliatela School of Hospitality and Tourism may receive help in finding a position in their chosen field. Through attendance at and participation in seminars, lectures, and industry conventions, students have an opportunity to meet interesting and important people in the field who are colleagues of the faculty. In addition, the Career Development Office is an active placement bureau helping students to obtain hospitality-related positions during the academic year as well as assisting with pursuit of permanent positions at the time of graduation. The faculty of the Tagliatela School of Hospitality and Tourism are also available for career counseling.

## Transfer Credits

The Tagliatela School of Hospitality and Tourism accepts transfer credits that meet established university criteria from regionally accredited junior and/or community colleges, four-year baccalaureate institutions or approved professional schools in the hospitality field.

## The University Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the university core curriculum. For further details on these requirements, see information listed earlier in this catalog.

# Hotel and Restaurant Management

**Associate Professor:** C.E. Vlisides, PhD, University of Texas

The program in hotel and restaurant management is an integral part of the Tagliatela School of Hospitality and Tourism. The department includes among its teaching staff a number of successful members of the industry who contribute their expertise in the classroom. These experts include Michael Schaffer, owner of four lodging operations in the Greater New Haven area, and David Jurcak, the General Manager of the Omni Hotel, a Four-Star hotel property in New Haven.

To those individuals who enjoy interacting with many diverse people, who seek a continuous challenge, and who thrive on details and deadlines, a career in hotel and restaurant management offers a variety of professional, personal, and financial rewards.

The focus of the program's curriculum is on the development of managerial skills, abilities, and competencies essential to all hospitality managers. The curriculum combines contemporary and realistic techniques. Students will learn to communicate, to lead, and to adapt in a multicultural environment. The diversified knowledge necessary for the management of the modern lodging or restaurant operation requires an educational background that is grounded in both theory and application. The hotel and restaurant curriculum at UNH is designed to permit classroom theory to be applied in various hospitality settings.

The mixture of courses is designed to provide a broad industry overview, as well as to allow the student to specialize in operational areas. To ensure that hotel and restaurant majors are well-grounded academically for a career and for lifelong learning, the curriculum has been designed to build on the university's core curriculum liberal studies.

The hospitality industry demands that graduates of hotel and restaurant programs understand the needs of guests and be able to provide a personal service orientation in a global marketplace.

### **BS, Hotel and Restaurant Management**

The programs in this discipline center on conceptual and technical knowledge required in the leadership and management of modern hotels, motels, and restaurants. The program emphasizes interpersonal communication skills, critical analysis, flexibility, and creativity from the perspective of the manager of operations.

A student earning a bachelor of science degree in hotel and restaurant management will develop skills, abilities, and competencies essential to all hospitality leaders and managers. Students must complete 40 courses equaling 121 credit hours, a 1000-hour practicum, and 400 hours of internship in the industry.

Since every aspect of the hospitality industry is involved with or depends on people, students are required to enroll in courses on human resources management and supervisory leadership.

With the advent of new technology, new and innovative private and non-profit operations, changing expectations of guests, the shifting demography of the workforce, and the globalization of our industry, today's students must be able to recognize and adjust to change. Upper-class courses, particularly those in hospitality research and marketing, form the management approach to meet the changes and challenges of the new century.

#### **Required Courses**

- HR 165 Introduction to Tourism and Hospitality
- HR 200 Classical Techniques in the Culinary Arts
- HR 210 Applied Techniques in the Culinary Arts
- HR 226 Front Office Procedures
- HR 227 Guest Services Management
- HR 228 Human Resource Management for the Hospitality and Tourism Industry
- HR 235 Dining Room Management
- HR 250 Lodging Operations

- HR 280 Legal Aspects of Hospitality, Tourism and Private Clubs
- HR 304 Volume Food Production
- HR 315 Beverage Management
- HR 321 Hospitality Accounting
- HR 322 Marketing for Tourism, Hospitality and Private Clubs
- HR 330 Hospitality Property Management
- HR 400 Leadership Theory for Hospitality and Tourism Professionals
- HR 411 Hospitality and Institutional Layout and Design
- HR 450 Advanced Cuisine Management
- HR 501 Leadership Applications in Hospitality, Tourism, and Private Clubs
- HR 510 Internship
- PS 241 International Relations
- TA 166 Touristic Geography I–The Western Hemisphere

*Plus* eight electives chosen in consultation with advisor

#### **Concentration in Tourism**

- TA 166 Touristic Geography I– The Western Hemisphere
- TA 335 Convention and Meeting Planning
- TA 345 Tourism Economics
- TA 450 Tourism Dimensions in Contemporary Society

### **AS, Hotel and Restaurant Management**

The AS program was designed using a selection of courses from the BS program that will provide two-year students requisite knowledge and skills needed for supervisory positions in the hotel and restaurant management career field. A two-year student can easily continue in the four-year BS program because all the courses in the two-year program are in the four-year program. For those students not continuing in the four-year program, the two-year program provides a sound foundation in hospitality theory and application. Students must complete 30 credits of hospitality/tourism courses and a total of 60 uni-

versity credits in addition to the 600-hour industry practicum.

#### Required Courses

- HR 165 Introduction to Tourism and Hospitality
- HR 200 Classical Techniques in the Culinary Arts
- HR 210 Applied Techniques in the Culinary Arts
- HR 228 Human Resource Management  
for the Hospitality and Tourism Industry
- HR 250 Lodging Operations
- HR 304 Volume Food Production and Service
- HR 321 Hospitality Accounting
- HR 322 Marketing for Tourism, Hospitality  
and Private Clubs
- HR 330 Hospitality Property Management
- TA 166 Touristic Geography I— The Western  
Hemisphere

*Plus* three electives

#### Hotel & Restaurant Management Certificate

The department offers a nontraditional certificate in Hotel and Restaurant Management. No prior experience is necessary. This 12-credit certificate is a flexible part-time program. The coursework requires an in-class time commitment of three to six hours per week.

Like the curriculum of the AS and BS degree programs, each course integrates practical and classroom applications. The 12 college credits earned for the certificate may be applied toward an associate's or bachelor's degree. For more information on required coursework, contact the School of Hospitality and Tourism.

## Tourism and Hospitality Administration

Assistant Professor: James J. Murdy, PhD,  
University of Connecticut

Professor Emeritus: Elisabeth van Dyke, PhD,  
Columbia University

As tourism continues to be a major factor in the economy of many nations, there is a growing need for

expert professionals and consultants who can provide in-depth guidance and direction for this rapidly expanding industry. Travel and tourism may indeed be the world's largest industry today, accounting for considerable percentages of the global domestic product, capital investment, and consumer spending worldwide.

Located between New York and Boston, two of the most prominent U.S. tourist gateways, the University of New Haven offers students a unique vantage point from which to study tourism.

Tourism as a profession requires a knowledge of fields such as economics, finance, accounting, marketing, planning, and policy development. Career possibilities in tourism include employment at tourist attractions and/or resorts; convention, meeting, and special event management; marketing and sales of travel services; administration of governmental tourism agencies; governmental and private tourism planning organizations; and international and national tourism associations.

Recognizing that education extends beyond the classroom, all tourism majors will complete 1400 hours of work experience by doing 1000 hours of practicum and 400 hours of internship. Professional internships are a means of obtaining additional quality work experience.

#### BS, Tourism and Hospitality

##### Administration

The program presents a balanced tourism curriculum of management skills, leadership, and human resource management as well as tourism economics, planning, and marketing. Global orientations are provided in courses covering international relations and international law, organization, and business. Classroom theory is complemented by other learning opportunities, including guest lectures and field trips to conventions, trade shows, and professional meetings. Moreover, as conditions allow, students are given opportunities to work on professional projects and leadership development initiatives. This provides excellent work experience and exposure to area tourism professionals at the local, state, regional, and national levels.

The BS degree in Tourism and Hospitality Administration will provide students with the knowledge and skills necessary to compete for management positions, and the orientation of the curriculum also enables graduates to secure upward mobility.

TA 450 Tourism Dimensions in Contemporary Society  
 TA 470 Tour Design, Marketing, and Management  
 TA 510 Internship  
*Plus six electives*  
*Plus Foreign language I & II*

### Required Courses

A student earning a bachelor of science degree in Tourism and Hospitality Administration must complete 121 credit hours, 1000 hours of practicum, and 400 hours of internship. Most students complete the practicum requirement through summer employment.

In addition to the university core curriculum students must take the following tourism major courses:

- HR 501 Leadership Applications in Hospitality, Tourism, and Private Clubs
- PS 355 Terrorism
- TA 165 Introduction to Tourism
- TA 166 Touristic Geography I – The Western Hemisphere
- TA 167 Touristic Geography II – The Eastern Hemisphere
- TA 228 Human Resource Management for the Hospitality and Tourism Industry
- TA 260 Transportation Systems I- Air, Rail, and Vehicular
- TA 261 Transportation Systems II- Shipping and Cruising
- TA 275 Connecticut Tourism in the 21st Century
- TA 280 Legal Aspects of Hospitality, Tourism and Private Clubs
- TA 322 Marketing for Tourism, Hospitality and Private Clubs
- TA 335 Convention and Meeting Planning
- TA 340 Tourism Planning and Policy
- TA 345 Tourism Economics
- TA 370 Tourism and the Gaming Industry
- TA 420 The Impact of Tourism on the International System
- TA 430 Special Interest and Adventure Tourism
- TA 445 Cultural Heritage Tourism

# SCHOOL OF PUBLIC SAFETY AND PROFESSIONAL STUDIES

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**Thomas A. Johnson, DCrim, Dean**

**William M. Norton, PhD, JD, Associate Dean**

The School of Public Safety and Professional Studies provides educational services for students who wish to major in degree programs specifically oriented toward career paths in human services, occupational safety and health, criminal justice, forensic science, fire science and arson investigation, corrections, law and public affairs dispute resolution, paralegal studies, professional counseling, and related programs. The school provides a broad professional education which often incorporates classroom learning with laboratory and field experience. The school attracts students of varied ages and levels of experience, from recent high school graduates to seasoned industry professionals. It also services professionals seeking programs designed to meet requirements of national and/or regional accreditations and licensures.

Graduate degree programs and certificates are available in various disciplines through the Graduate School.

## Programs and Concentrations

### Bachelor of Science

#### Criminal Justice

- Corrections
- Crime Analysis
- Investigative Services
- Juvenile and Family Justice
- Law Enforcement Administration
- Private Security
- Victim Services Administration

#### Fire Science

- Fire/Arson Investigation
- Fire Administration
- Fire Science Technology

#### Fire Protection Engineering

#### Forensic Science

#### Human Services and Professional Counseling

#### Legal Studies

#### Public Affairs

#### Dispute Resolution

#### Paralegal Studies

#### Occupational Safety and Health Administration

#### Occupational Safety and Health Technology

#### Associate in Science

#### Criminal Justice

#### Fire and Occupational Safety

#### Legal Studies

#### Occupational Safety and Health Administration

#### Occupational Safety and Health Technology

#### Certificates

#### Crime Analysis

#### Fire/Arson Investigation

#### Fire Prevention

#### Forensic Computer Investigation

#### Hazardous Materials

#### Industrial Fire Protection

#### Information Protection and Security

#### Law Enforcement Science

#### Occupational Safety and Health

#### Paralegal Studies

#### Private Security

#### Victim Services

#### Graduate Programs

#### Master of Science

#### Criminal Justice

#### Fire Science

#### Forensic Science

#### Industrial Hygiene

#### Occupational Safety and Health Management

#### National Security and Public Safety

#### Professional Counseling

**Graduate Certificates**

Arson Investigation  
 Criminal Justice/Security Management  
 Fire Science/Administration and Technology  
 Forensic Science/Advanced Investigation  
 Forensic Science/Criminalistics  
 Forensic Science/Fire Science  
 Forensic Computer Investigation  
 Forensic Psychology  
 Industrial Hygiene  
 Information Protection and Security  
 National Security  
 Occupational Safety  
 Public Safety Management  
 Victim Advocacy & Service Management

## Department of Criminal Justice

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**Chair:** Lynn Hunt Monahan, PhD

**Professor Emeritus:** David A. Maxwell, JD,  
 University of Miami, CPP

**Professors:** Thomas A. Johnson, DCrim, University of California, Berkeley; Henry C. Lee, PhD, New York University; Lynn Hunt Monahan, PhD, University of Oregon; William M. Norton, PhD, Florida State University, JD, University of Connecticut; L. Craig Parker, Jr., PhD, State University of New York at Buffalo; Gerald D. Robin, PhD, University of Pennsylvania; William L. Tafoya, PhD, University of Maryland

**Associate Professors:** James J. Cassidy, PhD, Hahnemann University Graduate School, JD, Villanova School of Law; Mario T. Gaboury, PhD, Pennsylvania State University, JD, Georgetown University; Howard A. Harris, PhD, Yale University, JD, St. Louis University; James Monahan, PhD, Florida State University; Richard J. Wilk, PhD, Columbia University

**Associate Research Professors:** Gregory Saville, MES, York University; Charles Genre, MS, Florida State University

**Assistant Professors:** James M. Adcock, PhD, University of South Carolina; Michael P. Lawlor, JD, George Washington University, Connecticut state representative; Marilyn T. Miller, EdD, Johnson & Wales University; Donna Decker Morris, JD, Yale University; Christopher M. Sedelmaier, PhD, Rutgers University

**Practitioners-in-Residence:** William H. Carbone, MPA, University of New Haven, director of alternative sanctions, State of Connecticut; Joseph DeVito, PhD, Georgia State University; The Honorary Martin Looney, JD, University of Connecticut; Joseph R. Polio, MS, University of New Haven; Leonard Rubin, PhD, SUNY at Stony Brook; George Wezner, MS, Rennesalaer Polytechnic Institute

**Criminal Justice**

**Coordinator of Corrections:**

Lynn Hunt Monahan, PhD

**Coordinator of Crime Analysis:**

James Monahan, PhD

**Coordinator of Investigative Services:**

James M. Adcock, PhD

**Coordinator of Juvenile and Family Justice:**

Lynn Hunt Monahan, PhD

**Coordinator of Law Enforcement Administration:**

William M. Norton, PhD, JD

**Coordinator of Private Security:**

William M. Norton, PhD, JD

**Coordinator of Victim Services Administration:**

Mario T. Gaboury, PhD, JD

The criminal justice system is a formal mechanism of control through which social order is maintained. The study of this system is approached in an interdisciplinary manner involving law, the physical sciences, and the social sciences. Through the use of both conventional and innovative techniques, including lectures, written assignments, seminars, workshops, internships, and independent research and study, students are provided with the opportunity to gain a wide variety of insights and experiences.

There is a full range of career opportunities available in criminal justice at the local, state, and national levels.

Because of its interdisciplinary approach, the study of criminal justice fills the needs of students seeking careers in teaching, research, and law and of in-service personnel seeking academic and professional advancement.

The department offers courses from the associate's to the master's level as well as certificates. Complete information about the master of science degrees in criminal justice and in forensic science and the graduate certificates is available in the Graduate School catalog.

Undergraduate criminal justice concentrations in law enforcement administration, corrections, crime analysis, investigative services, juvenile and family justice, victim services administration, and private security are available in the criminal justice program. A separate program is offered in forensic science.

### The Criminal Justice Club

The American Criminal Justice Association (ACJA) is a national professional and preprofessional organization with goals that include improved technology, training, and service for the benefit of the criminal justice system. UNH's local student chapter of ACJA is the Psi Omega chapter. This club offers students a variety of activities including community service as well as the opportunity to meet and work with practitioners in the field. Students also meet others with similar interests and are eligible to participate in regional and national programs and activities.

Additional information may be obtained by contacting the faculty advisor for the chapter, Dr. James Adcock, in the Department of Criminal Justice.

### Alpha Phi Sigma–Alpha Tau Chapter

Alpha Tau is the local chapter of Alpha Phi Sigma, the National Criminal Justice Honor Society. Alpha Tau's purpose is to recognize and promote academic excellence among undergraduate and graduate students. The local chapter was formed in 1998 and embraces the full spectrum of criminal justice students from criminal justice and forensic science to pre-law and the related social sciences.

Undergraduate students who have completed 60 credit hours and at least four criminal justice courses and who have at least a 3.4 cumulative

QPR are eligible for membership. Graduate students who have a 3.4 cumulative QPR and who have completed at least 12 credit hours of graduate work, or 9 credit hours of graduate work and at least 3 additional undergraduate credit hours, are eligible for membership.

Additional information may be obtained by contacting the Alpha Tau advisor, Dr. James Monahan, in the Department of Criminal Justice.

### The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in this catalog, or contact the Co-op coordinator in the School of Public Safety and Professional Studies.

### BS, Criminal Justice

#### Required Courses

Students earning the BS in criminal justice are required to complete at least 121 credit hours, including the university core curriculum and the common courses for criminal justice majors listed below:

CJ 100	Introduction to Criminal Justice
CJ 102	Criminal Law
CJ 201	Principles of Criminal Investigation
CJ 205	Interpersonal Relations
CJ 217	Criminal Procedure I
CJ 250	Scientific Methods in Criminal Justice
CJ 251	Quantitative Applications in Criminal Justice
CJ 311	Criminology
CJ 400	Criminal Justice Problems Seminar
CJ 500A	Criminal Justice Pre-Internship
CJ 500B	Criminal Justice Internship

### Concentration in Corrections

This concentration is designed to prepare students for careers with federal, state, local, and private correctional agencies and institutions. It is concerned with the treatment of offenders, administration, planning, and research. The curriculum emphasizes law, social

and behavioral sciences, and research methodology.

Students earning the BS in criminal justice with a concentration in corrections must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

- CJ 209 Correctional Treatment Programs
- CJ 220 Legal Issues in Corrections
- CJ 408 Child and Family Intervention Strategies
- CJ 409 Adult Intervention Strategies
- CJ 412 Substance Abuse and Addictive Behavior

*Plus one restricted elective*

*Plus twelve electives*

### Concentration in Crime Analysis

This concentration focuses on the application of advanced computer and Global Information Systems in the collection and analysis of crime data. Data from local, state, and federal agencies are considered. Students are encouraged to join the International Association of Crime Analysis. Graduates will enter the field of Crime Analysis as civilians or sworn officers, depending on their career goal. The program will also appeal to international students interested in applying such technology to their country's police system. Students will be required to complete a Research Project as well as present their findings at a departmental Crime Research Forum.

Students earning a BS in criminal justice with a concentration in crime analysis must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

- CJ 498 Research Project
- CJ 555 Crime Prevention Through Environmental Design
- CJ 556 Problem-Oriented Policing
- CJ 557 Crime Mapping and Analysis
- E 225 Technical Writing and Presentation
- E 230 Public Speaking
- EN 540 Introduction to Geographical Information Systems
- MG115 Fundamentals of Management

*Plus one restricted elective*

*Plus nine electives*

### Concentration in Investigative Services

This concentration is designed to provide an interdisciplinary educational program for those people entering law enforcement science fields, especially investigative work. In addition, it is geared toward enhancing the scientific knowledge of those people now holding investigative positions in various enforcement agencies. The curriculum emphasizes law enforcement, evidence, forensic science, and natural and physical sciences.

Students earning the BS in criminal justice with a concentration in investigative services must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

- CJ 215 Introduction to Forensic Science
- CJ 218 Criminal Procedure II and Evidence
- CJ 303 Forensic Science Laboratory I
- CJ 415 Crime Scene Investigation and Pattern Evidence
- CJ 420 Advanced Investigative Techniques

*Plus one restricted elective*

*Plus twelve electives*

### Concentration in Juvenile and Family Justice

This concentration is designed to prepare students for careers with federal, state, local, and private correctional agencies and with service agencies whose mission brings them into regular contact with the justice system. The curriculum is geared to preparing service providers with knowledge of law, and of social and behavioral sciences as well as communication skills with children, adolescents, and people of diverse cultural backgrounds.

Students earning a BS in criminal justice with a concentration in juvenile and family justice must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

- CJ 209 Correctional Treatment Programs
- CJ 221 Juvenile Justice System
- CJ 408 Child and Family Intervention Strategies
- CJ 409 Adult Intervention Strategies
- CJ 411 Victimology

*Plus four restricted electives*

*Plus nine electives*



## Concentration in Law Enforcement Administration

This concentration prepares students for careers in federal, state, and local law enforcement agencies, public and private security forces, planning agencies, and other related settings. The curriculum focuses on the roles, activities, and behaviors of people with regard to maintaining law and order, providing needed services, protecting life and property, and planning and research.

Students earning the BS in criminal justice with a concentration in law enforcement administration must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

- CJ 215 Introduction to Forensic Science
- CJ 218 Criminal Procedure II and Evidence
- CJ 221 Juvenile Justice System
- CJ 333 Police Civil Liability
- CJ 402 Police in Society

*Plus* two restricted electives

*Plus* eleven electives

## Concentration in Private Security

The concentration in private security is designed to provide those entering or now holding administrative or managerial positions in private security with the necessary skills and know-how to perform effectively and professionally. The program is interdisciplinary in nature and draws from the fields of criminal justice, forensic science, business administration, industrial engineering, and the behavioral sciences.

Students earning the BS in criminal justice with a concentration in private security must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

- CJ 105 Introduction to Security
- CJ 203 Security Administration
- CJ 226 Industrial Security
- CJ 306 Security Problems Seminar
- CJ 410 Legal Issues in Private Security

*Plus* two restricted electives

*Plus* eleven electives

## Concentration in Victim Services Administration

This concentration provides students with an interdisciplinary, practice-oriented educational program. It is designed to prepare graduates for entry into a wide variety of positions in law enforcement, criminal justice, the courts, corrections, and victim services programs as well as professional settings involving work with victims of crime, their families, and the community at large. The curriculum encourages a broad-based training experience focusing on the enhancement of the appropriate involvement of victims in the justice system and the provision of services to victims and survivors.

Students earning the BS in criminal justice with a concentration in victim services administration must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

- CJ 210 Ethnic and Gender Issues in Criminal Justice
- CJ 221 Juvenile Justice System
- CJ 315 Domestic Violence
- CJ 411 Victimology
- CJ 413 Victim Law and Service Administration

*Plus* two restricted electives

*Plus* eleven electives

## AS, Criminal Justice

Students completing the first two years of the bachelor of science degree program in criminal justice with the law enforcement administration concentration or the corrections concentration (61 credit hours) are eligible to receive the associate in science degree. Interested students should contact their advisor.

## Minor in Criminal Justice

To minor in criminal justice, students must complete 18 credit hours of criminal justice courses, including CJ 100 Introduction to Criminal Justice.

## Criminal Justice Certificates

Advisor: Lynn Monahan, PhD

The department offers certificates in crime analysis, law enforcement science, private security, and victim services. Students must complete 18 credit hours of required courses to earn a certificate. Credits earned for a certificate may be applied toward the requirements for a degree program at a later date.

### Crime Analysis Certificate

This certificate is designed to focus on the analysis of crime and criminal behavior. Geographic information systems and computer-assisted statistical packages are used to assist in the study of crime analysis. All students are required to take 15 credit hours, including the courses listed below:

#### Requirements:

- CJ 498 Research Project
- CJ 555 Crime Prevention Through Environmental Design
- CJ 556 Problem-Oriented Policing
- CJ 557 Crime Mapping and Analysis
- EN 540 Introduction to Geographical Information Systems

*Plus one CJ elective*

*Plus one Environmental Science elective*

### Law Enforcement Science Certificate

This certificate is designed to provide the fundamentals of criminal investigation techniques and procedures, particularly for those involved in or planning to enter investigative positions in law enforcement agencies in both the private and public sectors. All students are required to take 18 credit hours, including the courses listed below:

- CJ 201 Principles of Criminal Investigation
- CJ 215 Introduction to Forensic Science
- CJ 227 Fingerprints with Laboratory
- CJ 303 Forensic Science Laboratory
- CJ 415 Crime Scene Investigation and Pattern Evidence

*Plus one CJ elective*

### Private Security Certificate

This certificate is a concentrated program of study in management security systems for private business and industry. All students are required to take 18 credit hours, including the courses listed below:

- CJ 105 Introduction to Security
- CJ 203 Security Administration
- CJ 226 Industrial Security
- CJ 410 Legal Issues in Private Security
- FS 204 Fire Investigation I
- SH 100 Safety Organization and Management

### Victim Services Certificate

Students matriculated in other concentration areas, as well as non-matriculated students, may elect to take the five courses listed below to earn a certificate in victim services administration. Although internships are not required of certificate students, an internship experience is strongly encouraged and will be facilitated at the student's request.

- CJ 210 Ethnic and Gender Issues in Criminal Justice
- CJ 221 Juvenile Justice System
- CJ 315 Domestic Violence
- CJ 411 Victimology
- CJ 413 Victim Law and Service Administration

## Forensic Science

Director of Undergraduate Studies: Marilyn T. Miller, EdD

### BS, Forensic Science

Forensic science is a broad, interdisciplinary field in which biological and physical science methods are used to analyze and evaluate physical evidence related to matters of criminal and civil law. The objective of the program is to provide an appropriate education and scientific background to men and women planning careers as physical evidence examiners in crime laboratories. The curriculum is also appropriate for individuals currently working in forensic science laboratories and would be

valuable for those interested in related areas whose professional work requires in-depth knowledge of science and scientific investigation methods. The curriculum provides sufficient flexibility to allow students to focus their studies in chemistry or in biology.

#### Required Courses

Students earning the BS in forensic science must complete 131 credit hours, including the university core curriculum and the following courses:

- CJ 100 Introduction to Criminal Justice
- CJ 102 Criminal Law
- CJ 201 Principles of Criminal Investigation
- CJ 215 Introduction to Forensic Science
- CJ 403-404 Advanced Forensic Science Laboratory I and II
- CJ 415 Crime Scene Investigation and Pattern Evidence
- CJ 416 Seminar in Forensic Science
- CJ 502 Forensic Science Internship *or*  
CJ 498 Research Project
- BI 253-254 General Biology for Science Majors with Laboratory I and II
- BI 304 Immunology with Laboratory *or*  
M 203 Calculus III
- BI 311 Molecular Biology with Laboratory *or*  
CH 331/333 Physical Chemistry I with Laboratory
- BI 461 Biochemistry with Laboratory *or*  
CH 332/334 Physical Chemistry II with Laboratory
- CH 115-116 General Chemistry I and II
- CH 117-118 General Chemistry Laboratory I and II
- CH 201-202 Organic Chemistry I and II
- CH 203-204 Organic Chemistry Laboratory I and II
- CH 211 Quantitative Analysis with Laboratory
- CH 221 Instrumental Methods of Analysis with Laboratory
- CS 107 Introduction to Data Processing
- M 117-118 Calculus I and II
- PH 150 Mechanics, Heat and Waves with Laboratory
- PH 205 Electromagnetism and Optics with Laboratory

*Plus* five electives chosen through discussion with advisor

## Forensic Science Certificates

### Forensic Computer Investigation Certificate

Advisor: Thomas A. Johnson, DCrim

This certificate is designed for those professionals who wish to enhance their knowledge and skills in forensic computer investigation. Students interested in enrolling in the courses in this certificate must obtain permission of the instructor and/or the certificate advisor prior to registration. Alternate course selections may be permitted with the permission of the certificate advisor. Four courses (12 credits) are required for completion of the certificate:

- CJ 520 Computer Crime: Legal Issues and Investigative Procedures
- CJ 524 Network Security, Data Protection, and Telecommunications

*Plus* two of the following, with approval of advisor:

- CJ 201 Principles of Criminal Investigation
- CJ 217 Criminal Procedure I
- CJ 218 Criminal Procedure II and Evidence
- CJ 415 Crime Scene Investigation and Pattern Evidence
- CJ 420 Advanced Investigative Techniques
- CJ 450 Special Topics
- CJ 498 Research Project
- CJ 522 Computers, Technology, and Criminal Justice Information Management Systems
- CJ 523 Internet Vulnerabilities and Criminal Activity

### Information Protection and Security Certificate

Advisor: Thomas A. Johnson, DCrim

This certificate is designed to prepare individuals for assuming the responsibilities of protecting their agency or corporate information systems. The basics of information systems security as well as legal issues and cyber response strategies will be reviewed. Computer gaming simulations as well as online attack and defense techniques will be presented for student assignments.

Five courses (15 credits) are required for completion of the certificate:

- CJ 525 Information Systems Threats, Attacks, and Defenses
- CJ 526 Firewall and Secure Enterprise Computing
- CJ 527 Internet Investigations and Audit-Based Computer Forensics
- CJ 528 Computer Viruses and Malicious Code
- CJ 529 Practical Issues in Cryptography

## Department of Human Services and Professional Counseling

**Chair:** Mario T. Gaboury, JD, PhD

**Professors:** Robert J. Hoffnung, PhD, University of Cincinnati; Michael A. Morris, PhD, Boston College; Lynn Hunt Monahan, PhD, University of Oregon; William M. Norton, PhD, Florida State University, JD, University of Connecticut School of Law; Michael W. York, PhD, University of Maryland

**Associate Professors:** Mario T. Gaboury, PhD, Pennsylvania State University, JD, Georgetown University Law Center; James Monahan, PhD, Florida State University

### BS, Human Services

This program is designed to provide students with basic skills necessary for beginning practice in the human service professions. The curriculum includes an understanding of the basic principles of social and behavioral sciences, law, and communications as it applies to working with individuals, families and communities. Graduates of this program would be eligible for entry-level positions in non-profit organizations and social service agencies with address needs in child welfare, mental health and the community.

The University Core Curriculum develops basic competencies in: communication skills, clear reasoning, computers, scientific methodology, laboratory and

social science, history, literature, philosophy and art, music or theatre.

Additional required electives are: P216 Psychology of Human Development and MG 115, Fundamentals of Management.

The major program of study is organized around 10 Human Service courses intended to provide an understanding of the scope of human services, types and range of service needs, and basic approaches to resource development, assessment and change.

HMS 100 Introduction to Human Services

HMS 205 Interpersonal Relations

HMS 250 Scientific Methods

HMS 251 Quantitative Applications in Human Services

HMS 350 Leadership and Management in Human Services

HMS 351 Principles of Nonprofit Budgeting

HMS 352 Resource Development and Fundraising

HMS 400 Seminar in Human Services Administration

HMS 541 Problem Solving: Planning, Analysis and Evaluation (in process of approval/cross-list with CJ 541)

HMS 500A Pre-internship & HMS 500B Internship

In addition to these basic areas, students have a choice of specialization in several concentration areas:

### Concentration in Intervention Strategies

This concentration is designed to prepare students for careers in direct client services in a variety of community and institutional settings, including community-based mental health centers, child and family services agencies and related non-profit organizations. In addition to the major requirements and the university's common core requirements, students will be exposed to coursework that provides knowledge in the areas of the law, social and behavioral sciences, and field work opportunities, to assist them in their career placement or future graduate studies. The following courses comprise this concentration:

**Requirements:**

(P 301 Statistics for the Behavioral Sciences & P 305 Experimental Methods in Psychology are substituted for HMS 250 & 251)

P 330 Introduction to Community Psychology

P 336 Abnormal Psychology

P 375 Foundations of Clinical/Counseling Psychology

HMS 408 Child and Family Intervention Strategies (Formerly CJ 408)

HMS 409 Adult Intervention Strategies (Formerly CJ 409)

**Concentration in Criminal Justice**

This concentration is designed to prepare students for careers with criminal justice and related human service agencies, including law enforcement, court, probation, parole and correctional systems, and alternative sanction programs related to the provision of human services. In addition to the major requirements and the university's common core requirements, students will be exposed to coursework that provides knowledge in the areas of criminal law and related social and behavioral sciences, and field work opportunities, to assist them in their career placement or future graduate studies. The following courses comprise this concentration:

**Requirements:**

CJ 100 Introduction to Criminal Justice

CJ 102 Criminal Law

CJ 209 Correctional Treatment Programs

CJ 217 Criminal Procedure I

CJ 311 Criminology

**Concentration in Juvenile and Family Justice**

This concentration is designed to prepare students for careers with juvenile and family justice, human service and child serving agencies that bring them into regular contact with children and adolescence, including juvenile courts and detention centers, child protective

services, residential treatment centers and community-based juvenile services. In addition to the major requirements and the university's common core requirements, students will be exposed to coursework that provides knowledge in the areas of juvenile and criminal law, social and behavioral sciences, and field work opportunities, to assist them in their career placement or future graduate studies. The following courses comprise this concentration:

**Requirements:**

CJ 221 Juvenile Justice System

CJ 411 Victimology

LS 226 Family Law

LS 401 Alternative Dispute Resolution: Models & Practice

HMS 408 Child and Family Intervention Strategies\*

**Concentration in Victim Services Administration**

This concentration is designed to prepare students for careers in crime victim services and advocacy organizations within the criminal justice and human service systems focusing on criminal victimization including child abuse, domestic violence, sexual assault, drunk driving and homicide. In addition to the major requirements and the university's common core requirements, students will be exposed to coursework that provides knowledge in the areas of victimology, the criminal and juvenile justice systems, social and behavioral sciences, and field work opportunities, to assist them in their career placement or future graduate studies. The following courses comprise this concentration:

**Requirements:**

CJ 210 Ethnic and Gender Issues in Criminal Justice

CJ 221 Juvenile Justice System

CJ 315 Domestic Violence

CJ 411 Victimology

CJ 413 Victim Law and Service Administration

# Legal Studies

**Director:** Donna Decker Morris, JD

From the principles in the U.S. Constitution to regulation of the food we eat, law permeates our society. With the globalization of the world's economy, law and regulation have become increasingly important to business. At the same time, new forms of dispute resolution are being developed in government, business, and industry as alternatives to the courtroom. Legal policy increasingly will shape our future. Legal Studies is a unique and exciting undergraduate degree program designed to prepare graduates to be part of that future—and to help shape it.

## BS, Legal Studies

The legal studies major provides students with an understanding of fundamental principles of law and analyzes the role and function of the American legal system within a societal and political context. The interdisciplinary course of study develops critical thinking and writing skills and prepares students for law-related careers or for law or graduate school. Concentrations allow students to focus on particular career aspirations and interests.

A two-semester internship in the final year of study combines classroom learning with on-the-job experience, enhancing employment opportunities after graduation. Placements will be geared to the student's area of concentration.

Students earning a BS in legal studies must complete a minimum of 123 credit hours, including the university core curriculum, common courses for legal studies majors, and designated courses for a legal studies concentration.

**Required common courses for major:**

LS 100	Introduction to Legal Concepts
PS 122	State and Local Government
LS 240	Legal Research and Writing I
LS 241	Legal Research and Writing II
LS 201	Legal Ethics and Professional Responsibilities

LS 238	Civil Procedure I
LS 330	Legal Investigation
PS 332	Constitutional Law
LS 301	Administrative Law and Regulation
LS 501-502	Legal Studies Internship I and II

**Restricted Electives:**

Legal Studies majors are also required to take the following courses as restricted electives, some of which may be used to satisfy university core curriculum requirements:

CJ 205	Interpersonal Relations <i>or</i> CO 100 Human Communication
E 220	Writing for Business and Industry <i>or</i> E 225 Technical Writing and Presentation <i>or</i> E 230 Public Speaking and Group Discussion
P 111	Introduction to Psychology
PL 222	Ethics
PS 121	American Government and Politics
<i>Plus one of the following sequences:</i>	
P 301	Statistics for the Behavioral Sciences <i>and</i>
P 305	Experimental Methods in Psychology; <i>or</i>
CJ 250	Scientific Methods in Criminal Justice <i>and</i>
CJ 251	Quantitative Applications in Criminal Justice

## Concentrations

Students select an area of concentration for the elective portion of the program. The concentrations consist of five courses that focus on a specific approach to the field of legal studies. Course selection is made with the assistance of the program advisor.

## Concentration in Public Affairs

The public affairs concentration analyzes the application of law to public policy concerns, while providing legal research and writing skills. Government regulation, multicultural issues, vulnerable populations, and emerging issues are emphasized. This concentration is designed to prepare students for further education in law or graduate school or for careers in law-

related fields and regulatory affairs in federal, state, or local governments, business, industry, and non-profit organizations.

#### Concentration Requirements:

PA 404 Public Policy Analysis

*Plus* four of the following, or related courses, as approved by program advisor:

- CJ 100 Introduction to Criminal Justice
- CJ 102 Criminal Law
- CJ 413 Victim Law and Service Administration
- CJ 209 Correctional Treatment Programs
- CJ 210 Ethnic and Gender Issues in Criminal Justice
- CJ 221 Juvenile Justice System
- CJ 400 Criminal Justice Problems Seminar
- CO 420 Communication and the Law
- EC 311 Government Regulation of Business
- LS 430 Computers and the Law
- LS 401 Alternative Dispute Resolution: Models and Practice
- LS 405 Environmental Law
- MR 330 Coastal Resources Management
- PS 216 Urban Government and Politics
- PS 224 Public Attitudes and Public Policy
- PS 228 Public Interest Groups
- PS 230 Anglo-American Jurisprudence
- PS 231 Judicial Behavior
- PS 232 The Politics of the First Amendment
- SH 400 Occupational Safety and Health Legal Standards

*Plus* eight electives

#### Concentration in Dispute Resolution

Students in the dispute resolution concentration will explore alternative methods for resolving disputes traditionally resolved through the civil or criminal legal systems. This concentration is designed to provide students with an understanding of the theories and practices of alternative dispute resolution and an introduction to practical skills in negotiation, mediation and facilitation in preparation for law-related, alternative dispute resolution careers in the judicial system, government agencies and the private sector, or

for further education in law or graduate school.

#### Concentration Requirements:

LS 401 Alternative Dispute Resolution: Models and Practice

*Plus* four of the following, or related courses, as approved by program advisor:

- CJ 205 Interpersonal Relations\*
- CO 100 Human Communication\*
- CO 410 Management Communication Seminar
- CO 205 Intercultural Communication
- P 321 Social Psychology
- SW 340 Group Dynamics

*Plus* eight electives

\*Must be in addition to course selected to fulfill common course requirement for the major

#### Concentration in Paralegal Studies

This concentration is designed to prepare students for careers as paralegals in private law firms, government agencies, or corporations or for careers in law-related areas in the insurance industry, the banking and securities industries, businesses or non-profit agencies, and in federal, state, or local governments. Concentration electives allow students to focus on such areas as investigations, criminal law, general civil law, or law and financial issues. As part of a quality liberal arts education, the concentration will also enable students to pursue broad career opportunities or graduate school. Development of critical thinking, research, and writing abilities are emphasized, along with practical paralegal skills.

#### Concentration Requirements:

LS 239 Civil Procedure II: Litigation

*Plus* four of the following, or related courses, as approved by program advisor:

- A 101 Introduction to Financial Accounting
- A 112 Introductory Accounting II
- A 335 Federal Income Taxation I
- CJ 100 Introduction to Criminal Justice

- CJ 102 Criminal Law
  - CJ 201 Principles of Criminal Investigation
  - CJ 215 Introduction to Forensic Science
  - CJ 415 Crime Scene Investigation and Pattern Evidence
  - CJ 420 Advanced Investigative Techniques
  - LA 101 Business Law and the Regulatory Environment
  - LS 226 Family Law
  - LS 244 Estates and Trusts
  - LS 326 Real Estate Law: Property and Conveyancing
  - LS 430 Computers and the Law
- Plus eight electives*

### AS, Legal Studies

The associate degree program in legal studies prepares students to work as paralegals in law firms and legal departments or in law-related positions in corporations, banks, and local, state, and federal governments. Students may also continue their studies toward a bachelor's degree.

Students are required to complete 60 credit hours, including the university core requirements for the associate's degree and the following courses:

- LS 100 Introduction to Legal Concepts
- LS 201 Legal Ethics and Professional Responsibility
- LS 238 Civil Procedure I
- LS 239 Civil Procedure II: Litigation
- LS 240 Legal Research and Writing I
- LS 241 Legal Research and Writing II
- LS 330 Legal Investigation

*Plus three Legal Studies electives*

*Plus PL 222 Ethics and*

- CJ 205 Interpersonal Relations *or* CO 100 Human Communication

*Plus one elective*

Successful completion of the requirements for an associate's degree in legal studies includes the courses required for the Paralegal Studies Certificate described

in the Institute of Law and Public Affairs section below. The certificate is awarded via the Institute.

### Minor in Legal Studies

Students may minor in legal studies by successfully completing LS 100 Introduction to Legal Concepts plus five additional legal studies courses.

## The Institute of Law and Public Affairs

Director: William M. Norton, JD, PhD

The Institute of Law and Public Affairs has been established to provide undergraduates with specific training in the areas of the paralegal profession, public policy, and public affairs. Students with an undergraduate major in any of the schools of the university may attain paraprofessional status in paralegal studies or public affairs by completing a minor in the Institute. The term paraprofessional applies to those with special training in a professional field who do not yet possess the terminal degree normally required in the profession. In many instances, paraprofessional status is a step toward the accomplishment of the final degree.

### Minor in Public Affairs

The public affairs minor in the Institute of Law and Public Affairs is directed towards providing training for civil service positions at all levels of government. The goal of such training is to provide more effective public administrators and to introduce creativity into the profession of public service. The public affairs minor will take a problem-solving approach to the discipline as students will be conducting basic, in-depth research on problems of governmental agencies. Students in this minor will be able to develop valuable insights into the nature of the public policy process from the vantage point of the bureaucracy. Courses are selected in consultation with a faculty advisor.



## Paralegal Studies Certificate

Advisor: Donna Decker Morris, JD

The paralegal studies certificate requires a) 18 credit hours of designated legal studies courses each with a grade of C minus or better and b) completion of 60 undergraduate college credits at UNH or elsewhere, including 18 credit hours of general education courses. The University of New Haven has conducted this certificate program since 1971, providing paralegal education to both traditional and part-time evening students. The following courses are required for the certificate:

LS 100 Introduction to Legal Concepts

LS 238 Civil Procedure I

LS 240 Legal Research and Writing I

LS 241 Legal Research and Writing II

*Plus* two of the following, or related courses, as approved by the program advisor:

LS 226 Family Law

LS 239 Civil Procedure II: Litigation

LS 244 Estates and Trusts

LS 301 Administrative Law and Regulation

LS 326 Real Estate Law: Property & Conveyancing

LS 328 Legal Management and Administrative Skills

LS 330 Legal Investigation

## Department of Professional Studies

Chair: Brad T. Garber, PhD

Professor: Brad T. Garber, PhD, University of California, Berkeley

Associate Professors: Howard J. Cohen, PhD, University of Michigan; Martin J. O'Connor, JD, University of Connecticut

Assistant Professors: Sorin Iliescu, MS, University of New Haven; Robert E. Massicotte, Jr., MS, University of New Haven; Nelson Dunston, MS, University of Maryland

Practitioner-in-Residence: Mark B. Haskins, MS, University of New Haven

The department of professional studies offers several degree programs for students interested in specif-

ic employment-related areas: fire science (technology, administration, and fire/arson investigation), fire protection engineering, and occupational safety and health (administration and technology). A number of certificates are offered in these fields, as well as a certificate in paralegal studies and minors in legal/public affairs.

## Fire Science

Director: Robert E. Massicotte, Jr., MS

The United States continues to be among those countries worldwide which suffer the highest degree of destruction to life and property from fire. The arson/fraud fire problem continues to contribute to these statistics at an alarming rate.

Concern over this unnecessary loss of life and property has triggered a rapidly growing need for professionals in fire science. The municipal fire service is only one part of this demand for individuals with specialized education in this multidisciplinary field. Career opportunities in the public sector include those for municipal firefighters, fire inspectors, fire investigators, fire technicians, and fire protection engineers. Private sector careers include those of industrial firefighters, fire protection specialists, fire protection engineers, fire investigators and loss control consultants. Government, industry, fire equipment manufacturers and vendors, and the insurance industry are all potential employers.

The University of New Haven offers five undergraduate degrees and four certificate programs designed for those entering the exciting field of fire science. A combination of classroom lectures, laboratory sessions, case studies, and field trips are utilized to give the student the broadest possible exposure in this area of study. Internships are used to allow the student to obtain real-life work experience in this specialized field.

The university also offers graduate certificate programs and a master's degree in fire science for those completing their bachelor's degrees.

## Fire Science Club

The Fire Science Club is the campus student activities organization for students with interests in fire science and related fields. This very active group which organizes field trips, fire safety and substance abuse programs, and other activities, both on and off campus, throughout the school year.

## Student Branch of the Connecticut Valley Chapter of SFPE

The Student Branch of the Connecticut Valley Chapter of the Society of Fire Protection Engineers is the professional society on campus for fire science students. The Student Branch works closely with the Fire Science Club to provide programs and field trips with a strong technical basis.

## BS, Fire Science

The bachelor of science in fire science is offered with a choice of three concentrations to allow the student to major in fire science and specialize in an area of interest. The concentration areas are Fire/Arson Investigation, Fire Administration and Fire Science Technology.

### Required Courses

Students earning the BS in fire science are required to complete at least 128 credit hours including the university core curriculum and the common courses for fire science listed below, some of which fulfill requirements of the university core curriculum.

FS 102 Principles of Fire Science Technology  
 FS 201 Essentials of Fire Chemistry and Physics with Laboratory  
 FS 203 Fire and Casualty Insurance  
 FS 207 Fundamentals of Fire Prevention  
 FS 301 Building Construction Codes and Standards  
 FS 302 Chemistry of Hazardous Materials  
 FS 303 Process and Transportation Hazards  
 FS 304 Fire Detection and Control  
 FS 305 Fire Detection and Control Laboratory  
 FS 311 Fire Protection Fluids and Systems  
 FS 312 Fire Protection Fluids and Systems Laboratory  
 FS 325 Fire/Life Safety Codes

FS 404 Special Hazards Control  
 FS 497 Research Project  
 FS 501 Internship  
 CH 105 Introduction to General and Organic Chemistry with Laboratory  
 CS 107 Introduction to Data Processing  
*Plus* electives chosen with the advisor

## Concentration in Fire/Arson Investigation

This concentration is designed to prepare students for careers in fire investigation, arson/fraud detection, and code enforcement in both the public and private sectors. The curriculum provides the educational background required to determine the cause and origin of fires as well as an in-depth study of the laws regarding fire investigations and evidence collection. Students choosing this concentration will complete the requirements for a minor in criminal justice. Students earning the BS in fire science with a concentration in fire/arson investigation must complete 128 credit hours including the university core curriculum, the common courses for fire science majors listed above, and the courses listed below, some of which fulfill requirements of the university core curriculum.

FS 106 Emergency Scene Operations  
 FS 204 Fire Investigation I  
 FS 313 Fire Investigation II  
 FS 314 Fire Investigation II Laboratory  
 FS 408 Fire Protection Law  
 FS 409 Arson for Profit  
 CH105 Introduction to General and Organic Chemistry I with Laboratory  
 CJ 100 Introduction to Criminal Justice  
 CJ 102 Criminal Law  
 CJ 201 Principles of Criminal Investigation  
 CJ 215 Introduction to Forensic Science  
 CJ 217 Criminal Procedure I  
 CJ 218 Criminal Procedure II and Evidence  
 CJ 221 Juvenile Justice System *or*  
 CJ 415 Crime Scene Investigation and Pattern Evidence  
 M 109 Intermediate Algebra *or*  
 M 127 Finite Mathematics  
 P 111 Introduction to Psychology  
 P 336 Abnormal Psychology

## Concentration in Fire Administration

This concentration is designed to prepare students for careers in municipal, private, or industrial fire departments. The curriculum provides the educational background to advance through the ranks and become the future leaders of the fire service.

Students earning the BS in fire science with a concentration in fire administration must complete a minimum of 128 credit hours including the university core curriculum, the common courses for fire science majors listed above, and the courses listed below, some of which fulfill requirements of the university core curriculum.

- CH 105 Introduction to General and Organic Chemistry I with Laboratory
- FS 106 Emergency Scene Operations
- FS 204 Fire Investigation I
- FS 307 Municipal Fire Administration
- FS 313 Fire Investigation II
- FS 314 Fire Investigation II Laboratory
- FS 405 Emergency Incident Management
- FS 408 Fire Protection Law
- M 109 Intermediate Algebra *or*  
M 127 Finite Mathematics
- P 111 Introduction to Psychology
- PA 101 Introduction to Public Administration
- PA 302 Public Administration Systems and Procedures *or*  
PA 305 Institutional Budgeting and Planning
- PA 408 Collective Bargaining in the Public Sector
- SH 100 Safety Organization and Management
- SH 110 Accident Conditions and Controls *or*  
SH 200 Elements of Industrial Hygiene

## Concentration in Fire Science Technology

This concentration focuses on the technological aspects of fire science. Fire control by design, construction, and fixed fire suppression systems is stressed. A combination of fire science and engineering courses is used to prepare the student to apply basic engineering principles to the fire problem. Fire prevention and code compliance are stressed in this program. Careers in this field are mainly in the private sector; however, these skills are becoming more important in all areas, as the fire service prepares to meet the technical challenges of the future.

Students earning the BS in fire science with a concentration in fire science technology must complete 129 credit hours including the university core curriculum, the common courses for fire science majors listed above, and the courses listed below, some of which fulfill requirements of the university core curriculum.

- FS 308 Industrial Fire Protection I
- FS 309 Industrial Fire Protection II
- FS 425 Fire Protection Plan Review
- FS 460 Fire Hazards Analysis
- CE 205 Statics and Strength of Materials
- CE 306 Hydraulics
- M 117 Calculus I
- M 118 Calculus II
- ME 204 Dynamics
- ME 301 Thermodynamics I
- MG 115 Fundamentals of Management
- PH 150 Mechanics, Heat, and Waves with Laboratory
- PH 205 Electromagnetism and Optics with Laboratory
- SH 100 Safety Organization and Management
- SH 110 Accident Conditions and Controls
- SH 200 Elements of Industrial Hygiene

## BS, Fire Protection Engineering

Coordinator: Nelson Dunston, MS

The role of a fire protection engineer is to safeguard life and property from the devastating effects of fire and explosions by applying sound, multidisciplinary engineering principles to the fire protection problem. Through a combination of engineering and fire science courses, students learn how to design, construct, and install fire protection systems which prevent or minimize potential losses from fire, water, smoke, or explosions.

Graduates of the fire protection engineering program will be qualified to design, evaluate, or test systems responsible for the reduction of fire losses. They will also be prepared to analyze the fire protection defenses of various structures and operations and recommend cost-effective methods of improving the level of protection that is provided.

Careers in this field may be in the private or the public sector. Government, insurance companies, industry, manufacturers, and consultants are prospec-

tive employers of fire protection engineers.

### Required Courses

Students earning the BS in fire protection engineering must complete 131 credit hours including the university core curriculum and the courses listed below, some of which fulfill requirements of the university core curriculum.

- FS 102 Principles of Fire Science Technology
- FS 201 Essentials of Fire Chemistry and Physics with Laboratory
- FS 203 Fire and Casualty Insurance
- FS 207 Fundamentals of Fire Prevention
- FS 301 Building Construction Codes and Standards
- FS 303 Process and Transportation Hazards
- FS 304 Fire Detection and Control
- FS 305 Fire Detection and Control Laboratory
- FS 308 Industrial Fire Protection I
- FS 309 Industrial Fire Protection II
- FS 311 Fire Protection Fluids and Systems
- FS 312 Fire Protection Fluids and Systems Laboratory
- FS 325 Fire/Life Safety Codes
- FS 404 Special Hazards Control
- FS 425 Fire Protection Plan Review
- FS 450 Fire Protection Heat Transfer
- FS 460 Fire Hazards Analysis
- CE 205 Statics and Strength of Materials
- CE 306 Hydraulics
- CH 115 General Chemistry I
- CH 117 General Chemistry I Laboratory
- CH 116 General Chemistry II
- CH 118 General Chemistry II Laboratory
- CS 107 Introduction to Data Processing
- EAS 107 Introduction to Engineering
- IE 204 Engineering Economics
- M 117 Calculus I
- M 118 Calculus II
- M 203 Calculus III
- M 204 Differential Equations
- ME 200 Engineering Materials
- ME 204 Dynamics
- ME 301 Thermodynamics I

PH 150 Mechanics, Heat, and Waves with Laboratory

PH 205 Electromagnetism and Optics with Laboratory

*Plus* electives chosen with the advisor

### AS, Fire and Occupational Safety

This two-year associate in science degree offers students a well-rounded, basic program in the fields of occupational safety and fire science.

Many students continue on to earn their bachelor's degrees in occupational safety or fire science. The program is specifically designed for the individual who wishes to enter the private sector in the fields of occupational safety and fire protection.

Career options in this field include industry and insurance.

### Required Courses

Students earning the AS in fire and occupational safety must complete 62 credit hours including the university core curriculum for associate's degree programs and the courses listed below, some of which fulfill requirements of the university core curriculum:

- FS 102 Principles of Fire Science Technology
- FS 201 Essentials of Fire Chemistry and Physics with Laboratory
- FS 203 Fire and Casualty Insurance
- FS 207 Fundamentals of Fire Prevention
- FS 303 Process and Transportation Hazards
- FS 308 Industrial Fire Protection I
- FS 309 Industrial Fire Protection II
- CH 115 General Chemistry I
- CH 117 General Chemistry I Laboratory
- CS 107 Introduction to Data Processing
- M 109 Intermediate Algebra *or*
- M 127 Finite Mathematics
- SH 100 Safety Organization and Management
- SH 110 Accident Conditions and Controls
- SH 200 Elements of Industrial Hygiene

*Plus* electives chosen with the advisor

## Minor in Fire Science

Students wishing to minor in fire science should contact the director of the program. A minimum of 19 credit hours is required. The courses listed below are required unless a substitution is approved by the director of fire science.

### Required Courses

- FS 102 Principles of Fire Science Technology
- FS 201 Essentials of Fire Chemistry and Physics with Laboratory
- FS 204 Fire Investigation I
- FS 207 Fundamentals of Fire Prevention
- FS 301 Building Construction Codes and Standards
- FS 303 Process and Transportation Hazards

## Fire Science Certificates

The fire science department offers certificates in fire/arson investigation, fire prevention, industrial fire protection, and hazardous materials. To earn a certificate, students must complete 18 or 19 credit hours. Credits earned for a certificate may be applied to an associate's or bachelor's degree in fire science.

### Fire/Arson Investigation Certificate

The fire/arson investigation certificate is designed to provide individuals in either the public or private sector with the fundamentals required to determine the cause and origin of fires. Investigative techniques and arson determination are included in this certificate program. Students are required to complete 19 credit hours, including the courses listed below.

#### Required Courses

- FS 102 Principles of Fire Science Technology
- FS 203 Fire and Casualty Insurance
- FS 204 Fire Investigation I
- FS 313 Fire Investigation II
- FS 314 Fire Investigation II Laboratory
- FS 408 Fire Protection Law
- FS 409 Arson for Profit

## Fire Prevention Certificate

The Fire Prevention certificate is designed to provide the fundamentals of fire protection and prevention to the individual interested in fire inspection and/or code compliance. The certificate is applicable to both the public and private sectors, with an emphasis on property loss control. Students are required to complete 19 credit hours, including the courses listed below.

### Required Courses

- FS 102 Principles of Fire Science Technology
- FS 201 Essentials of Fire Chemistry and Physics with Laboratory
- FS 207 Fundamentals of Fire Prevention
- FS 303 Process and Transportation Hazards
- FS 325 Fire/Life Safety Codes
- FS 404 Special Hazards Control

## Industrial Fire Protection Certificate

The industrial fire protection certificate is designed to provide the individual interested in industrial property loss control with the fundamentals related to this field. While focusing on the private sector, these principles are equally important to those in the public sector who interact with those responsible for the protection of commercial and industrial properties. Students are required to complete 18 credit hours, including the courses listed below.

### Required Courses

- FS 102 Principles of Fire Science Technology
- FS 203 Fire and Casualty Insurance
- FS 207 Fundamentals of Fire Prevention
- FS 308 Industrial Fire Protection I
- FS 309 Industrial Fire Protection II
- FS 404 Special Hazards Control

## Hazardous Materials Certificate

The hazardous materials certificate is designed to provide the fundamentals required for dealing with the manufacture, storage, handling, and shipping of hazardous materials. The principles covered by this certifi-

cate are equally appropriate to the public and the private sectors. Students must complete 19 credit hours for this certificate, including the following:

#### Required Courses

- FS 102 Principles of Fire Science Technology
- FS 201 Essentials of Fire Chemistry and Physics with Laboratory
- FS 302 Chemistry of Hazardous Materials
- FS 303 Process and Transportation Hazards
- PH 303 Radioactivity and Radiation
- SH 200 Elements of Industrial Hygiene

## Occupational Safety and Health

**Director:** Brad T. Garber, PhD

**Coordinator:** Howard J. Cohen, PhD

In recent years, the global community has become painfully aware of the importance of safety procedures and precautions in our everyday survival: the accidental release of lethal gases in India and the United States, the space shuttle disasters, the cyanide deaths from altered Tylenol capsules, to mention only a few cases. Clearly, safety decision making has been brought to the forefront of corporation management. No employer today can afford to relegate safety to a minor role in the organizational hierarchy.

This great interest in safety issues has generated a significant demand for professional practitioners in the field. Industry, retailing, commerce, communications, construction, and labor unions, as well as local, state, and federal governments, need competent safety specialists.

The demands placed upon the safety professional require a broad background in chemistry, physics, engineering, psychology, and biology as well as specific knowledge in the safety sciences. Our undergraduate programs draw upon the resources of the entire university to educate students in each of these disciplines. In addition to required courses, students

choose from among a diversified offering of restricted and free electives with a balance of courses designed to meet the needs and interests of individual students. Upon graduation, our students have received the comprehensive education needed to become successful professionals in occupational safety and health.

In addition to the four-year bachelor of science programs in occupational safety and health administration and technology, the university also offers two-year associate's degree programs and an occupational safety and health certificate. At the graduate level, several programs are offered which include a master of science in occupational safety and health management, a master of science in industrial hygiene, and two graduate certificates.

#### The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine practical, paid work experience in their career field with college education. For further details see "The Co-op Program," which appears earlier in this catalog, or contact the co-op coordinator for the School of Public Safety and Professional Studies.

### BS, Occupational Safety and Health Administration

A group of degrees is offered in the field of occupational safety and health administration. These programs place less emphasis on the technical areas but broaden the scope of the program into the areas of management and decision-making required to give students the broad-based outlook necessary to direct safety functions.

In addition to the requirements for the AS degree as shown below, bachelor's candidates must complete the university core curriculum and the following courses, for a combined total of 123 credit hours:

**Required Courses**

FS 102	Principles of Fire Science Technology
FS 308-309	Industrial Fire Protection I and II
SH 400	Occupational Safety and Health Legal Standards
SH 401	Industrial Hygiene Measurements
BI 121-122	General and Human Biology with Laboratory I and II
E 220	Writing for Business and Industry
E 230	Public Speaking and Group Discussion
FS 208	Instructor Methodology
FS 304	Fire Detection and Control
IE 204	Engineering Economics <i>or</i> IE 414 Engineering Management
PH 303	Radioactivity and Radiation

*Plus* 12 additional credit hours of restricted electives, a science methodology elective, a literature/philosophy elective, an art/music/theatre elective, and 3 credit hours of unrestricted electives

**BS, Occupational Safety and Health Technology**

Both associate's and bachelor's degrees are offered in the field of occupational safety and health technology. These degree programs provide strong technical preparation with courses in calculus, chemistry, physics, biology, and other disciplines related to the evaluation and resolution of complex safety problems.

In addition to the requirements for the AS degree as shown below, bachelor's candidates also must complete the university core curriculum and the following courses, for a combined total of 132 credit hours:

**Required Courses**

CH 201	Organic Chemistry I
CH 203	Organic Chemistry I Laboratory
FS 308-309	Industrial Fire Protection I and II
SH 400	Occupational Safety and Health Legal Standards
SH 401	Industrial Hygiene Measurements
BI 121-122	General and Human Biology with Laboratory I and II

FS 304	Fire Detection and Control
IE 303	Cost Control
IE 348	Manufacturing Processes
M 117-118	Calculus I and II
PH 303	Radioactivity and Radiation
E 220	Writing for Business and Industry
SO 113	Sociology

*Plus* 9 credit hours of restricted electives, a science methodology elective, a literature/philosophy elective, and an art/music/theatre elective

**AS, Occupational Safety and Health Administration**

Students earning the AS in occupational safety and health administration must complete 64 credit hours including the courses listed below:

**Core Courses**

CH 105	Introduction to General and Organic Chemistry with Laboratory
CS 107	Introduction to Data Processing
E 105	Composition
E 110	Composition and Literature
HS 102	The Western World in Modern Times
M 127	Finite Mathematics
P 111	Introduction to Psychology

**Required Courses**

SH 100	Safety Organization and Management
SH 110	Accident Conditions and Controls
SH 200	Elements of Industrial Hygiene
FS 102	Principles of Fire Science Technology
FS 201	Essentials of Fire Chemistry and Physics with Laboratory
EN 101	Introduction to Environmental Science
EN 102	Environmental Science Laboratory
CJ 105	Introduction to Security
M 228	Elementary Statistics
SO 113	Sociology

*Plus* 6 credit hours of unrestricted electives and an arts elective

*Plus* 3 restricted elective credits

## AS, Occupational Safety and Health Technology

Students earning the AS degree in occupational safety and health technology must complete 67 credit hours including the courses listed below:

### Core Courses

- CH 115 General Chemistry I
- CH 117 General Chemistry I Laboratory
- CS 107 Introduction to Data Processing
- E 105 Composition
- E 110 Composition and Literature
- HS 102 The Western World in Modern Times
- M 115 Pre-Calculus
- P 111 Introduction to Psychology

### Required Courses

- SH 100 Safety Organization and Management
- SH 110 Accident Conditions and Controls
- SH 200 Elements of Industrial Hygiene
- FS 102 Principles of Fire Science Technology
- FS 201 Essentials of Fire Chemistry  
with Laboratory
- CH 116 General Chemistry II
- CH 118 General Chemistry II Laboratory
- CJ 105 Introduction to Security
- IE 204 Engineering Economics, *or* IE 414  
Engineering Management
- M 228 Elementary Statistics
- PH 103 *and* PH104 General Physics I and II  
with Laboratory

*Plus* 6 credit hours of unrestricted electives and an arts elective

## Occupational Safety and Health Certificate

Coordinator: Howard J. Cohen, PhD

The department offers an occupational safety and health certificate for which students must complete 18 credit hours. This program of study covers the fundamentals of on-the-job safety and health as well as the requirements of OSHA regulations. These courses provide an introduction to dealing with problems typically confronted by safety professionals.

### Required Courses

- FS 102 Principles of Fire Science Technology
- FS 308 Industrial Fire Protection I
- SH 100 Safety Organization and Management
- SH 110 Accident Conditions and Controls
- SH 200 Elements of Industrial Hygiene
- SH 400 Occupational Safety and Health Legal Standards
- SH 401 Industrial Hygiene Measurements



# COURSES

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Course descriptions are arranged alphabetically by the course prefix code letters as listed below. For the purpose of brevity, course descriptions do not follow traditional rules of grammar and may consist of sentence fragments.

<b>A</b>		<b>F</b>		MG	Management
A	Accounting	FE	Freshman Experience	MK	Marketing
AT	Art/Visual Arts	FI	Finance	MM	Multimedia
<b>B</b>		FR	French	MR	Marine Biology
BA	Business Administration	FS	Fire Science	MU	Music
BI	Biology	<b>G</b>		<b>P</b>	
<b>C</b>		GR	German	P	Psychology
CA	Culinary Arts	<b>H</b>		PA	Public Management
CE	Civil Engineering	HMS	Human Services	PH	Physics
CEN	Computer Engineering	HR	Hotel and Restaurant Management	PL	Philosophy
CH	Chemistry	HS	History	PS	Political Science
CJ	Criminal Justice	HU	Humanities	<b>Q</b>	
CM	Chemical Engineering	<b>I</b>		QA	Quantitative Analysis
CO	Communication	IB	International Business	<b>R</b>	
CS	Computer Science	IE	Industrial Engineering	RU	Russian
<b>D</b>		<b>J</b>		<b>S</b>	
DH	Dental Hygiene	J	Journalism	SC	Science
DI	Dietetics	<b>L</b>		SH	Occupational Safety and Health
<b>E</b>		LA	Business Law	SO	Sociology
E	English	LG	Logistics	SP	Spanish
EAS	Engineering and Applied Science	<b>M</b>		SW	Social Welfare
EC	Economics	M	Mathematics	<b>T</b>	
ED	Education	ME	Mechanical Engineering	T	Theatre Arts
EE	Electrical Engineering			TA	Tourism Administration
EN	Environmental Science				

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## ACCOUNTING

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### A 101 Introduction to Financial Accounting

Deals primarily with reporting the financial results of operations and financial position to investors, managers, and other interested parties. Emphasizes the role of accounting information in decision making. 3 credit hours.

### A 102 Introduction to Managerial Accounting

Prerequisite: A 101. The application of accounting in relation to current planning and control, evaluation of performances, special decisions, and long-range planning. Stress is on cost analysis. Additional topics include income tax planning, product costing, and quantitative techniques. 3 credit hours.

### A 220 Intermediate Financial Accounting I

Prerequisite: A 102. A rigorous examination of financial accounting theory and practice applicable to the corporate form of business organization. With an emphasis on reporting corporate financial status and results of operations, the course will include the principles governing and the procedures for implementing accounting valuations for revenue, expense, gain, loss, current assets, and deferred charges. 3 credit hours.

### A 221 Intermediate Financial Accounting II

Prerequisite: A 220. Continues the emphasis on corporate financial reporting established in A 220. The principles and procedures applicable to accounting valuations for current liabilities, long-term liabilities, deferred credits, and stock-holder's

equity are examined. Special attention is directed to preparing the cash-flow statement. 3 credit hours.

### A 222 Intermediate Financial Accounting III

Prerequisite: A 221. Advanced topics include income tax allocation, pensions and leases, accounting changes, price-level changes, installment sales and consignments, and revenue recognition. 3 credit hours.

### A 223 Cost Accounting

Prerequisite: A 102. An in-depth examination of the accounting principles and procedures underlying the determination of product costs for manufacturing concerns. Emphasis on job order costing systems. Other topics are: budgets, standard costing, and CVP analysis. 3 credit hours.

### A 331 Advanced Financial Accounting

Prerequisites: A 221 and junior standing. Advanced topics in financial reporting, including partnership accounting, consolidations, cost and equity methods, and purchase versus pooling methods. 3 credit hours.

### A 333 Auditing and Reporting Principles

Prerequisites: A 222, A 350 and junior standing. A general examination of the role and function of the independent auditor in the performance of the attest function. Emphasis will be placed on current auditing pronouncements, the audit report, statistical sampling, evaluation of internal control, and the determination of the scope of an audit. Rules and standards of compilation and review reports are presented. 3 credit hours.

**A 335 Federal Income Taxation I**  
Prerequisites: A 102 and junior standing. An introduction to the federal income tax law including objectives, history, and sources of tax law and administration. Course coverage will be devoted to different types of tax payers including individuals, corporations, partnerships, limited liability entities, subchapter S corporations, and trusts and estates. The course will explore income tax concepts of accounting methods and periods, income, deduction losses, property transactions, fringe benefits, and retirement plans. 3 credit hours.

**A 336 Federal Income Taxation II**  
Prerequisites: A 102 and A 335. Advanced studies in taxation including the tax consequences of the formation, operation, and termination of corporations, partnerships, and limited liability companies. Course coverage will also be devoted to the alternative minimum tax, related party transactions, estate and gift taxation, financial tax accounting concepts, and ethical responsibilities in tax practice. 3 credit hours.

### A 350 Accounting Information Systems

Prerequisites: A 221, A 223, and junior standing. This course provides a thorough introduction to basic systems theory, a firm working knowledge of systems analysis and design techniques, and an examination of various transaction cycles in the accounting system. Emphasis is on EDP environments. 3 credit hours.

### A 450-454 Special Topics

Prerequisite: A 102. Junior-level

standing required unless specified in course schedule description. Selected topics in accounting or taxation of special or current interest. 3 credit hours.

#### A 598 Internship

Prerequisites: A 222 and junior standing. On-the-job experience of accounting in selected organizations. 3 credit hours.

#### A 599 Independent Study

Prerequisites: A 102 and junior standing. A planned program of individual study under the supervision of a faculty member. 3 credit hours.

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## ART/VISUAL ARTS

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#### AT 101-102 Introduction to Studio Art I and II

Foundational study in the visual arts designed to heighten the student's aesthetic awareness and to provide an introduction to the study of drawing, painting and design using a variety of materials. 3 credit hours each.

#### AT 105 Basic Drawing I

A basic-foundation course which includes a disciplined study in the fundamentals of drawing such as nature studies, perspective, exercises in coordination of hand and eye. 3 credit hours.

#### AT 106 Basic Drawing II

A continuation of AT 105 with emphasis on perspective and depiction of three-dimensional space and form by two-dimensional means. Study of architectural forms, natural objects and landscape. 3 credit hours.

#### AT 122 Graphic Design Production

Prerequisite: AT 100 level course or consent of the instructor. Studio introduction to the technical skills of graphic design including: copy-fitting type specification, typesetting, layout, and mechanical preparation. 3 credit hours.

#### AT 201 Painting I

Problems in pictorial composition involving manipulation of form and color. Various techniques of applying pigment will be explored as well as mixing pigments, stretching and priming canvases. 3 credit hours.

#### AT 202 Painting II

A continuation of AT 201 with further exploration of two-dimensional pictorial arrangements of form and color for greatest visual effectiveness. Students will be encouraged to develop their own personal idiom in the medium. 3 credit hours.

#### AT 203 Graphic Design I

Basic theoretical design studies concentrate on the development of a design vocabulary consisting of an understanding of form, proportion, composition, rhythm, juxtaposition, progression, and balance. 3 credit hours.

#### AT 204 Graphic Design II

Prerequisite: AT 203. An investigation of formal aspects of composition, organic and geometric form, graphic translation, and color. Emphasis on concept development, sequencing, and visual logic. 3 credit hours.

#### AT 209-210 Photography I and II

Introduction to the technical and

aesthetic aspects of black and white photography. Camera controls, exposure, development, and print-making will be covered along with a simultaneous investigation into photographic design, historical tradition and media use. Photography II puts special emphasis on each student's creating a body of work which possesses a cohesiveness of vision. Further investigation of photographic technique. Laboratory fee; 3 credit hours each.

#### AT 211 Basic Design I

A basic-foundation course which includes exploration of two-dimensional visual elements—line, color, light and dark, shape, size, placement, figure-ground and their effective use. For those wishing basic art understanding. 3 credit hours.

#### AT 212 Basic Design II

A continuation of AT 211, with concentration on three-dimensional elements of design including positive and negative volumes, surfaces, structural systems, and other elements, employing a variety of materials. 3 credit hours.

#### AT 213 Color

An intensive exploration of color perception and interaction with manipulation of form and color for greatest effectiveness in pictorial compositions. 3 credit hours.

#### AT 216 Architectural Drawing

Prerequisite: AT 105. Drawing as applied to architectural problems. Drafting, drawing conventions, presentations, graphic symbols, line quality and context, and free-hand drawing. 3 credit hours.

**AT 221 Typography I**

Prerequisites: AT 203, AT 211. An introduction to the form, language, terminology, and use of typography. Letters, words, and text arrangements form the components in these theoretical studies, which lead to simple communication exercises. 3 credit hours.

**AT 222 Typography II**

Prerequisite: AT 221. Exploration of typographic structures and hierarchies as well as formal aspects of text. The typographic principles are applied to complex communication problems such as publication design and information graphics. 3 credit hours.

**AT 225 Photographic Methods**

Prerequisite: AT 209. An exploration of ideas, experiments, and investigations in alternative photographic processes. Includes toning, cyanotype printing, gum bichromate, platinum, and palladium. Also covered will be negative manipulation, hand-applied color, and pinhole cameras. Laboratory fee; 3 credit hours.

**AT 231 History of Art I**

Western art from cave art through the Middle Ages to Gothic. This course seeks to understand expressive, social, cultural, political, and economic aspects of the cultures in which specific art styles and visual developments emerged. This course forms the basic vocabulary for History of Art II. Includes economic and technological changes in the societies and their reflections in art. Appropriate for business and engineering students. 3 credit hours.

**AT 232 History of Art II**

Western art from the Renaissance to the twentieth century in Europe and America; a continuation of AT 231. 3 credit hours.

**AT 233 History of Architecture and Interior Design**

A survey of developments in architecture from antiquity to the present day. Special consideration of the aesthetic and practical relationships of architectural space to interior decor. For the major and those interested in this field. 3 credit hours.

**AT 302 Figure Drawing**

Prerequisite: AT 105 or consent of the instructor. Study of drawing which concentrates on the human figure. 3 credit hours.

**AT 304 Sculpture I**

The exploration of three-dimensional materials for maximum effectiveness in expressive design. Experimentation with clay, plaster, wood, stone, canvas, wire screening, metal, found objects. A basic understanding of major, fundamental methods: casting and carving. Laboratory fee; 3 credit hours.

**AT 305 Sculpture II**

A continuation of AT 304 with further exploration of three-dimensional materials and the possibilities they present for creative visual statements. Laboratory fee; 3 credit hours.

**AT 309 Photographic Design**

Prerequisite: AT 209. Introduction to basic materials and techniques of black and white photography used in graphic design. The relation between image and type as

well as sequencing and the extended print will be explored along with collage and basic bookmaking. Laboratory fee; 3 credit hours.

**AT 310 Photographic Lighting**

Prerequisite: AT 209. Aesthetic and technical understanding of light. Use of natural and artificial lighting systems and methods for working with both color and black and white film. Emphasis on the portrait and still life image as well as creative problem solving. Laboratory fee; 3 credit hours.

**AT 311 Color Photography**

Prerequisite: AT 209. Theory and practice of color photography. Study of current color photographic materials and processes. Laboratory fee; 3 credit hours.

**AT 315 Printmaking**

The expressive potential of the graphic image through the techniques of monoprints, etching, silkscreening, and photo/computer scanned printing processes. Laboratory fee; 3 credit hours.

**AT 317 Interior Design**

Prerequisites: AT 211 or AT 212; AT 233 or instructor's consent. A basic studio course with exploration of interior design problems and their relationship to architecture. Special emphasis on exploitation of space, form, color, and texture for greatest effectiveness. 3 credit hours.

**AT 322 Illustration**

A solid foundation in the techniques of creative illustration. Various media and their expressive possibilities will be studied: charcoal, pencil, pen and ink,

wash, colored pencils, acrylic. Focuses on application of these techniques. 3 credit hours.

#### AT 331 Contemporary Art

Focus on art since 1945. The developments of the present stem from ideas emanating from the 1870s—especially Impressionism; this course seeks to understand these connections. Emphasis on economic, historical, and technological developments. Appropriate for business, communication, history, and engineering students. 3 credit hours.

#### AT 333 Survey of Afro-American Art

Artistic creation by African-Americans in the United States from the Colonial period to the present. Consideration of African cultural influences. Analysis of modern trends in the work of black artists. 3 credit hours.

#### AT 401 Studio Seminar I

Prerequisites: AT 101-102, AT 201, AT 302 or AT 209, and art electives. Drawing on development through their previous study, students will concentrate on major projects in the areas of their choice. 1-4 credit hours.

#### AT 402 Studio Seminar II

Prerequisite: AT 401. Continuation of Studio Seminar I. 1-4 credit hours.

#### AT 403-425 Selected Topics

Selected topics of special or current interest in applied art or history of art. Variable credit hours.

#### AT 599 Independent Study

Prerequisites: consent of the instructor and department chair. Opportu-

nity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

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## BUSINESS ADMINISTRATION

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#### BA 100 Leadership in the Business Community

Leaders and their behavior as it pertains to the role of the leader within the organization are the focus for this participatory course. Theory and current research regarding leadership are discussed as well as the prerequisites, knowledge, and practices required for successful leadership. Student participation will be enhanced through use of videotape, role playing, writing activities, and presentations. 3 credit hours.

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## BIOLOGY

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*Biology courses marked with an asterisk (\*) are usually scheduled every other academic year. Courses marked with the symbol (†) may be offered at the discretion of the department.*

#### BI 121-122 General and Human Biology with Laboratory I and II

An introduction to the study of biology which integrates biological principles and human biology. Major topics covered are biochemistry, cell and molecular biology, genetics, anatomy and physiology, behavior, ecology, and evolution. The laboratory involves experimentation and demonstration of principles covered in lecture. BI 121 is a prerequisite for BI 122. Laboratory fee; 4 credit hours each term.

**BI 215 Principles of Nutrition**  
Prerequisite: BI 121. An introduction to nutrition science including nutrient interactions, digestion, absorption, sources of nutrients, and importance of phytochemicals. Energy metabolism, weight control, contemporary nutrition issues, and individual nutrition analysis are included. 3 credit hours.

#### BI 250 Invertebrate Zoology with Laboratory

Prerequisite: BI 122 or BI 254. A survey of invertebrate phyla focusing on taxonomy, evolutionary relationships, structure and function, physiological adaptations, and life modes. Laboratory include: examination of the structure and anatomy of representative taxa from the phyla, experiments and observations on behavior, and responses to varying environmental conditions. Laboratory fee; 4 credit hours.

#### BI 253-254 Biology for Science Majors with Laboratory I and II

Prerequisite or corequisite: M 109. A discussion of the principles of biological organization from the molecular level through the ecological. The basic course for biology and environmental studies majors. Laboratory fee; 4 credit hours each term.

#### BI 259-260 Vertebrate Anatomy and Physiology with Laboratory I and II

Prerequisite: BI 121, BI 122, BI 253, or BI 254. Examination of structure and function of vertebrate organ systems with an emphasis on human systems. Laboratory fee; 4 credit hours each term.

**BI 261 Introduction to Biochemistry**

Prerequisite: CH 105 or equivalent. An introduction to biochemistry including the study of pH, water bioenergetics, enzymes, and the structure, function, and metabolism of carbohydrates, proteins, lipids, and nucleic acids. A non-laboratory course for students in dental hygiene and dietetics. Not open to biology majors. 3 credit hours.

**BI 301 Microbiology with Laboratory**

Prerequisites: BI 121 or BI 253 and one college course in general chemistry. A history of microbiology and a survey of microbial life. Includes viruses, rickettsia, bacteria, blue-green algae, and fungi; their environment, growth, reproduction, metabolism, and relationship to man. Laboratory fee; 4 credit hours.

**\*BI 303 Cells and Tissues with Laboratory**

Prerequisite: BI 121 or BI 253. Microscopic and chemical structures of normal tissues, organs, and their cellular constituents as related to function. Laboratory includes microscopic observation, tissue staining, and slide preparation. Laboratory fee; 4 credit hours.

**BI 304 Immunology with Laboratory**

Prerequisites: BI 121 or BI 253 and one college course in general chemistry. The nature of antigens and antibodies, formation and action of the latter, other immunologically active components of blood and tissues, and various immune reactions. Laboratory emphasizes current antibody methodology. Laboratory fee; 4 credit hours.

**\*BI 305 Developmental Biology with Laboratory**

Prerequisite: BI 122 or BI 254. A survey of developmental biology integrating classical embryology with modern concepts of cellular development. Laboratory will include examination of embryonic serial sections as well as modern cellular and molecular studies of development. Laboratory fee; 4 credit hours.

**BI 306 Genetics**

Prerequisite: BI 253 or BI 121. This course is a survey of modern genetics that integrates the principles and concepts discovered in viruses, bacteria, and mammals including humans. Topics include organization of the chromosome, transmission genetics, DNA fingerprinting, linkage and mapping, mutations and chromosomal aberrations, organelle genetics, genetic engineering, population genetics, and evolution. 3 credit hours.

**BI 308 Cell Biology with Laboratory**

Prerequisites: BI 121 or BI 253, one college course in general chemistry, and one college course in general physics. Basic theories of physiology as applied to cells. Emphasis on cellular structure and function as well as cell-cell interactions in multicellular organisms. Laboratory will stress practical aspects and modern techniques. Laboratory fee; 4 credit hours.

**BI 311 Molecular Biology with Laboratory**

Prerequisite: BI 121, or BI 253, plus CH 115 and 117. An in-depth discussion of nucleic acids, the flow of information from nucleic acids to protein and the

control of gene activity. Laboratory emphasizes the techniques of modern molecular biology. Laboratory fee; 4 credit hours.

**BI 315 Nutrition and Disease**

Prerequisites: BI 215 and either BI 122 or BI 254. Aspects of diet in treating and preventing various symptoms and syndromes, diseases, inherited errors of metabolism, and physiological stress conditions. 3 credit hours.

**BI 320 Ecology with Laboratory**

Prerequisites: CH 116 and BI 254 (or BI 122 with permission of instructor). An investigation of the major subdisciplines of ecology including organismal, population, community ecosystem, and landscape ecology. Human impacts and environmental management and assessment are also considered. Laboratory includes designing ecological studies, field sampling techniques, ecological analysis, using global positioning systems in ecological studies, and gathering information on the Internet. Several weekend field classes are required. Laboratory fee; 4 credit hours.

**†BI 433 Medical Microbiology with Laboratory**

Prerequisites: BI 301, CH 115. A study of the more common diseases caused by bacteria, fungi, and viruses, including their etiology, transmission, laboratory diagnosis, and control. Laboratory fee; 4 credit hours.

**BI 461 Biochemistry with Laboratory**

Prerequisites: CH 201, CH 202, CH 203, and CH 204. A survey of biochemistry including a discus-

sion of pH, buffers, water, bioenergetics, oxidative phosphorylation, enzymology, metabolic regulation, and the structure, function, and metabolism of carbohydrates, proteins, lipids, nucleic acids, vitamins, and cofactors. Laboratory exercises are primarily designed to concentrate on various experimental techniques including electrophoresis, chromatography, spectrophotometry, centrifugation, and enzymology. Laboratory fee; 4 credit hours.

#### **BI 493 Evaluation of Scientific Literature**

Prerequisites: science major with junior or senior standing. In this seminar-format course the student will be trained to present and critically analyze research papers. In the first part of the semester students will be instructed in critically reading and evaluating primary research articles. In the latter part of the semester the students will present primary research articles from the recent and historical literature and a review topic in a seminar format. Active class participation in seminars is mandatory. 3 credit hours.

#### **BI 498 Internship**

Prerequisites: junior or senior standing; biology or environmental science major. Supervised field experience for qualified students in areas related to biology and/or environmental science. Minimum of 150 hours of field experience required. 3 credit hours.

#### **BI 501 Protein Biochemistry and Enzymology**

Prerequisites: BI 461, CH 201-204. First in a series of advanced

biochemistry courses; examines the relationship between protein structure and function. Topics include properties of proteins and amino acids, protein folding, enzyme kinetics, and enzyme regulation. 3 credit hours.

#### **BI 503 Biochemistry of Nucleic Acid**

Prerequisites: BI 461, CH 201-204. Second course in the advanced biochemistry course series; examines cellular metabolism, the transfer of chemical energy, and the biosynthesis of amino acids, carbohydrates, fatty acids, and nucleotides. 3 credit hours.

#### **BI 506 Genomics**

Prerequisite: BI 311. This course combines information from the most recent genomic projects with traditional genetic research methods to provide novel understanding of the role of the genome as the blueprint of life. Emphasis is placed on exploring the expression of genes in context of the activity and function of the whole genome. Topics include genome anatomy, functional genomics, regulation of the activity of the genome, genome evolution, proteomics, genome engineering, and computational genomics. 3 credit hours.

#### **\*BI 510 Environmental Health**

Prerequisites: BI 260 and a college chemistry course. The emphasis is on the health effects of environmental and occupational pollutants and on the spread and control of communicable diseases. Toxicological and epidemiological techniques are discussed. 3 credit hours.

#### **BI 511 Molecular Biology of Proteins with Laboratory**

Prerequisites: BI 311 and BI 461. Because the techniques for working with proteins are basic to the cell and molecular biologist and extend beyond the understanding of basic protein biochemistry, this course provides a theoretical understanding of methods commonly utilized for protein/peptide analysis. In the laboratory students will isolate proteins from various tissues or expression systems and analyze them by one- and two-dimensional polyacrylamide gel electrophoresis. Laboratory fee; 4 credit hours.

#### **BI 513 Molecular Biology of Nucleic Acids with Laboratory**

Prerequisite: B503 or permission of the instructor. Examination of gene expression and the techniques available for manipulating DNA, RNA, and protein expression. Course utilizes an extensive laboratory component to instruct students in the practical and technical aspects of working with nucleic acids. Laboratory fee; 4 credit hours.

#### **BI 520 Bioinformatics**

Prerequisite: BI 311. Students will become familiar with uses of computers in cellular and molecular biology and will be introduced to databases that are presently available for nucleic acid and protein sequences as well as literature citations. Students will work with modeling software which looks for potential secondary structures within both protein and DNA sequences. 3 credit hours.

**BI 590 Special Topics in Biology/Science**

Course(s) covering topics in biology or science which are of special or current interest. 1-4 credit hours.

**BI 595-596 Laboratory Research I and II**

Prerequisites: biology major, consent of the department. Choice of a research topic, literature search, planning of experiments, experimentation and correlation of results in a written report, under the guidance of a department faculty member. Three hours of work per week required per credit hour. Laboratory fee; 1-6 credit hours.

**BI 599 Independent Study**

Prerequisites: biology major, consent of the department. Weekly conferences with advisor. Three hours of work per week required per credit hour. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. A written report of the work carried out is required. 1-3 credit hours; maximum of 6.

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## CULINARY ARTS

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**CA 200 Classical Techniques in the Culinary Arts**

The student will understand the principles of professional cooking techniques and the interaction of the different ingredients used in cooking. The course will be theoretical and will not include tasting of food or hands-on assignments. The student will follow a series of cooking demonstrations done by professional chefs, illustrating the

techniques of classical professional cooking. 3 credit hours. (See also HR 200)

**CA 210 Applied Techniques in the Culinary Arts**

Prerequisite: CA 200. This course is designed to teach the basic classical cooking techniques, including the basic principles of baking, utilizing a hands-on format. The student will apply the theories and principles acquired in the prerequisite course in the context of a professional kitchen environment. The class will emphasize concepts of efficiency, organization, cleanliness, and time management. 3 credit hours. (See also HR 210)

**CA 220 Pastry Making Techniques**

This hands-on course will present the basic principles of pastry making in the context of a professional environment. From basic custards to complex doughs and batters, students will learn techniques as they create many assorted desserts and plated pastries. Cake decoration will be part of the focus of the course. 3 credit hours.

**CA 228 Human Resource Management for the Hospitality and Tourism Industry**

Prerequisite: Permission of advisor. Provides the knowledge required to formulate and manage effectively the human resources in a hospitality-and-tourism related operation. Manpower analysis, organizational needs, job designs, recruitment process, and other human resource topics are studied. 3 credit hours. (See also HR 228 and TA228)

**CA 235 Dining Room Management**

This course will provide the knowledge necessary to fully understand dining room management as essential to the success of commercial food operations. The course content complements the production and service offered in CA 450 Advanced Cuisine Management and Techniques. Students will practice various service techniques that include American, French, and Russian service standards as well as having the opportunity to demonstrate dining room organization, hospitality human resource and marketing techniques, and dining thematic decoration skills. 3 credit hours. (See also HR 235)

**CA 300 Principles of Baking**

Prerequisite: CA 210. The basic principles of baking presented within the context of a professional and profit-generating commercial kitchen environment. Students will demonstrate these principles through hands-on assignments in a professional kitchen lab. 3 credit hours.

**CA 304 Volume Food Production and Service**

Prerequisite: CA 200. This course is designed to teach the basic principles of volume food production and service, which are so critical to the commercial food industry. Students will be preparing meals that are consumed and analyzed by the public, applying the theories and principles acquired in the prerequisite course in the context of a professional kitchen environment. The class will emphasize concepts of efficiency, organization, cleanliness, and time manage



ment. 3 credit hours. (See also HR 304)

### CA 307 Cultural Understanding of Food and Cuisine

The importance of food and cuisine within the context of society. This course will explore the impact of food on the evolution of mankind and address issues relating to the importance of food in the political and economic structure of the world. Questions regarding food supplies and sources as well as ethical questions facing mankind in the near future will be examined. Also explored will be the influences and perceptions of food in different cultures of the world and how those perceptions affect intercultural understanding. 3 credit hours.

### CA 345 Catering and Events Management

A review of a variety of concepts germane to catering and event management within the context of the hospitality industry. Topics include themed events, outside services, audio-visual and other special effects, on-and off-premise catering and function sales, staffing, computer applications in banquet management, and general event planning. 3 credit hours.

### CA 440 International Food, Buffet and Catering

Prerequisites: CA 210, CA 345. Students gain hands-on knowledge of the planning, organizing, preparing, and serving of international food in the context of buffet catering service. Several public events featuring an international theme and food served in a buffet

setting will be planned, created, and prepared by student management teams under the supervision of a chef instructor. Gastronomy concepts will be studied as they relate to the international culture. 3 credit hours.

### CA 450 Advanced Cuisine Management and Technique

This is the capstone course in food production and service. Students are provided an opportunity to practice advanced culinary techniques within various international and domestic cuisine themes. Students are divided into management teams and develop a meal manual that includes team mission statements, pre- and post-meal cost analysis, personnel deployment, interaction with the dining room management teams, standardized recipe creations, and performance appraisal criteria. Student-managers prepare a dining experience that is offered to paying clientele. 3 credit hours. (See also HR 450)

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## CIVIL ENGINEERING

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### CE 201 Statics

Prerequisites: PH 150, M 117. Composition and resolution of forces in two and three dimensions. Equilibrium of forces in stationary systems. Analysis of trusses, frames, and machines. Centroids and second moments of areas, distributed forces and friction. 3 credit hours.

### CE 202 Strength of Materials I

Prerequisite: CE 201. Elastic behavior of structural elements under axial, flexural, and torsional loading. Shear and bending

moment diagrams. Stress in and deformation of members, including beams, columns, and connections. 3 credit hours.

### CE 203 Elementary Surveying

Prerequisite: M 115 or permission of instructor. Theory and practice of surveying measurements using tape, level, and transit. Field practice in traverse surveys and leveling. Traverse adjustment and area computations. Adjustment of instruments, error analysis. Laboratory fee; 3 credit hours.

### CE 205 Statics and Strength of Materials

Prerequisite: PH 150. Effects and distribution of forces on rigid bodies at rest. Various types of forces systems, friction, center of gravity, centroids, and moments of inertia. Relation between externally applied loads and their internal effects on nonrigid, deformable bodies. Stress, strain, Hooke's law, Poisson's ratio, bending and torsion, shear and moment diagrams, deflection, combined stress, and Mohr's circle. 4 credit hours.

### CE 206 Engineering Geology

Introduction to relationship of geologic processes and principles to engineering problems. Topics include engineering properties of rock as a construction and foundation material, soil formation and soil profiles, and subsurface water. 3 credit hours.

### CE 218 Civil Engineering Systems

Prerequisites: CE 205 or EAS 213 (may be taken concurrently), M 118. An introduction to civil engineering design. Analyze needs,

determine capacities and develop design alternatives for civil engineering systems. Structures, water and wastewater facilities, geotechnical and transportation systems are studied. 3 credit hours.

#### **CE 301 Transportation Engineering**

Prerequisite: M 117. A study of planning, design, and construction of transportation systems including highways, airports, railroads, rapid transit systems, and waterways. 3 credit hours.

#### **CE 302 Building Construction**

Introduction to the legal, architectural, structural, mechanical, and electrical aspects of building construction. Principles of drawing and specification preparation and cost estimating. 3 credit hours.

#### **CE 304 Soil Mechanics**

Prerequisite: CE205 or EAS 222. Soil classifications. Methods of subsurface exploration. Design principles are related to the potential behavior of soils subjected to various loading conditions. Seepage analysis. 3 credit hours.

#### **CE 306 Hydraulics**

Prerequisites: M 204 and EAS 224 or permission of instructor. The mechanics of fluids and fluid flow. Fluid statics, laminar and turbulent flow. Energy, continuity and momentum. Analysis and design of pipes and open channels. Orifices and weirs. 3 credit hours.

#### **CE 309 Water Resources Engineering**

Prerequisite: CE 306. Study of principles of water resources engineering including surface and

ground water hydrology. Design of water supply, flood control, and hydroelectric reservoirs. Hydraulics and design of water supply distribution and drainage collection systems including pump and turbine design. Principles of probability concepts in the design of hydraulic structures. General review of water and pollution control laws. 3 credit hours.

#### **CE 312 Structural Analysis**

Prerequisite: CE 205 or CE 202 or EAS 222. Basic structural engineering topics on the analysis of beams, trusses, and frames. Topics include load criteria and influence lines; force and deflection analysis of beams and trusses; analysis of indeterminate structures by approximate methods, superposition, and moment distribution. Computer applications and a semester-long design-analysis project requiring engineering decisions. 3 credit hours (two hours lecture, two hours discussion).

#### **CE 315 Environmental Engineering**

Prerequisites: CH 115, CH 117, CE 306. Introduction to water supply and demand. Water quantity and quality. Design and operation principles of water and wastewater treatment, disposal, and reuse systems. Collection, recycling, and disposal practices of solid wastes. Fundamentals of air pollution and air pollution control. 3 credit hours.

#### **CE 323 Mechanics and Structures Laboratory**

Prerequisite: CE 312 (may be taken concurrently). Experiments covering mechanics and structural engineering. The response of metals and

wood to different loading conditions will be examined. Laboratory instrumentation will be studied. Laboratory procedures, data collection, interpretation, and presentation will be emphasized. 2 credit hours.

#### **CE 327 Soil Mechanics Laboratory**

Prerequisite: CE 304 (may be taken concurrently). Experiments and laboratory testing in geotechnical engineering. Lab testing includes classification, density, hydraulic conductivity, shear strength, and consolidation tests. Laboratory procedures and data collection, interpretation, and presentation will be discussed. 2 credit hours.

#### **CE 328 Hydraulics and Environmental Laboratory**

Prerequisite: CE 315 (may be taken concurrently). Fundamentals of data collection, analysis, and presentation. Principles of technical report writing. Laboratory methods in hydraulics and environmental engineering. Experiments include pipe and open channel flow, analysis of various hydraulics structures, pumps and other hydraulic machinery, titrimetric, gravimetric, and instrumental methods in water/ wastewater quality testing. 2 credit hours.

#### **CE 398 Internship**

Prerequisite: 60 credit hours toward the BS degree. A partnership consisting of the student, faculty, and employers/organizations providing exposure to and participation in a working engineering environment. The internship will translate classroom knowledge to a professional work environment, and the student will work and learn

with practicing engineers while gaining professional experience. A minimum of 300 hours performing related engineering duties is required. No credit.

#### **CE 401 Foundation Design and Construction**

Prerequisite: CE 304 or consent of instructor. Application of soil mechanics to foundation design, stability, settlement. Selection of foundation type—shallow footings, deep foundations, pile foundations, mat foundations. Subsurface exploration. 3 credit hours.

#### **CE 403 City Planning**

Prerequisite: senior status or permission of instructor. Engineering, social, economic, political, and legal aspects of city planning. Emphasis placed on case studies of communities in Connecticut zoning. Principles and policies of redevelopment. 3 credit hours.

#### **CE 404 Water and Wastewater Engineering**

Prerequisite: CE 315. Physical, chemical, and biological aspects of water quality and pollution control. Study of unit operations and processes of water, wastewater and wastewater residuals treatment. Emphasis on hydraulic and process design of water pollution control facilities. 3 credit hours.

#### **CE 405 Indeterminate Structures**

Prerequisites: CS 110 and ME 307 or CE 312, and ME 204 or EAS 222. The analysis of statically indeterminate structures. Topics include approximate methods, moment distribution, conjugate beam, energy methods, influence lines, and an introduction to matrix methods.

Computer applications and a project requiring structural engineering decisions. 3 credit hours.

#### **CE 407 Professional and Ethical Practice of Engineering**

Prerequisite: senior status or permission of instructor. Principles of engineer-client, engineer-society, and owner-contractor relationships examined from ethical, legal, and professional viewpoints. Examination of codes of ethics and preparation of contract documents. 3 credit hours.

#### **CE 408 Steel Design and Construction**

Prerequisite: CE 312. Analysis, design, and construction of steel structures. Topics include tension, compression, and flexural members; connections; members subjected to torsion; beam-columns; fabrication, erection, and shop practice. Designs will be based on Load Resistance Factor Design (LRFD). 3 credit hours (two hours lecture, two hours discussion).

#### **CE 409 Concrete Design and Construction**

Prerequisite: CE 312. Analysis and design of reinforced concrete beams, columns, slabs, footings, retaining walls. Fundamentals of engineering shop drawings. 3 credit hours (two hours lecture, two hours discussion).

#### **CE 410 Land Surveying**

Prerequisite: CE 203 or consent of instructor. A study of boundary control and legal aspects of land surveying including deed research, evidence of boundary location, deed description, and riparian rights. Theory of measurement and

errors, position precision, state plane coordinate systems, photogrammetry. 3 credit hours.

#### **CE 411 Highway Engineering**

Prerequisite: CE 301 or consent of instructor. Highway economics and financing. Study of highway planning, geometric design, and capacity. Pavement and drainage design. 3 credit hours.

#### **CE 412 Wood Engineering**

Prerequisite: CE 205 or CE 202 or EAS 222. Study of the growth and structure of wood and their influence on strength and durability, preservation, and fire protection. The analysis and design of structural members of wood using the Allowable Stress Design method (ASD) including beams, columns, and connections. The design of wood structures. Discussion of Load Resistance Factor Design (LRFD). 3 credit hours (two hours lecture, two hours discussion).

#### **CE 413 Masonry Engineering**

Prerequisite: CE 205 or EAS 222. The design and analysis of brick and concrete masonry non-reinforced and reinforced structures. Strength, thermal, fire, and sound characteristics, testing and specifications. 3 credit hours.

#### **CE 414 Route Surveying**

Prerequisite: CE 203. A continuation of elementary surveying covering principles of route surveying, stadia surveys, practical astronomy, aerial photography, adjustments of instruments. Field problems related to classroom designs. 3 credit hours.

**CE 415 Traffic Engineering**

Prerequisite: CE 301 or junior status. Traffic flow theory including data collection, data analysis, free-ways, multilane highways, signalized and unsignalized intersections, intersection signal coordination. Students will be taught how to use several computer programs to analyze traffic flow along roadways. Projects will deal with actual locations in the area. 3 credit hours.

**CE 450-454 Special Topics**

Selected topics of special or current interest in the field of civil engineering. 1-3 credit hours.

**CE 500 Senior Project I**

Prerequisite: senior status. An introduction to project planning and presentation. This course will prepare the student for professional practice by teaching organizational skills, scheduling, technical writing for a lay audience, and oral presentation. Students will begin working on their senior design project and use this preliminary work in their course assignments. Oral and written presentations will be given to update the class on the progress of the project. 3 credit hours.

**CE 501 Senior Project II**

Prerequisite: CE 500. Supervised individual or group project. The project may be the preparation of a set of contract documents for the construction of a civil engineering facility, research work with a report, or a project approved by the faculty advisor. 3 credit hours.

**CE 505 Solid Waste Management**

Prerequisite: CE 315. Characteristics, volumes, collection, and disposal of solid waste and refuse.

Design of processing, recycling, and recovery equipment, landfill design and operation; resource recovery; incineration. 3 credit hours.

**CE 520 Engineering Hydrology**

Prerequisite: CE 309. Theory, methods, and applications of hydrology to contemporary engineering problems. Methods of data collection and analysis as well as design procedures are presented for typical engineering problems. Specific topics to be considered within this framework include the rainfall/runoff process, hydro graph analysis, hydrologic routing, urban runoff, storm water models, and flood frequency analysis. 3 credit hours.

**CE 523 Open Channel Hydraulics**

Prerequisite: CE 309. Basic theories of open channel flow will be presented and corresponding equations developed. Methods of calculating uniform/steady flow; gradually varied flow; and rapid, spatially varied, unsteady flow will be investigated. Flow through bridge piers, transitions, and culverts; backwater curves and the design of open channels. 3 credit hours.

**CE 599 Independent Study**

Prerequisites: consent of instructor and department chair. Opportunity for the student to explore an area of interest under the direction of a faculty member. Course must be initiated by the student. 1-3 credit hours.

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## COMPUTER ENGINEERING

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**CEN 398 Internship**

Prerequisite: junior standing. A partnership consisting of the student, faculty, and employers/organizations providing exposure to and participation in a working engineering environment. The internship will translate classroom knowledge to a professional work environment, and the student will work and learn with practicing engineers while gaining professional experience. A minimum of 300 hours performing related engineering duties is required. No credit.

**CEN 457 Design Preparation**

Prerequisite: senior standing. This course provides the student time and guidance in selecting a topic for the senior design course (CEN 458), which follows this one. Suitable design projects may be suggested by the student, the faculty, or contacts in industry. Projects involving both hardware and software are encouraged. Each student carries out a literature search on the topic, prepares a written proposal with a plan of action for the project, obtains approval from the faculty advisor, makes oral reports of work in progress, and presents a formal project proposal. 3 credit hours.

**CEN 458 Senior Design  
Laboratory**

Prerequisite: CEN 457. Students complete the design planned in CEN 457. This course provides students with experience at a professional level with engineering

projects that involve analysis, design, construction of prototypes, and evaluation of results. Projects involving both hardware and software are encouraged. A final report presentation and a formal written report are required. 3 credit hours.

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## CHEMISTRY

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### CH 103 Introduction to General Chemistry

Introductory course for students without a high school chemistry background. Fundamentals of chemistry including such topics as elements, compounds, nomenclature, and practical applications. Intended primarily for nonscience and nonengineering majors. CH 104 is taken concurrently with CH 103. 3 credit hours.

### CH 104 Introduction to General Chemistry Laboratory

To be taken with CH 103. Experiments include systems of measurement, the measurement of physical properties, determination of percentage of composition, chemical formulas, and chemical reactions. 1 credit hour.

### CH 105 Introduction to General and Organic Chemistry with Laboratory

Fundamentals of general and organic chemistry: atomic structure and properties of compounds, stoichiometry and reactions, energy relationships, states of matter, solutions, hydrocarbons, and classes of organic compounds. 4 credit hours.

### CH 115 General Chemistry I

Prerequisite: High school algebra

or M 109, CH 103, CH 105 or one unit of high school chemistry or written qualifying exam. Brief review of fundamentals including stoichiometry, atomic structure, and chemical bonding. Other topics include thermochemistry, gas laws, properties of solution, and inorganic coordination compounds. Intended primarily for science/engineering majors. CH 117 is taken concurrently with CH 115. 3 credit hours.

### CH 116 General Chemistry II

Prerequisites: CH 115, CH 117 or the equivalent. Topics include nuclear chemistry; rates of chemical reactions; chemical equilibria including pH, acid-base, common ion effect, buffers, and solubility products; thermodynamics; an introduction to organic and biochemistry. Problems in each area include environmental applications. CH 118 is taken concurrently with CH 116. 3 credit hours.

### CH 117 General Chemistry I Laboratory

To be taken with CH 115. Experiments include percent composition, stoichiometry, heats of reaction, gas laws, molecular model building and colligative properties of solutions. 1 credit hour.

### CH 118 General Chemistry II Laboratory

To be taken with CH 116. Experiments include quantitative measurements of chemical reaction rates, equilibrium constants, the common ion effect, pH, buffers, electrochemical cells, and simple organic synthesis. 1 credit hour.

### CH 201-202 Organic Chemistry I and II

Prerequisites: CH 116, CH 118. Common reactions of aliphatic and aromatic chemistry with emphasis on functional groups and reaction mechanisms. CH 203 and CH 204 are taken concurrently with CH 201-202. 3 credit hours each term.

### CH 203-204 Organic Chemistry I and II Laboratory

To be taken with CH 201-202. Some of the techniques, reactions, and syntheses commonly employed in the organic chemistry laboratory are covered on microscale level including qualitative organic analysis and FTIR analysis. 1 credit hour each term.

### CH 211 Quantitative Analysis with Laboratory

Prerequisites: CH 116, CH 118. Theory and applications of acid-base, solubility, complex-formation, and oxidation-reduction equilibria to quantitative chemical analysis; introduction to statistics and evaluation of results. Laboratory analysis of samples by gravimetric and volumetric methods. 4 credit hours.

### CH 221 Instrumental Methods of Analysis with Laboratory

Prerequisites: CH 201, CH 203, CH 211, or permission of instructor. Theory and applications of various instrumental methods with emphasis on ultraviolet, visible, atomic absorption, fluorescence, infrared and nuclear magnetic resonance spectroscopy; mass spectrometry; gas and liquid chromatography; and potentiometry. Laboratory

analysis of samples by methods discussed in the lecture. 4 credit hours.

#### CH 321-322 Plastics and

#### Polymer Chemistry I and II

Prerequisites: CH 116, CH 118, CH 202, CH 204. All phases of the plastics and polymers field, including the chemistry involved, methods of production, physical properties, and the uses of specific polymers. 3 credit hours each term.

#### CH 331-332 Physical

#### Chemistry I and II

Prerequisites: CH 116, PH 205, M 203 (may be taken concurrently). Kinetic theory of gases, thermodynamics, phase equilibria, transport and surface phenomena, kinetics, quantum mechanics, atomic and molecular spectroscopy. 3 credit hours each term.

#### CH 333-334 Physical Chemistry

#### I and II Laboratory

To be taken with CH 331-332. Laboratory training in vacuum line techniques and real-time collection of temperature, pressure and spectrophotometric data by microcomputer. Experiments include diffusion, velocity and heat capacities of gases; calorimetry; phase diagrams of mixtures; electro-chemical properties, kinetics of fast reactions, enzyme and oscillating reactions; rotational-vibrational spectroscopy. 1 credit hour each term.

#### CH 341 Synthetic Methods

#### in Chemistry

Prerequisites: CH 202, CH 204, CH 221. A one-semester laboratory course covering the synthesis and characterization of inorganic and organic compounds. Performance of a variety of reactions and chemi-

cal manipulations with a focus on advanced laboratory techniques: handling air-sensitive materials, use of cryogenic conditions, separation and purification, isolation of natural products, experiment design, and safety procedures. A selection of methods for transition metal, main-group element, and aromatic and aliphatic organic syntheses. Characterization of compounds by UV, IR, NMR, mass spectrometry, and other instrumental methods. Eight hours of laboratory per week. 4 credit hours.

#### CH 411 Chemical Literature

Prerequisites: CH 202, CH 204, CH 332. Acquaints the student with the chemical literature and its use. Assignments include library searches and online STN searching. 1 credit hour.

#### CH 412 Seminar

Prerequisite: CH 411. The student researches a specific current topic in chemical research or applied chemistry and presents a formal seminar to the faculty and students. 1 credit hour.

#### CH 451 Thesis with Laboratory

Prerequisites: CH 202, CH 204, CH 211, CH 221, CH 332. An original investigation in the laboratory and/or library under the guidance of a member of the department. A final thesis report is submitted. 2 credit hours.

#### CH 452-455 Special Topics

#### in Chemistry

Prerequisite: consent of instructor. In-depth study of topics chosen from areas of particular and current interest to chemistry and

chemical engineering students. 1-4 credit hours.

#### CH 471 Industrial Chemistry

Prerequisites: CH 202, CH 211, CH 221, CH 332. A course to bridge the gap from the academic to the industrial world. Topics include material accounting, energy accounting, chemical transport, reactor design, process development and control. 3 credit hours.

#### CH 501 Advanced Organic

#### Chemistry

Prerequisites: CH 202, CH 204. This course focuses on four topics: mechanisms of organic chemistry reactions, fundamentals of synthesis of complex molecules, organic chemistry of biologically important molecules, and an introduction to medical chemistry. An underlying theme throughout this course is the relationship between chemical structure and the function and reactivity of organic compounds. 3 credit hours.

#### CH 521 Advanced Inorganic

#### Chemistry

Prerequisite: CH 331. Corequisite: CH 332. Review of atomic structure and introduction to group theory and symmetry. The chemistry of transition metal complexes and organometallic compounds with emphasis on bonding and structure, physical and chemical properties, and reaction mechanisms including catalysis and photochemistry. Bioinorganic chemistry and ionic solids will be covered as time permits. 3 credit hours.

#### CH 599 Independent Study

Prerequisite: consent of instructor.

Opportunity for the student under the direction of a faculty member to explore an area of interest. This course may be used to do preliminary work on the topic studied for Thesis (CH 451). 1-4 credit hours.

## CRIMINAL JUSTICE

### **CJ 100 Introduction to Criminal Justice**

Survey of criminal justice system with emphasis on prosecution, corrections, and societal reaction to offenders. Retribution, rehabilitation, deterrence, and incapacitation serve as generic frames of reference and theoretical points of departure for analyzing the dispositional and correctional processes. The course focuses on the process—from the police and prosecution through the courts; from the courts through the correctional system. 3 credit hours.

### **CJ 102 Criminal Law**

The scope, purpose, and definitions of substantive criminal law: criminal liability, major elements of statutory and common law offenses (with some reference to the Connecticut Penal Code), and significant defenses. 3 credit hours.

### **CJ 105 Introduction to Security**

General survey of the major historical, legal, and practical developments and problems of security. Course stresses the components, organization, and objectives of security; the trend toward professionalization; the role of security in the public and private sectors and its relationship to management. 3 credit hours.

### **CJ 201 Principles of Criminal Investigation**

Introduction to criminal investigation in the field. Conducting the crime scene search, interview of witnesses, interrogation of suspects, methods of surveillance, and the special techniques employed in particular kinds of investigation. 3 credit hours.

### **CJ 203 Security Administration**

An overview of security systems found in retail, industrial, and governmental agencies; the legal framework for security operations; and the administrative and procedural processes in security management. 3 credit hours.

### **CJ 204 Forensic Photography with Laboratory**

Introduction to basic techniques, material, and other aspects of crime scene photographs. Theory and practice of photographic image formation and recordings. Laboratory exercises with emphasis on homicide, sex offenses, arson, and accident photograph techniques. Laboratory fee; 3 credit hours.

### **CJ 205 Interpersonal Relations**

Prerequisite: P 111. Theories, conceptual models, and research related to interpersonal relations. Topics include reciprocal theory, attitudes, and labeling theory. 3 credit hours. (See also HMS 205)

### **CJ 209 Correctional Treatment Programs**

Prerequisite: CJ 100. Various treatment modalities employed in the rehabilitation of offenders. Field visits to various correctional treatment facilities such as halfway houses and community-based

treatment programs. 3 credit hours.

### **CJ 210 Ethnic and Gender Issues in Criminal Justice**

Introduction to issues of diversity within the criminal justice system. The course will focus on prejudice and discrimination along with other special problems experienced by women, gays, and various ethnic and racial minority groups in dealing with the criminal justice system. 3 credit hours.

### **CJ 215 Introduction to Forensic Science**

Prerequisite: CJ 201. A classroom lecture/discussion session and a laboratory period. Topics include the recognition, identification, individualization, and evaluation of physical evidence such as hairs, fibers, chemicals, narcotics, blood, semen, glass, soil, fingerprints, documents, firearms, and tool marks. Laboratory fee; 3 credit hours.

### **CJ 217 Criminal Procedure I**

Prerequisites: CJ 100, CJ 102. An inquiry into the nature and scope of the U.S. Constitution as it relates to criminal procedures. Areas discussed include the law of search and seizure, arrests, confessions, and identification. 3 credit hours.

### **CJ 218 Criminal Procedure II and Evidence**

Prerequisites: CJ 100, CJ 102. Legal doctrines employed in controlling the successive stages of the criminal process. Rules of law related to wiretapping and lineups, pre-trial decision making, juvenile justice, and trial. 3 credit hours.

**CJ 220 Legal Issues  
in Corrections**

Prerequisites: junior status and CJ 100, CJ 217. Examination of the legal foundations of correctional practice and review of recent judicial decisions which are altering the correctional environment. An analysis of the factors and forces which are creating a climate of significant reform in corrections. 3 credit hours.

**CJ 221 Juvenile Justice System**

Prerequisites: CJ 100, P 111. Analysis of stages and decisions made at critical junctures of the juvenile justice process. Topics include an analysis of Supreme Court treatment of juvenile justice issues and the ability of the juvenile justice system to respond to juvenile crime. Focus on the processing of juveniles through the system and the special problems unique to juvenile justice. 3 credit hours. (See also SO 231)

**CJ 226 Industrial Security**

Prerequisite: CJ 105. Concepts of security as it integrates with industrial management systems presented along with industrial security requirements and standards, alarms and surveillance devices, animate security approaches, costing, planning, and engineering. Principles of safety practices and regulations, fire prevention, property conservation, occupational hazards, and personal safeguards. 3 credit hours.

**CJ 227 Fingerprints  
with Laboratory**

Prerequisites: CJ 201, CJ 215. The genetic and mathematical theory relating to fingerprints, chemical and physical methods used in

developing latent fingerprints, and major systems of fingerprint classification. Laboratory fee; 3 credit hours.

**CJ 250 Scientific Methods in  
Criminal Justice**

Prerequisites: CJ/HMS 100; M 109 or M 127. Introduction to the use of scientific methods and logic in the human service professions. Topics studied will include science and the scientific approach to problem solving, the logic of causal inference, problem and hypothesis formulation, the use of experimental designs, laboratory methods, survey research methods, and measurement issues in human services. 3 credit hours. (See also HMS 250)

**CJ 251 Quantitative Applications  
in Criminal Justice**

Prerequisite: CJ/HMS 250. Introduction to the use of quantitative analysis through study of the basic statistical tools and databases used in human services. Emphasis will be on applied applications of quantitative methods in service delivery systems. 3 credit hours. (See also HMS 251)

**CJ 300 History of  
Criminal Justice**

Prerequisite: CJ 100. The development of the major CJ elements including police, prisons, probation, and parole. Significant historical events and philosophical postulates as they pertain to this development. 3 credit hours.

**CJ 301 Group Dynamics  
in Criminal Justice**

Prerequisites: CJ 205, P 111. Analysis of theory and applied

methods in the area of group process. Focus on both individual roles and group development as they relate to criminal justice issues. Experiential exercises are included. 3 credit hours.

**CJ 303-304 Forensic Science  
Laboratory I and II**

Prerequisite: CJ 215. Specific examination of topics and laboratory testing procedures introduced in CJ 215. In the classroom, laboratory procedures are outlined and discussed. Identification and individualization of evidence, casting of hairs and fibers for microscopic identification, electrophoretic separation of blood enzymes. Laboratory fee; 3 credit hours each term.

**CJ 306 Security  
Problems Seminar**

Prerequisites: CJ 105, CJ 203. An analysis of special problem areas including college and university campuses, hospitals, hotel/motels, etc. Also, special problems concerning computer protection, bank security, executive personnel protection, credit cards, case law and legal aspects, control of proprietary information, and white collar crime. 3 credit hours.

**CJ 310 Criminal  
Justice Institutions**

Prerequisite: CJ 300. Examination of the societal and psychological implications of various types of institutions. Includes both social and total institutions and examines their similarities and dissimilarities with particular emphasis on their implications for criminal justice. 3 credit hours.



**CJ 311 Criminology**

Prerequisites: CJ 100, P 111, SO 113. An examination of principles and concepts of criminal behavior; criminological theory; the nature, extent, and distribution of crime; legal and societal reaction to crime. 3 credit hours. (See also SO 311)

**CJ 312 The Police and Crime Control**

Prerequisite: CJ 100. The changing role, perspectives, and operational strategies of policing as they relate to the crime control function of the police. The focus will be on innovative, promising, emerging, or "futuristic" and often highly controversial police practices, programs, and approaches to law enforcement as well as on selective community crime prevention efforts undertaken in conjunction with, under the auspices of, or independently of the police department. Special attention will be devoted to police brutality, the use of deadly force and its consequences, including high-speed police pursuits. 3 credit hours.

**CJ 315 Domestic Violence**

Introduction to the study of family violence issues. Typology and history of family abuse, responses to family violence, and public policy issues will be the focus of study. Issues in domestic violence, sexual abuse, emotional abuse, elder abuse, child abuse, treatment approaches, and legal guidelines. 3 credit hours.

**CJ 333 Police Civil Liability**

Prerequisites: CJ 100, CJ 102, CJ 217, or permission of instructor. Introductory overview of types of civil liability lawsuits brought against law enforcement officers.

Exploration of ways to relieve the pressures of this potential liability. Emphasis placed on negligence and intentional torts. 3 credit hours.

**CJ 340 Comparative Criminal Justice**

Affords students the opportunity to explore a number of foreign systems with emphasis on policing. Different perspectives of crime problems will be looked at through the prism of foreign culture. 3 credit hours.

**CJ 350 Leadership and Management in Human Services**

Prerequisite: junior or senior standing. An in-depth view of leadership and management skills in a variety of criminal justice and human service settings. Special focus will include problem solving and quality control in agencies. 3 credit hours. (See also HMS 350)

**CJ 400 Criminal Justice Problems Seminar**

Prerequisites: CJ 100, CJ 300. An examination of theoretical and philosophical issues affecting the administration of justice: the problems of reconciling legal and theoretical ideals in various sectors of the criminal justice system with the realities of practice. 3 credit hours.

**CJ 402 Police in Society**

Prerequisites: CJ 100, CJ 300. Acquaints students with the major developments and trends of policing in a free society. Emphasis placed on American police and the role of the police in a democracy. Further emphasis placed on the examination of the interactions between the police and the communities they serve. 3 credit hours.

**CJ 403 Advanced Forensic Science I with Laboratory**

In-depth examination of blood grouping procedures for red cell antigens, isoenzymes, and serum proteins; identification and typing of body fluids and their stains; collection, processing, and handling of biological materials in casework. Laboratory fee; 4 credit hours.

**CJ 404 Advanced Forensic Science II with Laboratory**

In-depth examination of several subjects in modern criminalistics, including hair and fiber analysis and comparison, arson accelerants and explosives residues, glass comparisons, and forensic chemistry. Laboratory fee; 4 credit hours.

**CJ 408 Child and Family Intervention Strategies**

Prerequisites: P 111, P 336, CJ 205, CJ 209, CJ 301. This course is designed to introduce students to the application of investigation and critical thinking strategies to the problems of child abuse, neglect, and domestic violence. Assessment, decision-making, and case management strategies will be explored. 3 credit hours.

**CJ 409 Adult Intervention Strategies**

Prerequisite: CJ/HMS 408 and HMS 409. A comprehensive investigation of mental health and correctional systems, including residential and community-based treatment. Particular attention will be placed on strategies for dealing with resistant clients. Students will develop critical thinking skills relating to best practices in a variety of settings. 3 credit hours.

### **CJ 410 Legal Issues in Private Security**

Examines legal problems affecting the private security industry and ways to prevent loss from litigation. Includes intentional torts, negligence, agency, contracts and law of arrest, search and seizure, and interrogation by citizens. 3 credit hours.

### **CJ 411 Victimology**

Introduction to the principles and concepts of victimology, analysis of victimization patterns and trends, and responses to criminal victimization. 3 credit hours.

### **CJ 412 Substance Abuse and Addictive Behavior**

Course provides an overview of drug use and addictive behavior as they relate to law enforcement and correctional treatment issues; current estimate is that 80-90% of violent crime in the United States is correlated with alcohol and drug use. 3 credit hours.

### **CJ 413 Victim Law and Service Administration**

Prerequisite: CJ 411. Introduces the study of crime victims' legal rights and the services system available to crime victims within the criminal justice system and in other settings. Topics include victim assistance programs from law enforcement through the courts and corrections systems as well as community-based advocacy and support. This study of victim services is integrated with a focus on the underlying legal structure of crime victim statutory and constitutional rights including notification, participation, protection, and financial remedies (e.g., resti-

tution, compensation, and civil litigation) as well as other rights. Practical program management, evaluation, and funding issues are incorporated. 3 credit hours.

### **CJ 414 Legal Rights of Crime Victims**

Prerequisite: CJ 100. Introduces the study of crime victims' rights within the justice system. Topics include victim-witness programs, victim impact statements, victim notification laws, compensation schemes, and victims' rights legislation. 3 credit hours.

### **CJ 415 Crime Scene Investigation**

Prerequisites: CJ 201, CJ 215. A study of the methods and techniques of scientific crime scene investigation, documentation and recognition of physical evidence, collection, and crime scene reconstruction.

### **CJ 416 Seminar in Forensic Science**

Prerequisites: CJ 201, CJ 215. An examination and evaluation of current issues in the scientific analysis of physical evidence in criminal investigations. Individual and group activities relating to professional practices of forensic science and the criminal justice system. 3 credit hours.

### **CJ 420 Advanced Investigative Techniques**

Prerequisites: CJ 201, CJ 215, CJ 218, and junior/senior standing. An in-depth study of the principles and techniques associated with the collection and documenting of information obtained during an

investigation. Addresses the many sources of information, utilization of informants, the use of hypnosis, polygraph, advanced strategies for interviews and investigations, and provides documentation techniques. 3 credit hours.

### **CJ 440 Death Investigation—Scene to Court**

Prerequisites: senior standing as Criminal Justice or Forensic Science major plus CJ 201, CJ 215, and CJ 415 or permission of instructor. An in-depth study of the principles and techniques associated with investigating homicides; suicides; and accidental, natural, or equivocal deaths. While considering the sociological, psychological, and legal aspects typically found in these cases, the process will take the student from the scene to the court—criminal or civil. 3 credit hours.

### **CJ 450-454 Special Topics**

A study of selected issues of particular interest to the students and instructor. 3 credit hours.

### **CJ 498 Research Project**

Prerequisite: consent of the department chair. The student carries out an original research project in a criminal justice setting and reports the findings. 3 credit hours.

### **CJ 500A Criminal Justice Pre-Internship**

Prerequisite: senior standing in CJ. A course designed to assist students to gain full understanding and appreciation of the internship experience. Students will be acquainted with work rules in criminal justice agencies and helped to select the correct internship for

their particular interest. A key issue will be extended discussion of criminal justice ethics as related to the various aspects of the criminal justice system. Students are required to complete the CJ 500A course prior to enrolling in the CJ 500B internship experience. 3 credit hours.

#### **CJ 500B Criminal Justice Internship**

Prerequisites: CJ 500A and consent of department chairperson. Provides academically monitored field experience with selected federal, state, or local criminal justice agencies with faculty supervision, guidance, and review. The course will include required classroom discussion meeting(s) to facilitate a better understanding of the issues presented during the internship experience. 3 credit hours.

#### **CJ 502 Forensic Science Internship**

Prerequisite: junior/senior standing. Provides academically supervised, real-world experience for forensic science majors. The internship usually constitutes the only practical experience in an actual casework lab that students have during the forensic science program, and it provides a valuable asset to the student in the job market. 3 credit hours.

#### **CJ 520 Computer Crime: Legal Issues and Investigation Procedures**

Prerequisite: consent of instructor. An overview of computer crime and the procedures forensic computing specialists, law enforcement investigators, and prosecutors must invoke

to prosecute computer criminals successfully. 3 credit hours.

#### **CJ 522 Computers, Technology and Criminal Justice Information Management Systems**

Prerequisite: consent of instructor. An introduction to information systems used within the criminal justice system. Overview of existing criminal justice information systems with implications for future needs. Analysis of the impact of science and technology on criminal justice agencies. 3 credit hours.

#### **CJ 523 Internet Vulnerabilities and Criminal Activity**

Prerequisite: consent of instructor. This course provides appropriate strategies for the proper documentation, preparation, and presentation of investigations involving the Internet and familiarizes students with legal information which impacts Internet investigations. 3 credit hours.

#### **CJ 524 Network Security, Data Protection, and Telecommunication**

Prerequisite: consent of instructor. A comprehensive introduction to network security issues, concepts, and technologies. The core technologies of access control, cryptography, digital signatures, authentication, network firewalls, and network security services are reviewed along with issues of security policy and risk management. 3 credit hours.

#### **CJ 525 Information Systems**

Threats, Attacks, and Defenses This course provides an overview of the actors, motives, and methods used in the commission of computer-related crimes and describes the

methods used by organizations to prevent, detect, and respond to these crimes. 3 credit hours.

#### **CJ 526 Firewall and Secure Enterprise Computing**

This course covers theory and practices of Internet firewalls and many of the details and vulnerabilities of the IP and embedded protocol sites. In the laboratory and online portion of the course students will construct, deploy, and test a real firewall against common Internet attacks. 3 credit hours.

#### **CJ 527 Internet Investigations and Audit-Based Computer Forensics**

Theory and techniques for tracking attackers across the Internet and gaining forensic information from computer systems. The course includes case studies of Internet-based crimes and addresses limits of forensic techniques. 3 credit hours.

#### **CJ 528 Computer Viruses and Malicious Code**

This course addresses theoretical and practical issues surrounding computer viruses. 3 credit hours.

#### **CJ 529 Practical Issues in Cryptography**

Includes examples of current historical cryptography and steganographic system; major types of cryptosystems and cryptanalytic techniques and how they operate, hands-on experience with current cryptographic technology. 3 credit hours.

**CJ 540 Computer Applications in Research and Program Evaluation**

Prerequisites: CJ/HMS 250, CJ/HMS 251; M 109 or M127. An advanced course reviewing major statistical packages and models employed in the analysis of criminal justice and human services data. Students will learn analytic techniques using real data sets. Program evaluation needs will be studied and tested. 3 credit hours.

**CJ 541 Problem Solving: Planning, Analysis, and Evaluation**

Prerequisite: senior standing. An advanced seminar utilizing the skills developed in preceding research methods and program evaluation courses. The focus will be on integrating and developing an effective yet flexible problem solving schema for criminal justice and human service agencies. Quantitative and qualitative solutions will be stressed to fit the appropriate problem. Field problems will be solicited. 3 credit hours. (See also HMS 541)

**CJ 555 Crime Prevention**

**Through Environmental Design**  
Prerequisite: CJ 100. Analysis of theory and applied methods of crime prevention using environmental design methods. Experiential exercises are included. 3 credit hours.

**CJ 556 Problem-Oriented Policing**

Prerequisite: CJ 100. An in-depth examination of problem-oriented policing, including examination of the SARA model, specialized tac-

tics, and methods of community analyses. 3 credit hours.

**CJ 557 Crime Mapping and Analysis**

Prerequisite: CJ 100. Survey of GIS research and applications in the field of public safety, including analysis of hot spots, density patterns, and forecasts of crime patterns. 3 credit hours.

**CJ 558 Leadership Issues in Policing**

Prerequisite: CJ 100. Study of leadership within modern police organizations. Experiential exercises are included. 3 credit hours.

**CJ 599 Independent Study**

Prerequisite: consent of department chair. An opportunity for the student, under the direction of a faculty member, to explore and acquire competence in a special area of interest. 1-3 credit hours.

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## CHEMICAL ENGINEERING

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**CM 201 Fundamentals of Chemical Engineering I**

Prerequisites: CH 116, E 105, EAS 108, M 117. Corequisite: PH 150. An introduction to the profession of chemical engineering and the application of fundamental chemical, physical, and mathematical concepts to the solution of chemical engineering problems. Topics include data analysis, physical property estimation, material balances, stoichiometry with single/multiple reactions, and recycle calculations. 3 credit hours.

**CM 202 Fundamentals of Chemical Engineering II**

Prerequisite: CM 201. A continuation of CM 201 with emphasis on the use of energy balances for both nonreactive and reactive processes. Combined material and energy balances are used in solving a variety of chemical engineering problems. 3 credit hours.

**CM 220 Process Analysis**

Prerequisites: CH 116 or EAS 120; EAS 213, M 118. An introduction to the profession of chemical engineering and the application of material and energy balances to the solution of chemical engineering problems. Analysis and design of processes using physical property estimation methods, mass balances, and energy balances. Typical processes include sequences of mixing, separation, and reaction steps. 3 credit hours.

**CM 301 Transport Phenomena Analysis**

Prerequisites: CM 202, E 110, M 203. A unified introduction to momentum, heat, and mass transfer. Use of macroscopic balances, applications in fluid mechanics, thermal energy transport, and mass transfer operations, particularly absorption processes. Application of transport phenomena principles to systems involving momentum, heat, and mass transfer with emphasis on understanding system and equipment operation. 3 credit hours.

**CM 310 Transport Operations I with Laboratory**

Prerequisites: M 204, CM 301.

Application of transport phenomena principles to systems involving momentum, heat, and mass transfer with emphasis on equipment design. Use of microscopic and macroscopic balances, continuity and Navier-Stokes principles, and turbulent flow theories to develop mathematical models of physical systems with applications in fluid mechanics and thermal energy transport. Topics include design of piping systems, flow instruments, filters, heat exchangers, evaporators, and others of current interest. Laboratory work includes experiments in fluid flow and heat transfer, computer simulation, oral and written reports. 4 credit hours.

#### **CM 311 Chemical Engineering Thermodynamics**

Prerequisite: CM 202. Applications of the first and second laws of thermodynamics to batch and flow processes important in chemical engineering for homogeneous and heterogeneous systems, mixtures, and pure materials. Topics include phase and chemical equilibria, chemical reactions, thermochemistry, thermodynamic properties, and miscibility. 3 credit hours.

#### **CM 321 Reaction Kinetics and Reactor Design**

Prerequisite: CM 202. Corequisite: M 204. Homogeneous and heterogeneous catalyzed and noncatalyzed reaction kinetics for flow and batch chemical reactors. Application of kinetic data to both isothermal and nonisothermal reactor design. This course is intended for both chemists and chemical

engineers. 3 credit hours.

#### **CM 401 Mass Transfer Operations**

Prerequisites: M 204, CM 301. Advanced topics in diffusion and mass transfer in solids, liquids, and gases. Topics include Fick's law, mass transfer coefficients, mass transfer correlation, interphase transfer, unsteady state mass transfer, adsorption, membrane separations, humidification and drying. Application to the analysis and design of mass transfer controlled process equipment. 3 credit hours.

#### **CM 410 Transport Operations II with Laboratory**

Prerequisite: CM 310. Application of transport phenomena principles to systems involving momentum, heat, and mass transfer with emphasis on equipment design. Topics include design of staged separation equipment for distillation, extraction and leaching, absorption, and others of current interest. Laboratory work includes experiments in mass transfer, reactor systems, computer simulation, oral and written reports. 4 credit hours.

#### **CM 420 Process Design Principles**

Prerequisites: CM 310, IE 204. Corequisites: CM 321, CM 410. Study and application of principles needed in the design of process systems. Topics include: cost estimation, hazard and safety analysis, ethical concerns, preliminary design techniques, optimization, computer-aided design (using ASPEN PLUS), alternative designs, and technical

reports. Methods include team and individual assignments, oral and written presentations. 3 credit hours.

#### **CM 421 Plant and Process Design**

Prerequisites: CM 321, CM 410, CM 420, and senior status. A capstone course in the design of processing plants and equipment, applying principles from transport operations, thermodynamics, kinetics, and economics. Students work individually and in groups to develop flowsheets, select equipment, specify operating conditions, and analyze designs from technical, economic, and safety perspectives. Extensive report writing and oral presentations. 3 credit hours.

#### **CM 431 Process Dynamics and Control with Laboratory**

Prerequisites: EE 201, M 204, CM 310, CM 321. Fundamental principles of chemical process dynamics used in the measurement and control of process variables such as temperature, pressure, and flow rate. Development of linear and nonlinear dynamic process models, stability analysis, and control system design using analytical and computer methods. Laboratory assignments stress the analysis, design, and tuning of process loops using computer simulations and industrial control equipment on pilot-scale process equipment. Students gain experience using industrial control hardware such as programmable logic controllers and distributed control systems. 4 credit hours.

#### **CM 450-455 Special Topics in Chemical Engineering**

Prerequisite: consent of instructor. Intensive study of some aspects of

chemical engineering not covered in the more general courses. 1-4 credit hours.

#### CM 501/502 Senior Project I and II

Prerequisites: senior status and consent of course instructor (faculty advisor) and program director. Student should propose an original, significant problem or theory. The investigation should include at least two of the following elements: theoretical analysis, mathematical or computer modeling, optimal design methods, laboratory experimentation. Weekly conferences with advisor, final written and oral report with format to be determined by faculty advisor. 3 credit hours per term.

#### CM 521 Air Pollution Fundamentals

Prerequisite: permission of instructor. An introduction to the sources of air pollution, the transport of gaseous and particulate pollutants in the atmosphere on local and global scales, transformations of pollutants by atmospheric processes, the impact of pollutants on the environment, the control of sources of air pollution, and legislative mandates. Introduction to meteorological concepts and computer transport models. Current issues such as ozone depletion and global warming will also be discussed. 3 credit hours.

#### CM 599 Independent Study

Prerequisites: consent of faculty supervisor and program director. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest.

Weekly conferences with supervisor, final written (and possibly oral) report, format to be determined by faculty supervisor. 1-4 credit hours.

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## COMMUNICATION

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**CO 100 Human Communication**  
Competencies and skills needed to communicate effectively in varied personal, relational, and professional contexts. Communication process, verbal/nonverbal communication, listening, persuasion, conflict management, and group decision-making are studied in interpersonal, public, mass, and organizational settings. Students are assisted in developing skills appropriate to real-life situations. Recommended for all students regardless of major. 3 credit hours.

#### CO 101 Fundamentals of Mass Communication

Corequisite: CO 100. Introduction to the mass media of newspapers, film, magazines, radio, television, trade publications, and public relations. Course emphasizes media's impact on society. 3 credit hours.

#### CO 102 Writing for the Media

A study of drills and exercises in writing television and radio news, news releases, speeches, public service announcements, and film documentaries. Emphasis is placed on firsthand practical experience assignments and criticism of completed copy. 3 credit hours.

#### CO 103 Audio in Media

Concerned with sound as used in radio, television, and film. Course entails lectures, demonstration,

and lab practice of sound production and transmission. Laboratory fee; 3 credit hours.

#### CO 109 Communication for Management and Business

Prerequisite: CO 100. Introduction to the concepts and skills needed to communicate effectively in business and professional settings. Students develop communication competency by focusing on communication activities common to business and service organizations. Interpersonal communication, group and meeting communication, listening skills, interviewing, speeches, public and instructional presentations, and negotiation are stressed. 3 credit hours.

#### CO 114 Production Fundamentals

Introduction to theory and technique in sound and video media. Several team projects will provide a fundamental production orientation in each medium as well as provide the environment to discuss goals and objectives of production. Laboratory fee; 3 credit hours.

#### CO 200 Theories of Group Communication

Prerequisite: CO 100. Focus is on the dynamics of communication and group processes including leadership styles, team building, task and maintenance functions, problem-solving and decision-making, and conflict management. Students develop communication skills through class activities designed to maximize effective decision-making and evaluation. 3 credit hours.

**CO 203 Radio Production**

Prerequisite: CO 103 or permission of instructor. Theory and practice of techniques involved in the function and operation of a radio station. Microphone techniques, engineering operations, transmitter readings, logging, and programming will be included. Laboratory fee; 3 credit hours.

**CO 205 Intercultural Communication**

Prerequisite: CO 100. A theoretical and practical survey of intercultural communication processes. This course is concerned with the interpersonal dimensions of intercultural communication and will examine the distinctive cultural orientations, behaviors, expectations and values that affect communication situations. 3 credit hours.

**CO 208 Introduction to Broadcasting**

Prerequisite: CO 101. General survey and background of broadcasting, cable, pay and premium TV services, and new technologies. Current changes, law, regulation, financing, and public input are examined. Emphasis is placed on current status and future potential of these industries. 3 credit hours.

**CO 212 Television Production I**

Prerequisite: CO 114 or permission of instructor. Introduction to the mechanics, techniques, and aesthetic elements of television production. Course provides the basic grounding in the art and craft of the medium. Laboratory fee; 3 credit hours.

**CO 214 Elements of Film**

Prerequisite: CO 114 or permis-

sion of instructor. Stresses the understanding of film as a creative form of communication. Student is introduced to basic techniques of motion picture production through lectures, audiovisual activity, and small-group involvement. Laboratory fee; 3 credit hours.

**CO 220 Film Production I**

Prerequisite: CO 214. Involves the transformation of an original idea into film: initial analysis, proposed treatment plan, sequencing, film scripting, preproduction planning, nature of the production process. A short film is produced through team effort. Laboratory fee; 3 credit hours.

**CO 300 Persuasive Communication**

Prerequisite: CO 100. Study of communication as social influence. Analysis of theories of attitude change. The use and effects of compliance-gaining strategies in interpersonal, public, and mass communication contexts. Students develop, present, and analyze persuasive messages. 3 credit hours.

**CO 301 Communication Theory and Research**

Prerequisite: junior status. Acquaints students with the nature of communication inquiry. Theories of communication effects are surveyed. Research methodologies relevant to advertising, journalism, broadcast media, public relations, and organizational communication settings are examined. 3 credit hours.

**CO 302 Social Impact of Media**

Prerequisite: CO 101. Examines such problems as regulatory control

of the media, law and ethics, and the behavioral aspects of mass and interpersonal communication. Students examine the variety of media writing and commence writing their own media messages. 3 credit hours.

**CO 306 Public Relations Systems and Practices**

This course makes students aware of the depth and sensitivity of the role public relations plays in today's business environment. Orients students to career paths utilizing communication, journalistic, and management skills as well as skills acquired in business and English courses. Use of the lecture/discussion, case study, and guest speaker approach to teach all students the historical, theoretical, practical, and technical applications of public relations. 3 credit hours.

**CO 308 Broadcast Journalism**

Prerequisite: CO 102 or permission of the instructor. Entails practice in news gathering, editing, writing, and use of news services and sources. Creating documentary and special event programs through film for television news, on-the-spot film and video-tape reporting are included. 3 credit hours.

**CO 309 Public Relations Writing**

Prerequisite: CO 102. Examines the elements of good writing as applied to the public relations field. Students research and identify general and specialized audience needs and create messages to satisfy those needs. They plan and execute projects within selected media such as newspapers, magazines, TV, radio, and film, as well as speeches for public

appearances. 3 credit hours.

#### **CO 310 Pictorial Journalism**

The study of photography and media design as an active observation and interpretation of events in the print media. 3 credit hours.

#### **CO 312 Television Production II**

Prerequisite: CO 212. An intermediate course designed to provide the student with the opportunity to coordinate the many areas of TV production. Videotape and live production techniques are employed. Laboratory fee; 3 credit hours.

#### **CO 317 Advanced Writing for the Media**

Prerequisite: CO 102. Planning and writing longer forms of scripts, emphasizing documentary and dramatic writing for production. 3 credit hours.

#### **CO 320 Film Production II**

Prerequisite: CO 220. The creative process involved in translating the screenplay into a narrative film is explored. Narrative form, structure, and production technique are examined through examples of short and feature-length films. Students produce short narrative films by team effort. Laboratory fee; 3 credit hours.

#### **CO 335 Advertising Media**

This course covers the characteristics of major media and the impact of advertising on the demand for products and services. It will provide students with a critical study of communication principles and concepts as applied to advertising copy. Emphasis will be on how consumers use media; media planning and evaluation; copywriting

styles; coordination of visual and verbal concepts; and the principle problems of building, implementing, and evaluating advertising programs. 3 credit hours.

#### **CO 340 The History of Film**

A survey of the historical development of the film medium consisting of lectures, discussions, and the screening of films which demonstrate the interrelationships between the historical development and the establishment of the film medium as a powerful communicative art form. Laboratory fee; 3 credit hours.

#### **CO 399 Media Campaigns**

Examines the role played by the mass media in political campaigning. Students look at historical perspectives and study current trends. FCC laws regarding advertising, lowest unit cost, section 315, and other regulations will be examined. Students view videotapes of past political media campaign examples and have the opportunity to participate in and produce hypothetical political media campaigns. 3 credit hours.

#### **CO 400 Communication in Organizations**

Communication examined in formal organizational contexts such as school, industry, hospitals, and government. Students will be prepared to function more effectively in organizations' dynamic communication systems, and to solve problems relative to the interaction of organizations with the environment via the interactions of people and messages. 3 credit hours.

#### **CO 410 Management**

##### **Communication Seminar**

Open to all upper-division students, regardless of major. Involves structure and function of communication in organizations. Practice in understanding and managing interpersonal differences. Emphasizes concepts and principles needed for effective management of organizational communication processes. 3 credit hours.

#### **CO 412 Advanced Television Production**

Prerequisite: CO 312. Essentials of budgeting, marketing, and regulatory policies and rules. Production teams are formed to produce sophisticated local television programs under close supervision. 3 credit hours.

#### **CO 415 Broadcast Management**

Involves the administrative and personnel problems of television and radio studio management, broadcast engineering, local sales, continuity, and programming. Discussions will include scheduling and the development of facilities. 3 credit hours.

#### **CO 420 Communication and the Law**

Prerequisite: junior status. This course will trace the freedom and control of the print, broadcast, cable, and telecommunications industries and the effect on the public. 3 credit hours.

#### **CO 435 Advertising Seminar**

Prerequisites: CO 335 and senior standing. Strategic approaches to managing an advertising campaign related to a specific area, topic, or product are developed. Emphasis



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## COMPUTER SCIENCE

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on market research, determining consumer target markets, media selection, creation of copy, development and control of budgets, and evaluation and presentation of advertising. 3 credit hours.

### CO 440-454 Special Topics

Topics in communication which are of special or current interest. 3 credit hours.

### CO 500 Seminar in Communication Studies

Prerequisite: Senior communication major. This capstone course will integrate current and developing trends with the individual student's interest and perspectives. Students will present for discussion and examination issues of interest within a unifying theme. 3 credit hours.

### CO 598 Internship

Prerequisite: Permission of the instructor. On-the-job learning in selected organizations in production, public relations, journalism, or advertising. 3 credit hours.

### CO 599 Independent Study in Communication

Prerequisites: consent of faculty member and department chair. Opportunity for the student under the direction of a faculty member to explore an area of interest. 1-3 credit hours per semester with a maximum of 6 credit hours.

### CS 107 Introduction to Data Processing

Concepts underlying modern application of computer systems. Windows, word processing, spread sheets, databases. *Not to be taken for credit by computer science majors.* 3 credit hours.

### CS 110 Introduction to C Programming I

Prerequisite or corequisite: M 115. A first course in computer programming using the C language; for engineering, computer science, mathematics, and science students. Problem-solving methods, algorithm development, and good programming style. Expressions, functions, libraries, basic types and arrays. Programming assignments will stress numeric applications. Lecture plus lab (4 contact hours); 3 credit hours.

### CS 166 Discrete Mathematics for Computing

Prerequisite: CS 110. A foundation course for computer science majors. Introduction to fundamentals, including logic, sequences, sets, functions, recursion, induction, proof methods, counting techniques, and Big-O notation. 3 credit hours.

### CS 210 Java Programming

Prerequisite: CS 110. Introduction to the Java programming language. Strings, arrays, and vectors. Object-oriented programming concepts including encapsulation, inheritance, and polymorphism.

Applets, and event-driven programming. 3 credit hours.

### CS 212 Intermediate C Programming

Prerequisites: CS110, CS 210, or permission of academic advisor and instructor. Further topics in the C programming language. Problem-solving methods, algorithm development, and good programming style. Pointers, strings, structured data, two-dimensional arrays, files, recursion, dynamic memory allocation, parameter passing mechanisms, and the use of pointers to process arrays and lists. Basic algorithms for searching, sorting, and simple numerical analysis. Programming assignments will include both numeric and non-numeric applications. 3 credit hours.

### CS 214 Computer Organization

Prerequisite: CS 166 or consent of instructor. Fundamentals of computer technology, binary number systems, data type standards and data type storage requirements, Turing machines, binary logic, and simple "gate" circuits. The five functional units of input, output, ALU, control unit, and memory are covered and integrated into a "virtual," "generic" computing machine. Progression from Boolean fundamentals through binary logic to micro-code creation. Hands-on experience assembling and implementing low-level programming of a typical computing system. 3 credit hours.

### CS 215 Introduction to Databases

Prerequisite: CS 110. Emphasis on

comprehending database concepts and developing a practical level of skill in a current database software package. An introduction to data modeling and normal forms, introduction to Standard Query Language (SQL), Query By Example (QBE), security, and report generation. Students develop and implement a modest database project. 3 credit hours.

#### CS 226 Data Structures Using Collections

Prerequisite: CS 210. Intermediate program design and debugging in Java. The nature and application of data structures such as arrays, stacks, queues, priority queues, and trees. Evaluation of the performance of different data structures for typical applications. Students will write and debug several projects using Java's built-in class library; classes covered include sets, maps, hash tables, trees, array-based lists, linked lists, stacks, and vectors. 3 credit hours.

#### CS 247 Network Essentials and Technologies

Prerequisites: sophomore standing. Corequisite: CS 214. A foundation in current network technologies for local area networks (LANs), wide area networks (WANs), and the Internet. Introduction to the hardware, software, terminology, components, design, and connections of a network. The OSI model will be covered as well as differing topologies and protocols for LANs. The course will include both lectures and hands-on labs. 3 credit hours.

#### CS 320 Operating Systems

Prerequisite: CS 214, or EE 371 and

EE 472 as a corequisite. Modern operating system concepts including interrupts, process and thread management, concurrency, deadlock, memory management, file system management, resource allocation. 3 credit hours.

#### CS 326 Data Structures and Algorithms II

Prerequisites: CS 166, CS 212, CS 226. Data structures—trees, graphs, hash tables. Recursive techniques—divide and conquer, backtracking, recursion elimination. Algorithms—sorting, searching, shortest paths. Analysis of the complexity of algorithms. Programming will be required. 3 credit hours.

#### CS 350 Human-Computer Interaction

Prerequisite: CS 210 or programming experience in C, VB, VB.Net, or Java. The effect of psychological and physiological factors on the design of the Human-Computer Interface (HCI). The influence of various input and output devices. Evaluation of the interface for qualities such as learnability, usability, human efficiency, and accuracy. Students will design, implement, analyze, and evaluate Graphical User Interfaces (GUIs). 3 credit hours.

#### CS 416 Social and Professional Issues in Computing

Prerequisite: junior or senior standing. A broad-ranging look at the capabilities and limitations of computers and the effects of rapid change. Roles and responsibilities of the computer professional in our world, codes of ethics. Complex systems, risks, and system failure. Intellectual property. Social effects of net-

works and global communication, outsourcing, privacy, databases, data mining, cryptography, and snooping. Computer crime, break-ins, terrorism, and countermeasures. 3 credit hours.

#### CS 425 Principles of Computer Graphics

Prerequisites: M 118, CS 212, CS 226. Development and implementation of the fundamental algorithms of computer graphics: 2-D viewing, geometric transformations, clipping, curves, user interaction. Introduction to 3-D viewing and surfaces. Programming projects required. 3 credit hours.

#### CS 428 Object-Oriented Design

Prerequisites: CS 210, CS 226. An object-oriented design methodology course. Topics include requirements capture, object-oriented system analysis, design and implementation. Primary emphasis on the UML methodology, separation of layers, design patterns, and the importance of these in developing a software project. Students will design a major group project and implement portions using C++ or Java. 3 credit hours.

#### CS 434 Assembly Language

Prerequisites: CS 210, CS 214 or EE 371. Introduction to assembly language programming, including the hardware instruction set, assembly language syntax and features, macros, subprograms, interrupts, I/O conversions. Programming required. 3 credit hours.

#### CS 440 Programming Laboratory

Prerequisites: junior or senior stand-

ing in computer science, consent of faculty supervisor, and approval of program coordinator. The student will write a large program or a series of programs. Projects will be an extension of the course materials of one of the junior/senior courses. Course may be taken repeatedly, up to three times, working in different languages or doing more advanced projects. 1 credit hour.

#### CS 441 Web Database Connectivity

Prerequisites: CS 215 and CS 210 or programming experience in C, VB, VB.Net, or Java. "Dynamic" web page generation through interaction of "client-side" user input and "server-side" back-end databases. Various technologies and applications that enable the two-way interchange of data between users and databases across the web. 3 credit hours.

**CS 445 Network Administration**  
Prerequisite: CS 320. Fundamentals of administration of a networked computer. Topics include basic duties of a system administrator; overview of TCP/IP networking; file system layouts; user management; network services such as DNS, NIS, DHCP, file sharing, printing, mail, ftp, web, interfacing different operating systems on one network; and general security issues including prevention through firewalls and secure shells. Lab exercises will use both UNIX and Windows systems. 3 credit hours.

#### CS 446 Introduction to Computer Security

Prerequisite: CS 320 or permission

of the instructor. Knowledge of networks desirable. A survey of computer and network security issues including types of network attacks, viruses, intrusion detection and tracking, firewalls, trust relationships, and authentication, secure connections cryptography, and recent security policy and legislation. 3 credit hours.

#### CS 447 Computer Communications

Prerequisites: CS 214 or EE 472 and any one of the following: EAS 345 or IE 346 or M 371 or EE 320. Problems and solutions in network design. Layered models, network topology, protocols, virtual circuits and packet switching, local networks (CSMA, token ring, ethernet), security (DES, public key crypto-systems), Internet protocols, client/server programming, sockets. 3 credit hours.

#### CS 450-469 Special Topics

Prerequisite: junior or senior standing in computer science. New developments or current practices in computer science. 3 credit hours.

#### CS 478 Artificial Intelligence

Prerequisite: CS 226. The concepts, syntax, and procedures of a functional language (LISP or a derivative of LISP such as Scheme). Methods and present capabilities of artificial intelligence. Topics: general search strategies, heuristics, game trees, knowledge representation, propositional and first-order logic, inference, probabilistic reasoning, planning, and expert systems. 3 credit hours.

#### CS 504 Senior Project

Prerequisites: senior standing in computer science, consent of faculty supervisor and approval of program coordinator. A project is selected and carried out in conjunction with the faculty advisor. Work is presented at a seminar at the end of the term. 3 credit hours.

#### CS 526 Object-Oriented Principles and Practice/C++

Prerequisites: CS 212, CS 226. The C++ language; object-oriented design and programming. Protection of privacy, encapsulation of data with relevant functions. Advanced aspects of C++; inheritance, templates, polymorphism, virtual functions, and exception handling. Several programming projects in C++. 3 credit hours.

#### CS 536 Structure of Programming Languages

Prerequisites: CS 212, CS 226. Computer language components: their specification, semantics, implementation, and internal operation. The structure, syntax, and semantic aspects of several languages are examined. Short programs are required in two new languages. 3 credit hours.

#### CS 547 Systems Programming

Prerequisites: CS 212, CS 320 or EE 371. Techniques for UNIX systems programming in the C language. Topics include macro preprocessors, conditional compilation, low-level interface programming, UNIX system calls including file operations and directory operations, process control, interprocess communication, and client-server routines. Programming projects required. 3 credit hours.

### CS 551 Advanced Computer Graphics

Prerequisite: CS 425. Three-dimensional graphics including surface modeling, transformations, three-dimensional viewing, spline curves and surfaces, color theory and shading, hidden-surface elimination, and an introduction to ray tracing. Programming projects required. 3 credit hours.

### CS 563 Mobile Robotics

Prerequisites: CS 226, CS 320. Principles of construction and navigation of mobile robots. Topics include locomotion mechanisms, sensor types and usage, reactive behavior, tracking, obstacle avoidance, path planning, and communication schemes for remote control. Students will work both individually and in groups to construct and program small mobile robots using Lego Mindstorms kits. 3 credit hours.

### CS 590 Internship

Prerequisite: junior standing, approval of advisor. Student will undertake a supervised work experience of at least 100 hours, preferably in the local computer science industry. 0 credit hours.

### CS 599 Independent Study

Prerequisites: junior or senior standing in computer science, consent of faculty supervisor, and approval of program coordinator. (Refer to academic regulations for independent study.) Exploration of an area of interest. Written and oral presentations are normally required. 3 credit hours.

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## DENTAL HYGIENE

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### DH 105 Introduction to Dental Hygiene I

This course provides entry-level students with an introduction to allied health education and the profession of dental hygiene. Topics include: the role of the dental hygienist in the health care delivery system, the history of dental hygiene, the role of professional associations, basic scientific terminology of the head, neck, and oral cavity, introduction to the caries process and gingival disease process, and oral hygiene protocols. 1 credit hour.

### DH 110 Introduction to Dental Hygiene II

Prerequisite: DH 105. This course is a continuation of DH 105 and provides students with a survey of contemporary issues encountered by dental health care professionals. Emphasis is placed on professional standards, health promotion, disease prevention, review of dental specialties, and ethical issues that are encountered by dental hygienists. 1 credit hour.

### DH 214 Oral Facial Structures

Prerequisites: DH 105, DH 110, BI 121. This course examines the head and neck region, emphasizing the anatomy of oral facial structures, including the teeth. This course also addresses oral histology and embryology. 4 credit hours.

### DH 215 Radiology

Prerequisites: DH 105, DH 110, DH 214, DH 220, BI 121. This course is an extension of the clinical course sequence and concen-

trates on the role of radiographs in the diagnosis and treatment of oral diseases. The course emphasizes radiographic characteristics and production, equipment, safety, processing, and interpretation. 3 credit hours.

### DH 220 Dental Hygiene Concepts I

Prerequisites: sophomore status and DH 105, DH 110. DH 220 is the first in a series of clinical courses; it provides the foundations of clinical dental hygiene practice. The course focuses on professionalism, ethical decision-making principles, infection control, the impact of tooth accumulated deposits, and the development of the knowledge and skills necessary for the delivery of dental hygiene services. Clinical laboratory fee; 3 credit hours.

### DH 240 Dental Hygiene Concepts II

Prerequisites: sophomore status and DH 105, DH 110, DH 214, DH 220. This course is an extension of DH 220 and focuses on the continuing development of the didactic, affective, and psychomotor skills necessary for comprehensive dental hygiene treatment. Lecture topics include medical history, oral inspection, data collection procedures, caries process, fluoride, oral physiotherapy and chemotherapeutics for the management of caries and periodontal disease, and treatment planning. Classroom presentations concentrate on the dental hygiene process of care. Clinical laboratory fee; 4 credit hours.

### DH 320 Pharmacology and Pain Management

Prerequisites: junior status and

required first- and second-year dental hygiene courses. This course provides an overview of medications encountered by health care workers. Particular attention is paid to the impact various medications have on dental and dental hygiene treatment. Medications, local anesthetics, and other chemotherapeutic agents utilized in the dental treatment setting will be emphasized. 3 credit hours.

#### **DH 325 General and Oral Pathology**

Prerequisites: junior status and required first- and second-year dental hygiene courses. A survey of general pathology with emphasis on the impact of pathologic conditions on the oral cavity. Diseases of the gingiva and periodontium and the role of the dental hygienist in recognition and referral will be emphasized. 3 credit hours.

#### **DH 327 Periodontology**

Prerequisites: sophomore status and DH105, DH110, DH214, DH220. This course provides an in-depth examination of periodontal diseases, the immune response, and both surgical and nonsurgical interventions. The role of the dental hygienist as a periodontal co-therapist is emphasized. 3 credit hours.

#### **DH 330 Dental Hygiene Concepts III**

Prerequisites: junior status and required first- and second-year dental hygiene courses. Dental Hygiene 330 is a continuation of the clinical-course sequence. Content emphasis is placed on instrument alternatives, professional mechanical oral hygiene care, instrumentation theory for pre-

vention and control of periodontal diseases, and the utilization of patient cases to assess periodontal status. Clinically, students will be treating patients with a broader scope of oral/physical conditions while incorporating patient radiographs into the dental hygiene treatment plan. Clinical laboratory fee; 3 or 5 credit hours.

#### **DH 342 Dental Materials**

Prerequisites: DH 330, junior status, and required first- and second-year dental hygiene courses. This lecture/laboratory course provides students with an understanding of the biomaterials and techniques utilized in preventive, restorative, and surgical dental procedures. Emphasis is placed on the role of the dental hygienist in maintaining and evaluating preventive and restorative materials. 3 credit hours.

#### **DH 350 Dental Hygiene Concepts IV**

Prerequisites: required first- and second-year dental hygiene courses and DH 320, DH 325, DH 327, DH 330 BI 115. DH 350 is the fourth course in the clinical course sequence. The didactic portion of the course concentrates on ethical decision-making skills, problem-solving abilities, treating the medically compromised patient, and practice management principles. Clinically, students will have an opportunity to treat more challenging cases. Clinical laboratory fee; 5 credit hours.

#### **DH 423 Instructional Planning and Media**

Prerequisites: junior status and required first- and second-year

dental hygiene courses. This course provides dental hygiene students and practitioners with an overview of the instructional planning process. Emphasis will be placed on the steps in the process, the development and utilization of media, and oral presentation skills. 3 credit hours.

#### **DH 438 Dental Hygiene Research**

Prerequisites: senior status and required first-, second-, and third-year dental hygiene courses. This course provides dental hygiene students with the skills needed to understand, interpret, and critique professional literature. Emphasis is placed on the design of a sound research protocol. 3 credit hours.

#### **DH 455 Dental Hygiene Public Health**

Prerequisites: required first- and second-year dental hygiene courses and DH 320, DH 325, DH 327, DH 330, BI 115. This course emphasizes the role of dental and dental hygiene public health programs in the health care delivery system. The role of the dental hygienist in community disease prevention and health promotion activities will be stressed. Students will have the opportunity to interact with a broad spectrum of community groups during the field experience aspect of the course. 4 credit hours.

#### **DH 460 Advanced Dental Hygiene Concepts**

Prerequisites: required first- and second-year dental hygiene courses and DH 320, DH 325, DH 327, DH 330, DH 342, DH 350, BI 115. The clinical course sequence culmi-

nates in DH 460; this course provides the opportunity for students to integrate skills and didactic knowledge previously gained. Clinical time will focus on increasing time efficiency while maintaining recognized standards of care. Didactic content will focus on professional credentials, state licensing agencies, continuing education, the role of professional organizations, employment goals, and resume preparation. Clinical laboratory fee; 5 credit hours.

#### DH 461 Oral Medicine

Prerequisites: required first- and second-year dental hygiene courses and DH 320, DH 325, DH 327, DH 330, BI 115. Oral Medicine utilizes the content from Anatomy and Physiology, Pharmacology, Oral Pathology, Dental Hygiene Concepts, and other courses as the basis for discussing the impact of systemic conditions on the oral cavity. The medical history will be utilized in a case-study approach to address the role of the dental hygienist in medical risk assessment and management. 3 credit hours.

#### DH 462 Dental Hygiene Internship

Prerequisites: junior status and required first- and second-year dental hygiene courses. This course provides senior-level dental hygiene students with the opportunity to apply the knowledge and skills gained throughout the dental hygiene curriculum in an internship experience compatible with future career goals. 3 credit hours.

#### DH 468 Dental Hygiene Senior Project

Prerequisites: junior status and DH

423, DH 438. This course provides the student with the opportunity to design, implement and present a project that enriches their existing knowledge and contributes to the profession of dental hygiene. All previous and current coursework will assist the student in the effort. 3 credit hours.

#### DH 490-499 Special Topics

Prerequisite: dental hygiene major; specifics of course(s) to be determined in consultation with the program director. Opportunity for the student, under the direction of the dental hygiene faculty, to explore an area of interest. 1-3 credit hours; maximum of 6 credits.

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## NUTRITIONAL DIETETICS

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#### DI 150 Sports Nutrition

Review of the principles of nutrition and exercise with emphasis on counseling the athlete; facts and fallacies of sports nutrition; energy and fluid balance; evaluating sports nutrition information in the lay literature; appropriate diets for training; and managing the young person, older adult, and athlete with special needs. Planning meals for training and competition, as well as dietary evaluation using computerized nutrient analyses, will be included. 3 credit hours.

#### DI 200 Introduction to Food Science and Preparation

Provides basic knowledge of food science, food preparation and baking principles; physiology of taste; components of food including

color and flavor pigments (phytochemicals); application of scientific reactions during preparation and cooking; weighing and measuring skills; proper tasting and product evaluation techniques; as well as safe handling of knives and kitchen equipment. Instruction will include sanitary food experimentation and preparation in addition to classroom lectures. Laboratory fee; 3 credit hours.

#### DI 214 Menu Planning

Principles of meal planning and writing menus for volume food combinations, texture, color, nutrition, and cost. The interrelated steps involved in quantity food production, the delivery of food, and the responsibilities of management. 3 credit hours.

#### DI 216 Safety and Sanitation

Basic principles of food sanitation and work safety are stressed. The student will write policies and procedures and conduct an in-service training class for a food service facility in the hospitality field. Emphasis is placed on the causes and prevention of food poisoning and the moral and legal responsibilities of management to present safe and sanitary food to patrons. 3 credit hours.

#### DI 326 Principles of Dietetics Management

Provides knowledge required to effectively manage the provision of dietetic services in a food service operation, clinical nutrition department, community or ambulatory nutrition program, private practice office, or other food/nutrition facility. Management principles will be discussed using human

resource applications, leadership theories, decision-making tools, and organizational skills for the successful dietetics manager. Managing materials, productivity, financial data, and information in a dietetics environment will be discussed using quality improvement principles. 3 credit hours.

#### DI 330 Dietetic Practice in Today's Society

Prerequisite: BI 315. Knowledge of dietetic practice: medical terminology, interpretation of laboratory values, format of the medical record, documenting nutrition care, nutrition screening and assessment, medical nutrition therapy (MNT), patient interviewing and counseling. Nutrition care protocols for enteral and parenteral feeding, pediatric care, diabetes, cardiovascular disease, hypertension, pulmonary insufficiency, dysphagia, cancer, renal disease, obesity, and other diseases with nutritional implications. 3 credit hours.

#### DI 342 Healthy Food Preparation

Preparing food according to today's healthy eating goals. Food laboratory strategies include modifying recipe content to include natural sources of protein, fat, and carbohydrate in healthy meals, snacks, sports beverages, etc. while incorporating accurate nutrition analysis and costing of recipes using the latest technology. Discussion of organic, functional, and genetically engineered foods. Students design recipe or food demo projects incorporating course content. Provides knowledge and expertise in creating and redesigning

recipes. Incorporates today's healthy eating principles. Emphasis is placed on eating healthy without its costing more. Laboratory fee; 3 credit hours.

#### DI 405 Community and Institutional Nutrition

Emphasizes tools for developing effective dietetic programs in the community. Looks at the organization and development of action plans. Develops knowledge of the fundamentals of the political and legislative process. Discussion of nutritional problems that may be secondary to other health, social, and economic influences. 3 credit hours.

#### DI 450-455/499 Special Topics

Selected topics in dietetics, health care, food service management, team concepts, and a variety of current issues. 3 credit hours.

#### DI 597 Dietetic Practicum

An elective course that provides an opportunity for students to gain practical work experience in the dietetics field. Students must spend a total of 130 hours at a field site under the supervision of a registered dietitian and an additional 20 hours of course time devoted to preparation of a term paper or case study directly related to their practicum experience. This opportunity will help students meet competencies required for entry into a post-graduate internship. 3 credit hours.

#### DI 599 Independent Study

Prerequisite: permission of the program coordinator. Independent research projects or other approved phases of independent study.

3 credit hours.

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## ENGLISH

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*Note: E 105 and E 110 are required by all departments in the university and must be taken during the student's first year at the university. They are prerequisites for all upper-level, 200 or above, English courses.*

#### E 101 Academic Reading

Reading, analyzing and interpreting nonfiction for the purpose of learning to comprehend textbooks. 3 excess credit hours.

#### E 102 Academic Reading and Speaking.

Reading, analyzing, and interpreting nonfiction for the purpose of learning to comprehend textbooks. Locating and organizing material for public speaking and presenting it with confidence and fluency. Open only to Developmental Bloc students. 3 excess credit hours.

#### E 103 Fundamentals

Designed to increase awareness of the structure of English. Intensive practice in writing to improve the student's ability to construct effective sentences, paragraphs and short themes. 3 excess credit hours, 6 class hours per week. (See section titled Developmental Studies Program elsewhere in this catalog.)

#### E 104 Fundamentals

For international students. Same course description as E 103.

**E 105 Composition**

Prerequisite: E 103 or placement by English department. Analytical study of essays for the purpose of improving skills of written communication. Practice in writing in a variety of rhetorical modes with emphasis upon clarity and precision. 3 credit hours.

**E 106 Composition**

For international students. Same course description as E 105.

**E 110 Composition and Literature**

Prerequisite: E 105 or placement by the English department. Reading, analyzing, and interpreting literature in three basic genres: fiction, poetry, and drama. Writing of analytical and critical essays. Theatre fee for day sections. 3 credit hours.

**E 111 Composition and Literature**

For international students. Same course description as E 110.

**E 201 Early World Literature**

Prerequisite: E 110. Selected world classics of prose, poetry, and drama from ancient times through the sixteenth century, written in or translated into English. 3 credit hours.

**E 202 Modern World Literature**

Prerequisite: E 110. Selected world classics of prose, poetry, and drama from the seventeenth century to the present, written in or translated into English. 3 credit hours.

**E 211 Early British Writers**

Prerequisite: E 110. A study of important British writers from the beginning of literature in English

through the Neoclassic era. 3 credit hours.

**E 212 Modern British Writers**

Prerequisite: E 110. A study of important British writers from the Romantic era to the present. 3 credit hours.

**E 213 Early American Writers**

Prerequisite: E 110. A study of important American writers from Colonial times to the 1850s. 3 credit hours.

**E 214 Modern American Writers**

Prerequisite: E 110. A study of important American writers from the 1860s to the present. 3 credit hours.

**E 217 African-American Literature I**

Prerequisite: E 110. A survey of African-American writers from the late 1700s to 1940. Texts selected from a variety of genres with emphasis on the African-American experience and heritage. 3 credit hours.

**E 218 African-American Literature II**

Prerequisite: E 217 or permission of instructor. A survey of African-American writers from the Harlem Renaissance to the present. Texts selected from a variety of genres with emphasis on the African-American experience and heritage. 3 credit hours.

**E 220 Writing for Business and Industry**

Prerequisite: E 110. Intensive practice in the various types of writing required of executives, business people, engineers, and other pro-

fessionals, with emphasis on business letters, memos, resumes, internal and external reports, evaluations and recommendations, descriptions of procedures and processes. 3 credit hours.

**E 225 Technical Writing and Presentation**

Prerequisite: E 110. Intensive practice in the common forms of technical writing, with emphasis on technical description, processes, reports, and manuals. Oral presentation of written work. 3 credit hours.

**E 230 Public Speaking and Group Discussion**

Prerequisite: E 110. Objectives are to develop proficiency in organizing and presenting material and to give practice in speaking, group interaction, conference management, and small-group discussion. 3 credit hours.

**E 251 Narrative Nonfiction**

Prerequisite: E 110. Exploration of and practice in writing "the fourth genre," creative nonfiction. Emphasis on the short piece, the literary memoir, and the personal essay. 3 credit hours.

**E 260 The Short Story**

Prerequisite: E 110. A critical study of the best stories of American and British writers as well as stories, in translation, of writers of other nationalities. 3 credit hours.

**E 267 Creative Writing I**

Prerequisite: E 110. Exercises and instruction in writing short fiction and poetry. Composing, critiquing, and editing skills developed in workshop format. 3 credit hours.



**E 268 Creative Writing II**

Prerequisite: E 267. Advanced exercises and instruction in writing short fiction and poetry. Composing, critiquing, and editing skills refined in workshop format. 3 credit hours.

**E 270 The Advanced Essay Workshop**

Prerequisite: E 251 or E 267 or permission of instructor. Variable topics selected from travel, nature, science, social critique, humor. 3 credit hours.

**E 275 Popular Lyrics**

Prerequisite: E 110. Popular lyrics have always reflected the shifting values and concerns of American life—from the songs of the Jazz age, the Depression, and World War II to rock'n'roll and the music video revolution of today. Through printed lyrics, recordings, and videos, such topics as The American Dream, love and relationships, war and protest are traced in the songs of Irving Berlin, Cole Porter, Ira and George Gershwin; Broadway and Tin Pan Alley; the Beatles, Bob Dylan, Paul Simon; rhythm blues, and country western; to folk, rock, and rap. 3 credit hours.

**E 281 Science Fiction**

Prerequisite: E 110. A survey of the development of science fiction during the nineteenth and twentieth centuries. Reading of American, English, and European science fiction novels and short stories. 3 credit hours.

**E 290 The Bible as Literature**

Prerequisite: E 110. A study of literary genres in the Bible: narrative, drama, poetry, wisdom literature,

books of prophecy, letters. Extensive readings in both the Old and New Testaments. 3 credit hours.

**E 300 Writing Proficiency Examination**

Required of each student after earning 57 credit hours (including transfer credits). See Writing Proficiency Examination statement, or contact English Department Chair.

**E 323 The Renaissance in England**

Prerequisite: E 110. Major writers of the English Renaissance, including Sidney, Spenser, Donne, and Milton. 3 credit hours.

**E 341 Shakespeare**

Prerequisite: E 110. An analysis of representative tragedies, comedies, and history plays. 3 credit hours.

**E 353 Literature of the Romantic Era**

Prerequisite: E 110. Poetry and prose of the major Romantics—Wordsworth, Coleridge, Byron, Shelley, Keats, Lamb and Hazlitt—with attention given to the milieu of the writers, the Continental background, and theories of Romanticism. 3 credit hours.

**E 356 Victorian Literature**

Prerequisite: E 110. Poetry and prose from 1830-1900. The works of Tennyson, Browning, Arnold, Carlyle, Mill, Newman, Ruskin, and others studied in the light of the social, political and religious problems of the period. 3 credit hours.

**E 371 Literature of the Neoclassic Era**

Prerequisite: E 110. British writers

of the period 1660-1789, with emphasis on Dryden, Pope, Swift, and Johnson. 3 credit hours.

**E 390 The Novel in English**

Prerequisite: E 110. Great novels written in English (with the exception of American novels, which are studied in American literature courses). 3 credit hours.

**E 392 Poe, Hawthorne, and Melville**

Prerequisite: E 110. A study of the poetry and fiction of the three major representatives of the tragic outlook on life in mid-nineteenth century American literature. 3 credit hours.

**E 394 American Humor**

Prerequisite: E 110. An intensive study of the history of American humor and its relevance to modern America. Various media and major humor writers including Mark Twain and Woody Allen will be studied. This distance-learning course is taught on-line, using Internet resources to complement traditional materials. 3 credit hours.

**E 395 American Realism and Naturalism**

Prerequisite: E 110. Readings in the works of such major realists as Howells, Twain, and James and important naturalist successors such as Norris, Crane, and Dreiser. 3 credit hours.

**E 406-409 International Literature**

Prerequisite: E 110. Selected poetry, drama, and fiction, in translation, from one of the following nations: Russia, France, Germany, Spain.

Topic to be announced for each semester. 3 credit hours each course.

**E 477 American Literature  
Between the World Wars**

Prerequisite: E 110. A study of the achievements of the main figures of the generation that flourished between the two world wars and brought about "America's Coming of Age." Poets Ezra Pound, T.S. Eliot, Robert Frost, Wallace Stevens and William Carlos Williams; novelists Hemingway, Faulkner, Fitzgerald. 3 credit hours.

**E 478 Contemporary  
American Literature**

Prerequisite: E 110. Intensive study of recent American fiction, nonfiction, poetry, and drama. 3 credit hours.

**E 480 Internship**

Prerequisite: E 110. A work experience, arranged through the department, that will require the effective use of written or spoken English. 3 credit hours.

**E 481-498 Studies in English**

Prerequisite: E 110. Special topics in literature, speaking, or writing. 3 credit hours.

**E 599 Independent Study**

Prerequisites: consent of the instructor and the chair of the department; restricted to juniors and seniors who have at least a 3.0 quality point ratio. Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester.

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## ENGINEERING & APPLIED SCIENCE

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**EAS 103 Technology in  
Modern Society**

Scientific and technological developments and their implications for the future of society. Prospects and problems in communications, energy sources, automation, transportation, and other technologies. Use and control of technological resources for public benefit. 3 credit hours.

**EAS 107 Introduction to  
Engineering**

Prerequisite: M109 or equivalent. Overview of the problems, perspectives, and methods of the engineering profession. Modeling of real-world problems for purposes of optimization, decision-making, and design. Practical techniques of problem formulation and analysis. 3 credit hours.

**EAS 108 Engineering Workshop**

Prerequisite: M 115 (may be taken concurrently). An introduction to the use of elementary statistics and basic computer modeling for engineering problem-solving. Computer packages used may include spreadsheets, databases, math packages, and drafting. 1 credit hour.

**EAS 109 Project Planning and  
Development**

Prerequisite: M 115 (may be taken concurrently). Students develop the skills required to successfully plan and implement selected projects within budgetary and time constraints using project management software. Projects use LabVIEW© programming for data acquisition

and control and CAD tools and presentation software for technical communication of design information. Students gain proficiency in each of these three areas as they are applied to a series of projects spanning the course. 2 credit hours.

**EAS 112 Methods of Engineering  
Analysis**

Prerequisite: a laboratory science course. Corequisite: M 117. Students will be introduced to typical problems encountered in various branches of engineering using a case-study approach. They will gain experience using computer tools to solve these problems numerically. Skill will be developed in a spreadsheet environment, and the fundamentals of programming will be presented. Applicators involve use descriptive statistics, regression, interpolation, logical and numerical functions, sets of algebraic, differential, and finite difference equations, integration. Students are introduced to data types, assignment and conditional statements, program flow control, passing parameters, returning values with functions, arrays. 3 credit hours.

**EAS 120 Chemistry with Applications  
to Biosystems**

Prerequisites: CH 115/117, E 105, EAS 109 (or consent of instructor), M 115. Integrated concepts from chemical and life sciences including solutions, equilibrium, kinetics, thermodynamics, and electrochemistry. Extensive laboratory component illustrates the interaction between chemical and biological processes. 4 credit hours.

**EAS 211 Introduction to**

**Modeling of Engineering Systems**  
Prerequisite: EAS 112 or consent of instructor. Corequisites: M 118, PH 150. Modeling of simple engineering systems from different fields using empirical laws and the balance principle for mass, charge, linear momentum, and energy. Applications include introductory problems in material balances, electric circuits, fluid mechanics, statics, thermodynamics and heat transfer. Emphasis is on developing an engineering approach to problem-solving. 3 credit hours.

**EAS 213 Materials in Engineering Systems**

Prerequisites: CH 115, EAS 112. Corequisite: EAS 211. Properties, behavior and application of materials (solid, liquid, and gas) are studied and demonstrated, with emphasis on selection and use in engineering systems. Topics include mechanical, electrical, magnetic, thermal, optical, rheological, and chemical properties and behavior. 3 credit hours.

**EAS 222 Fundamentals of Mechanics and Materials**

Prerequisites: EAS 211, EAS 213. Corequisite: M 203. Behavior of mechanical and structural systems under load. Topics include effects and distribution of forces on rigid bodies at rest; kinematics and kinetics of particles; force systems; shear and moment diagrams; force-stress-strain-deformation relationships, including torsion and combined loading; buckling and stability analysis; stress/strain transformation; Mohr's circle. 3 credit hours.

**EAS 224 Fluid-Thermal Systems**

Prerequisites: E 105, EAS 211, EAS 213. Corequisite: M 203. An expansive study of thermal and fluids principles and applications including laws of thermodynamics, basic power cycles, conservation laws, internal and external flows, and convective heat transfer. 3 credit hours.

**EAS 230 Fundamentals and Applications of Analog Devices**

Prerequisite: EAS 211 or consent of instructor. Corequisite: PH 205. Fundamental principles of analog electrical devices as applied to a variety of engineering systems, as well as hands-on experience on those devices as applied in various engineering disciplines. Applications include sensors, transformers, motors, and transmission lines. 3 credit hours.

**EAS 232 Project Management and Engineering Economics**

Prerequisites: EAS 109 or knowledge of the fundamentals of project management and familiarity with the basic concepts of probability and statistics. An introduction to economic analysis with emphasis on those concepts directly related to project management. Topics include analysis of alternatives, project initiation, depreciation and taxation, cost estimates, risk and uncertainty, project planning, execution, and control. 3 credit hours.

**EAS 345 Applied****Engineering Statistics**

Prerequisites: M 118 and CS 107 or equivalent. Topics include basic terminology, data presentation, descriptive statistics, curve-surface fitting and correlation, probability

and model fitting, random variables, statistical inferences, one-way analysis of variance, prediction and tolerance intervals, and control charts. 3 credit hours.

**EAS 415 Professional Engineering Seminar**

Prerequisite: senior status. Discussion of topics on professional engineering and ethical matters pertaining to the practice of engineering. *This course intended for non-civil engineering majors. Civil engineering majors take CE 407.* 1 credit hour.

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## ECONOMICS

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**EC 100 Economic History of the U.S.**

Development of American economic interactions in the various stages of agriculture, trade, industry, finance, and labor. Change of economic practices and institutions, particularly in business, banking, and labor, as well as the changing role of government. 3 credit hours.

**EC 133 Principles of Economics I**  
Foundations of economic analysis, including economic progress, resources, technology, private enterprise, profits, and the price system. Macroeconomics including national income, employment, and economic growth. Price levels, money and banking, the Federal Reserve System, theory of income, employment and prices, business cycles and problems of monetary, fiscal, and stabilization policy. 3 credit hours.

**EC 134 Principles of Economics II**

Microeconomics including markets and market structure and the allo-

cation of resources. The distribution of income, the public economy, the international economy, and selected economic problems. 3 credit hours.

#### **EC 200 Global Economy**

Prerequisites: EC 133, EC 134. This survey provides an understanding of the linkages between the American economy and the rest of the world in a period of increased globalization. Particular emphasis will be placed on understanding the various policies international trade and finance and their relationship to business. 3 credit hours.

#### **EC 250 Economics and U.S. Industrial Competitiveness**

Prerequisites: EC 133, EC 134. An examination of the free market and the most effective path to revitalizing the competitiveness of U.S. industry in world markets. Addressed are such key issues as government assistance to industries, regions, and workers; regulation and antitrust; dealing with international competition; and promoting trade in services. 3 credit hours.

#### **EC 311 Government Regulation of Business**

Prerequisites: EC 133, EC 134, and junior standing. An appraisal of public policy toward transportation, trusts, monopolies, public utilities, and other forms of government regulation of economic activity. 3 credit hours.

#### **EC 312 Contemporary Economic Problems**

Prerequisites: EC 133, EC 134, and junior standing. Selected cur-

rent economic problems: inflation, un-employment, poverty in an affluent society, economic issues in health services, the economics of higher education, and the problems of the cities and population. Examination and exploration of policies to cure these problems. 3 credit hours.

#### **EC 314 Public Finance and Budgeting**

Prerequisites: EC 133, EC 134, and junior standing. A general survey of government finance at the federal, state, and local levels, including government expenditures, principles of taxation, public borrowing, debt management, and fiscal policy for economic stabilization. 3 credit hours.

#### **EC 336 Money and Banking**

Prerequisites: EC 133, EC 134, and junior standing. Nature and function of money, commercial banking system, Federal Reserve System and the Treasury, monetary theory, financial institutions, international financial relationships, history of money and monetary policy in the United States, and current problems of monetary policy. 3 credit hours.

#### **EC 340 Microeconomic Analysis**

Prerequisites: EC 133, EC 134, and junior standing. Study of commodity and factor pricing, theory of production, cost theory, market structures under perfect and imperfect market conditions. 3 credit hours.

#### **EC 341 Macroeconomic Analysis**

Prerequisites: EC 133, EC 134, and junior standing. An investigation of the makeup of the national income and an analysis of the fac-

tors that enter into its determination. The roles of consumption, investment, government finance, and money influencing national income and output, employment, the price level and rate of growth, and policies for economic stability and growth. 3 credit hours.

#### **EC 342 International Economics**

Prerequisites: EC 133, EC 134, and junior standing. The role, importance, and currents of international commerce; the balance of international payments; foreign exchange and international finance; international trade theory; problems of payments adjustment; trade restrictions; economic development and foreign aid. 3 credit hours.

#### **EC 350 Economics of Labor Relations**

Prerequisites: EC 133, EC 134, and junior standing. History of the union movement in the United States, union structure and government, problems of collective bargaining, economics of the labor market, wage theories, unemployment, governmental policy and control, and problems of employment security. 3 credit hours.

#### **EC 420 Applied Economic Analysis**

Prerequisites: EC 133, EC 134, and junior standing. Study of applied economics involves application of the tools of economic analysis to the real-life problems of business firms, government agencies, and other organizations. 3 credit hours.

#### **EC 440 Economic Development**

Prerequisites: EC 133, EC 134, and

junior standing. Economic problems of developing countries and the policies necessary to induce growth. Individual projects required. 3 credit hours.

#### EC 442 Economic Thought

Prerequisites: EC 133, EC 134, and junior standing. The development of economic doctrine from mercantilism and Adam Smith to Marx and to the thinking of modern-day theorists such as Friedman, Galbraith, Schumpeter, and Debreu. Emphasis upon the main currents of thought with applicability to present-day problems. Individual study and reporting. 3 credit hours.

#### EC 598 Internship

Prerequisites: EC 133, EC 134, and junior standing. On-the-job learning in selected organizations in areas related to the student's major. 3 credit hours.

#### EC 599 Independent Study

Prerequisites: EC 133, EC 134, and junior standing. Independent research projects or other approved forms of independent study. 3 credit hours.

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## EDUCATION

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#### ED 350 Introduction to

Education and Field Study  
Prerequisite: junior or senior status. This course introduces students to the field of education. Students will focus on the Connecticut Teaching Competencies and be given a broad overview of school-related issues, including classroom management skills. In addition, students will be required to complete a five-week field study

practicum in a local area school district. 3 credit hours.

**ED 504 Educational Psychology**  
Content emphasizes the application of psychological principles and research results to the teaching-learning process. Includes learning principles, development, planning instruction, evaluating student performance, classroom management, and motivation. Cannot be used as a Psychology elective. 3 credit hours.

#### ED 508 Child Development

A study of the physical, cognitive, and social development of children, with special emphasis on major theories and research methods. Cannot be used as a Psychology elective. 3 credit hours.

#### ED 509 Adolescent Development

A study of the physical, cognitive, and social development of adolescents, with special emphasis on major theories and research methods. Cannot be used as a Psychology elective. 3 credit hours.

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## ELECTRICAL ENGINEERING

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#### EE 155 Digital Systems I

Fundamental concepts of digital systems. Binary numbers, Boolean algebra, combinational logic design using gates, map minimization techniques. Use of modular MSI components such as adders, multiplexers, etc. Analysis and design of simple synchronous sequential circuits, including flip-flops, shift registers, and counters. Introduction to VHDL. 3 credit hours.

#### EE 201 Introduction to

Electrical Circuits  
Corequisites: M 118, PH 205. Energy effects and ideal circuit elements, independent and dependent sources; Ohm's Law and Kirchhoff's Laws; resistive networks; node and mesh analysis; Thevenin and Norton Theorems, maximum power transfer, analysis of first order networks; introduction of sinusoidal steady state, phasors, impedance, admittance. DC and transient analysis using SPICE. 3 credit hours.

#### EE 202 Network Analysis

Prerequisites: EE 201, M 118. Continuation of EE 201. Analysis and design of networks in sinusoidal steady state. Use of phasors and phasor diagrams, voltage and current gain, resonance, watts, VARS, power factor. Average and RMS values. Maximum power transfer. Mutual inductance, ideal transformers, Fourier series, use of SPICE in steady state analysis and design. 3 credit hours.

#### EE 212 Principles of

Electrical Engineering  
Prerequisite: EE 201. This course includes several laboratory exercises related to topics covered in EE 201 as well as new topics in EE 212; the course is equally divided between lectures and laboratory. Digital logic systems. The binary number system, binary arithmetic, decimal to binary conversion, binary codes, hexadecimal codes. Boolean algebra, AND, OR, NAND, NOR and XOR gates. Combinational logic design. Multiplexer, rom, decoders, and read and write memory. Digital systems. Sequential logic, latches and flip-flops, digital

counters, registers, sequential logic design. *This course is intended for non-electrical engineering majors.* 3 credit hours.

#### EE 235 Analog Circuits

Prerequisite: EAS 230. In-depth analysis techniques applied to resistive circuits including a review of nodal and mesh analysis, Thevenin and Norton theorems, linearity and superposition, maximum power transfer, applications of operational amplifiers, PSPICE projects, 1st and 2nd order networks, mutual inductance and transformers, steady state power analysis, effective and rms values, complex power, power factor, three phase circuits, power relationships, power factor correction, sinusoidal frequency analysis, resonant circuits, simple filter networks, Laplace transform and its application to circuit analysis. 3 credit hours.

#### EE 247 Electronics I

Prerequisites: EE 201 or EAS 230. Signals and their frequency spectrum, amplifiers, circuit models for amplifiers, frequency response. Operational amplifiers, ideal op-amps, inverting and noninverting configurations, op-amp circuits. Basic semiconductor concepts, drift currents, the p-n junctions, analysis of diode circuits, Zener diodes. BJT transistors, physical structure and modes of operation, biasing techniques, the BJT as an amplifier, biasing the BJT for discrete circuit design, analysis of the transistor as a switch. Field-effect transistors, structure and physical operation of MOSFETs, voltage-current characteristics of various FETs. FET circuits at DC, the FET

as an amplifier. 3 credit hours.

#### EE 256 Digital Systems

##### Laboratory

Prerequisite: EE 155. Covers digital systems test instruments. Experiments in combinational and introductory sequential circuits. Software tools, simulators. Schematic capture and introduction to hardware description languages. Design of simple digital circuits. Written and oral laboratory reports. 2 credit hours.

#### EE 257 Analog Circuits

##### Laboratory

Prerequisite: EE 201 or EAS 230. Laboratory exercises and projects in dc and ac circuits including Ohm's law, Kirchhoff's laws, Mesh and Nodal Analysis, Thevenin and Norton theorems, capacitance and inductance measurements, transient behavior of RLC circuits, operational amplifiers and applications. PSPICE and LabView© are introduced; written and oral reports are required. Laboratory fee; 2 credit hours.

#### EE 302 Systems Analysis

Prerequisites: EE 201 or EAS 230 and M 204. Continuous-time and discrete-time signal and system properties; linear difference equations; the convolution integral and convolution sum; the Laplace transform; the Z transform; the Fourier transform of continuous-time signals. 3 credit hours.

#### EE 306 Electronic Materials and Devices

Prerequisite: EE 247. Semiconductor materials including doping, conduction, diffusion, p-n junction effects. Hall effect and quantum theory. Diode current-voltage relation, diode capacitance and

breakdown; FET and BJT operation. Magnetic properties of matter. 3 credit hours.

#### EE 320 Random Signal Analysis

Prerequisite: EE 302. The elements of probability theory. Continuous and discrete random variables. Characteristic functions and central limit theorem. Stationary random processes, auto correlation, cross correlation. Power density spectrum of a stationary random process. Systems analysis with random signals. 3 credit hours.

#### EE 341 Numerical Methods in Engineering

Prerequisites: M 203 and a standard programming language. Topics include solutions of algebraic and transcendental equations by iterative methods; system of linear equations (matrix inversion, etc.); interpolation, numerical differentiation and integration; solution of ordinary differential equations. Scientific and engineering applications. 3 credit hours. (This course is cross listed with M 338 Numerical Analysis.)

#### EE 344 Electrical Machines

Prerequisite: EE 202 or EE 235. Magnetic fields and magnetic circuits, forces and torques. Theory, characteristics, operation, testing, equivalent circuits, design concepts, and applications of direct current and alternating current machines including transformers, synchronous and induction machinery. Design of main dimensions of transformer cores, rotors and stators and armature windings. 3 credit hours.

#### EE 348 Electronics II

Prerequisite: EE 247. Review of FETs. Biasing the FET in discrete

circuits, biasing configurations of single stage IC MOS amplifiers, FET analog switches. Differential and multistage amplifiers, the BJT differential pair, biasing in BJT integrated circuits, actively loaded differential pair, MOS differential amplifiers and multistage amplifiers. Frequency response of amplifiers, s domain analysis, poles and zeros, Bode plots, Miller effect, frequency response of differential amplifiers, study of various wide-band amplifiers. Output stages and power amplifiers, Class A, B, and AB stages, IC power amplifiers. Analog integrated circuits, complete analysis of 741 op-amp circuit, CMOS op-amps, D/A and A/D converter circuits. 3 credit hours.

#### EE 349 Electronics

##### Design Laboratory

Prerequisites: EE 257, EE 348 (may be taken concurrently). Laboratory exercises and design projects intended to give students practical experience in analog electronics. Experiments include operational amplifiers, diodes, BJTs, FETs, single and multistage amplifier design as well as open-ended design projects. PSPICE and LabView© are used; written and oral reports are required. 2 credit hours.

#### EE 355 Control Systems

Prerequisite: EE 302. The modeling of linear and nonlinear physical systems with discrete and continuous state space equations. Solutions to the discrete and continuous linear state equation; state transition matrices; phase variable forms. Eigenvalues and eigenvectors; Jordan canonical form. Controllability, and observability of discrete and continuous systems.

Relationships between controllability, observability and transfer functions. The stability of discrete and continuous linear systems, Liapunov, root locus, Nyquist, feedback; PID control; lead-lag control. 3 credit hours.

#### EE 356 Digital Systems II

Prerequisite: EE 155 or equivalent. Course focuses on sequential logic design. Both synchronous and asynchronous techniques are covered, with an emphasis on controller-based modular design. Design with a hardware description language. Advanced topics will be covered as time permits. Course includes laboratory activity. 3 credit hours.

#### EE 371 Computer Engineering

Prerequisites: CS 110, EE 155. Introduction to the organization of digital computers. Stored program concept, instruction processing, memory organization, instruction formats, addressing modes, instruction sets, assembler and machine language programming. Input/output programming, direct memory access. Bus structures and control signals. Course includes laboratory activity. 3 credit hours.

#### EE 398 Internship

Prerequisite: Junior standing. A partnership consisting of the student, faculty and employers/organizations providing exposure to and participation in a working engineering environment. The internship will translate classroom knowledge to a professional work environment, and the student will work and learn with practicing engineers while gaining professional experience. A minimum of 300 hours performing related engineering duties

is required. No credit.

#### EE 410 Networking I

Prerequisite: Junior standing or consent of instructor. Reference models TCP/IP and OSI, Transmission media, Data Link Layer issues, the Medium Access Control Sublayer, Networking devices and topologies, LANs, WANs, lab experiments. 3 credit hours.

#### EE 437 Industrial Power Systems Engineering

Prerequisite: EE 202 or EE 235. Study of the components forming a power system, three-phase systems, transmission line modeling and design, per unit quantities, modeling of power systems, one-line diagrams, symmetrical components, sequence networks and unsymmetrical fault calculations, matrices and matrix algebra. 3 credit hours.

#### EE 438 Electric Power Transmission

Prerequisite: EE 437. Power system modeling for fault analysis using sequence networks, bus impedance matrix formulation, rake equivalent method, fault analysis by computer methods, transmission line ABCD parameters and distributed parameter analysis, design and performance using computers, load flow analysis, Gauss-Siedel method, Newton-Raphson method, economic load sharing, stability design and analysis using computers and FORTRAN programs. 3 credit hours.

#### EE 439 Electric Power Distribution

Prerequisites: EE 344, EE 437. Structure of electric power distribution, distribution transformers,

subtransmission lines, substations, bus schemes, primary and secondary systems, radial and loop feeder designs, voltage drop and regulation, capacitors, power factor correction and voltage regulation, protection, buses, automatic reclosures and coordination. 3 credit hours.

**EE 445 Communications Systems**  
Prerequisite: EE 320. The analysis and design of communications systems. Signal analysis, transmission of signals, power density spectra, amplitude, frequency and pulse modulation; pulse code modulation; digital signal transmission. Performance of communications systems and signal to noise ratio. 3 credit hours.

**EE 446 Digital Electronic Circuits**  
Prerequisite: EE 247. Analysis and design of digital circuit classes (comparators and logical gates) by application of Ebers-Moll transistor model (saturation/active/cutoff regions). Comparators treated as overdriven differential/operational amplifiers, including bistable Schmitt trigger. Gates treated for major technologies: resistor-transistor logic (RTL), transistor-transistor logic (TTL), and emitter-coupled logic (ECL). Related integrated circuit analysis including internal variables and I-O characteristics. 3 credit hours.

**EE 450 Analog Filter Design**  
Prerequisite: EE 202 or EE 235. Techniques in the analysis and design of analog filters. First order and second order. Design of Butterworth, Chebyshev, Bessel-Thomson, and Cauer lowpass. Lowpass to band-pass, bandstop and highpass filter transformations,

design, and sensitivity analysis. 3 credit hours.

**EE 452 Digital Filter Design**  
Prerequisite: EE 302. Techniques in the analysis and design of digital filters. Digital filters terminology and frequency response. FIR filter design. IIR digital filter design including Butterworth, Cauer, and Chebyshev lowpass, highpass, bandpass, and bandstop filters. The DFT and IDFT. FFT algorithms. 3 credit hours.

**EE 455 Control System Design**  
Prerequisite: EE 355. State-space representation of dynamical systems via LaGrange's equations and rigid body dynamics. Solution of linear time varying differential equations in state-space form. Interpretation and properties of the state transition matrix. Transformation of state variables and the canonical forms. Robustness and stability via frequency-domain analysis. Controllability and observability via the controllability and observability grammian. Shaping the dynamic response via pole placement using full- and reduced-order linear observers and state feedback. Compensator design by the separation principle. 3 credit hours.

**EE 456 Hardware Description Language**  
Prerequisite: EE 356. General structure of VHSIC Hardware Description Language (VHDL) code; entities and architecture in VHDL; signals, variables, data types; concurrent signal assignment statements; if, case and loop statements; components; package; functions and procedures; slices;

attributes; generate statement; blocks; projects on design of combinational and sequential circuits using VHDL. 3 credit hours.

**EE 457 Design Preparation**  
Prerequisites: EE 349 and the consent of the instructor. This course provides the student time and guidance in selecting a topic for the senior design course (EE 458), which follows this one. Suitable design projects may be suggested by the student, the faculty, or via industrial contacts. Each student carries out a literature search in an area of interest, prepares a written proposal with a plan of action for the project, obtains approval by the faculty project advisor, and makes an oral presentation of the project proposal. 2 credit hours.

**EE 458 Senior Design Laboratory**  
Prerequisite: EE 457. A continuation of EE 457. This course provides the student with experience at a professional level with engineering projects that involve analysis, design, construction of prototypes, and evaluation of results.

Design laboratory activity includes:

Communications/Signal Process Laboratory. Prerequisites: EE 445 or EE 450 or EE 452, EE 457.

Control Systems Laboratory. Prerequisites: EE 355, EE 457.

Digital Design Laboratory. Prerequisites: EE 356, EE 371, EE 457. Corequisite: EE 472 or EE 475.

Fiber Optics/Microwave Laboratory. Prerequisite: EE 462 or EE 480, EE 457.

Machines/Power Systems Laboratory. Prerequisites EE 344, EE 437, EE 457.



Final report presentation and formal written final report required. 3 credit hours.

**EE 461 Electromagnetic Theory**  
Prerequisites: M 203, PH 205. Basic electromagnetic theory including static fields of electric charges and magnetic fields of steady electric currents. Fundamental field laws including Coulomb's Law, Gauss's Law, Biot-Savart's Law, and Ampere's Law. Maxwell's equations, scalar and vector potentials, Laplace's equation, and boundary conditions. Magnetization, polarization. 3 credit hours.

**EE 462 Electromagnetic Waves**  
Prerequisite: EE 461. Electromagnetic wave propagation and reflection in various structures, including coaxial, two-wire, and waveguide systems. Transmission lines. Various modes of propagation in rectangular waveguides. The dipole antenna. Linear antenna arrays. 3 credit hours.

**EE 472 Computer Architecture**  
Prerequisite: EE 356. Introduction to theory of computing, processor design, control unit design, microprogramming, memory organization, survey of parallel processors as time permits. 3 credit hours.

**EE 475 Embedded Systems, Interfaces, and Buses**  
Prerequisite: EE 371. Microprocessors and peripheral devices. Hardware and software aspects of interfacing. Microprocessor-based system design. Introduction to advanced topics such as data communications, memory manage-

ment, and multiprocessing, as time permits. The course is structured around laboratory exercises. 3 credit hours.

**EE 480 Fiber Optic Communications**  
Prerequisite: EE 461. The fundamentals of lightwave technology, optical fibers, LEDs and lasers, signal degradation in optical fibers. Photodetectors, power launching and coupling, connectors and splicing techniques. Transmission link analysis. This course will include selected laboratory experiments. 3 credit hours.

**EE 500 Special Topics in Electrical Engineering**  
Prerequisite: instructor's consent. Special topics in the field of electrical engineering. 3 credit hours.

**EE 599 Independent Study**  
Prerequisites: consent of faculty supervisor and approval of department chair. (Refer to academic regulations for independent study.) Independent study provides the opportunity to explore an area of special interest under faculty supervision. May be repeated. 3 credit hours.

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## ENVIRONMENTAL SCIENCE

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**EN 101 Introduction to Environmental Science**  
Today's environmental problems have scientific, social, and political aspects to them. This course, which is required for majors and is suitable for non-majors, will focus on the scientific aspects, but will not ignore

the other two. The student will be introduced to the geology, biology, physics, and chemistry behind the problems and to the social and political difficulties inherent in dealing with them. Through a combination of lectures, case histories, in-class discussions, and observation of the environmental decision making process at work, the student will gain an understanding of the complex nature of environmental problems and of the choices that must be made in solving them. *May be taken concurrently with EN 102 Environmental Science Laboratory for laboratory science credit.* Environmental Science majors and minors must take EN 102 concurrently. 3 credit hours.

**EN 102 Environmental Science Laboratory**  
Corequisite: EN 101. A laboratory to accompany EN 101 Introduction to Environmental Science. Laboratory and field methods of identifying, characterizing, and dealing with environmental concepts and problems such as water quality, waste disposal, ecosystem structure and change, population growth, pesticides, and food production. Some field work required. Portions of some laboratory sessions will be devoted to discussion. 1 credit hour.

**EN 320 Introduction to Environmental Geology**  
Prerequisites: EN 101 and introductory chemistry or physics. An introduction to geology-related environmental problems and the applications of geology to environmental problem solving. Topics will include an introduction to basic physical geology, natural haz-

ards—causes and remediation, energy and mineral resources, waste disposal, and the applications of geology to land use planning. 3 credit hours.

#### EN 500 Environmental Geoscience

Prerequisite: M 115 or permission of instructor. Study of the systems of atmosphere, hydrosphere, and lithosphere important in understanding the causes of and solutions to environmental problems. Includes material from meteorology, climatology, oceanography, geology, geophysics, geomorphology, and hydrology. Some weekend field trips, or acceptable alternative, required. 3 credit hours.

#### EN 502 Environmental Effects of Pollutants

Prerequisites: BI 320, EN 500. The demonstrated and suspected effects of air, water, and other pollutants on natural systems and on human welfare. Methods of studying effects. Some weekend field trips, or acceptable alternative, required. 3 credit hours.

#### EN 521 Hydrology

Prerequisite: Any one of the following: a college-level course in physics, geology, hydraulics, or limnology or permission of instructor. Lectures cover basic hydrologic theory including nature and chemical behavior of water, precipitation and evapotranspiration, interception, surface water, ground water, water supply and treatment, and water law. Other topics may include irrigation, flood control karst hydrology, and water chemistry. Required labs cover field measurement, sampling, and problem-solving techniques. Some

weekend fieldwork required. Laboratory fee; 4 credit hours.

#### EN 525 Geomorphology

Prerequisite: EN 500/600 or a previous college-level course in physical geology or geography or permission of instructor. Study of landforms and the processes that produce them including the operation of erosional and depositional processes in a variety of geologic settings (fluvial, coastal, glacial, periglacial, karst, and arid). Also covers relationship of landforms and processes, to the solution of environmental problems. Lectures cover processes and laboratories focus on landform recognition and geomorphic process interpretation using maps and aerial photographs. Two required field trips (one 2-day and one 2 1/2-day) with shared transportation and costs. 4 credit hours.

#### EN 527 Soil Science

Prerequisite: EN 500/600 or a previous college level course in physical geology/geography or permission of instructor. Properties, occurrence, and management of soil as a natural resource. Covers the chemistry, physics, morphology, and mineralogy of soils and their genesis and classification. Soil properties will be related to their role in environmental problem solving and decision making. 3 credit hours.

#### EN 533 Special Topics in Field Geology

Prerequisites: EN 500/600 or a previous college level course in geology; other prerequisite(s) dependent on specific course topic. Selected field studies and trips of special interest. Credit varies

depending on the length of the trip or investigation. May be taken more than once. 1-4 credit hours.

#### EN 540 Introduction to Geographical Information Systems

Survey of GIS technology, research, and applications in natural resource management, environmental assessment, urban planning, business, marketing and real estate, law enforcement, public administration, and emergency preparedness. Includes critical evaluation, case studies, and computer demonstrations. 3 credit hours.

#### EN 541 Geographical Information System Techniques and Applications I

Prerequisites: working knowledge of PC-based computing and consent of instructor/program coordinator. First of a two-course sequence on GIS technology and applications. Laboratory exercises using both raster- and vector-based GIS systems. Hardware and software components of GIS; data acquisition, input, and manipulation; cartographic output; report generation. 3 credit hours.

#### EN 542 Geographical Information System Techniques and Applications II

Prerequisite: EN 541 or consent of instructor. Second of a two-course sequence on GIS technology and applications. Laboratory exercises using both raster- and vector-based GIS systems. Advanced GIS techniques; spatial analysis and modeling for a variety of applications (e.g., environmental science, business, planning); development of GIS systems. 3 credit hours.

**EN 543 Application of GIS in Environmental Science**

Prerequisite: EN 642 or consent of instructor. Application of advanced GIS techniques to environmental assessment and management constructed around a real-world project from a government agency or non-profit organization. Students will collaborate to design and implement the complete GIS application. Definition of project goals, special project needs, and steps necessary for successful completion. 3 credit hours.

**EN 590 Special Topics in Environmental Science**

Prerequisites depend on the specific course content. Essentially, the course is a study of selected field studies, projects, and/or occasional trips of special interest. 1-4 credit hours.

**EN 598 Internship**

Prerequisite: permission of advisor. An opportunity for field/work experience under the supervision of a faculty advisor. 3 credit hours.

**EN 599 Independent Study**

Prerequisites: environmental science major, consent of the department. Weekly conferences with advisor. Three hours of work per week required per credit hour. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. A written report of the work carried out is required. 1-6 credit hours; maximum of 6.

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## FRESHMAN EXPERIENCE

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**FE 001 Freshman Experience Seminar**

A ten-week course required for graduation is offered during the first semester of study for all first-time, full-time freshman day students. The goal of this team-taught seminar class is to give students the tools to help them understand and succeed in a competitive environment by addressing such topics as academic standards, diversity, time and stress management, college life vs. high school, university relationships, responsible human sexuality, exploration of self, alcohol and substance abuse, and real-life learning. Seminar fee; 1 credit hour.

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## FINANCE

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**FI 313 Business Finance**

Prerequisites: A 101, EC 133, QA 217. An introduction to the principles of financial management and the impact of financial markets and institutions on that managerial function. An analytic emphasis will be placed on the tools and techniques of the investment, financing, and dividend decision. In addition, the institutional aspects of financial markets, including a description of financial instruments, will be developed. 3 credit hours.

**FI 314 Principles of Real Estate**

Prerequisite: FI 313. An introduction to the fundamentals of real estate practice and the essentials of

the various aspects of the real estate business. Emphasis will be placed on brokerage, mortgage financing, investments, management, and valuation relative to commercial and industrial real estate. 3 credit hours.

**FI 325 International Finance**

Prerequisite: FI 313. An introduction to the theory and determination of foreign exchange rates, mechanisms of adjustment to balance of payments disturbance, fixed vs. flexible exchange rates. The international reserve supply mechanism and proposals for reform of the international monetary system. 3 credit hours.

**FI 327 Risk and Insurance**

Prerequisite: FI 313. An examination and evaluation of risk in business affairs and the appropriate methods for handling it from the viewpoint of the business firm. Emphasis will be placed on, and extended consideration devoted to, the various forms of insurance coverage. 3 credit hours.

**FI 329 Corporate Financial Management**

Prerequisite: FI 313. A comprehensive analysis of the structure of optimal decisions relative to the functional areas of corporate financial decision making. Emphasis is placed on developing an understanding of the applications and limitations of decision models for the investment, financing, and dividend decisions of the corporation. Topics include firm valuation, capital budgeting, risk analysis, cost of capital, capital structure, and working capital management. 3 credit hours.

**FI 330 Investment Analysis and Management**

Prerequisite: FI 313. An analysis of the determinants of valuation for common stocks, preferred stocks, bonds, convertible bonds and preferred stock, stock warrants, and puts and calls. Emphasis will be placed on the analytic techniques of security analysis, portfolio analysis, and portfolio selection. 3 credit hours.

**FI 341 Financial Decision Making**

Prerequisite: FI 330. An examination of the conceptual foundations underlying portfolio theory, capital market theory, and firm financial decision making. Emphasis will be placed on an integrated analysis of firm financial decision making under varying conditions of certainty and capital market perfections. 3 credit hours.

**FI 345 Financial Institutions and Markets**

Prerequisite: FI 313 (may be taken concurrently). An examination of the relationship between the financial system and the level, growth, and stability of economic activity. Emphasis will be placed on the theory, structure, and regulation of financial markets and institutions, coupled with the role of capital market yields as the mechanism that allocates savings to economic investment. 3 credit hours.

**FI 371 Structuring and Financing a New Business**

Prerequisite: FI 313. This course covers the financing requirements for a new business start-up. Students will learn the process of evaluating a venture and structuring the deal for raising money to finance the busi-

ness. 3 credit hours.

**FI 450-454 Special Topics in Finance**

Prerequisites: FI 313, junior-level standing unless otherwise specified in course schedule description, and instructor or finance coordinator approval. In-depth coverage of a selected topic in finance. 3 credit hours.

**FI 598 Internship**

Prerequisite: FI 313. On-the-job learning in selected organizations in areas related to the student's major. 3 credit hours.

**FI 599 Independent Study**

Prerequisite: FI 313. The student undertakes independent research in finance under supervision of an instructor. The topic and meetings will be coordinated with the instructor. Research findings are presented in a formal paper. 3 credit hours.

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## FRENCH

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**FR 101-102 Elementary French I and II**

Stresses pronunciation, aural and reading comprehension, basic conversation, and the fundamental principles of grammar. 3 credit hours each term.

**FR 201-202 Intermediate French I and II**

Prerequisites: FR 101-102 or equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to do some reading in their own areas of interest. 3 credit

hours each term.

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## FIRE SCIENCE

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**FS 102 Principles of Fire Science Technology**

Introduction to fire science. Review of the role, history, and philosophy of fire protection in the United States. Particular emphasis placed on identifying fire hazards and finding appropriate methods of protecting life and property from fire. Includes career orientation and discussion of current and future problems in fire protection. 3 credit hours.

**FS 106 Emergency Scene Operations**

The responsibilities and operating modes of officers commanding fire department units, including engine, ladder, and rescue companies. A basic study of the Incident Command System and its application. Initial evaluation of the problems confronting first responding units. Outline of particular problems encountered in various types of occupancies, buildings, and situations. Stress on safety of the operating forces as well as of the public. Standpipe and sprinkler system utilization. Overhauling operations. 3 credit hours.

**FS 201 Essentials of Fire Chemistry and Physics with Laboratory**

Prerequisite: CH 105/105L or CH 115/117 as required by a specific major. The characteristics of fire behavior will be studied as they relate to the chemical requirements for

combustion, the chemistry and physics of fuels and explosive mixtures, and the various methods of stopping combustion. Analysis of the properties of materials affecting fire behavior. Elements of fire modeling. 4 credit hours.

### **FS 203 Fire and Casualty Insurance**

Provides a working knowledge of the property and casualty insurance industry with an emphasis on property and liability coverages. The basic fire insurance policy is studied in depth. Methods of rating buildings to promulgate a property insurance rate. Various methods of estimating the replacement cost and actual cash value of buildings are practiced. The concept of HPR (Highly Protected Risk) is studied. 3 credit hours.

### **FS 204 Fire Investigation I**

An analysis of fire investigations from the viewpoint of the field investigator. An in-depth study of determining the cause and origin of fires. Proper protection and collection of evidence will be covered. 3 credit hours.

### **FS 207 Fundamentals of Fire Prevention**

Fundamentals of fire loss; standards; fire laws; and the engineering, chemistry, and physics related to fire protection and prevention. Fire inspection practices and procedures as well as the fire and safety problems involved in various occupancies will be discussed in depth. 3 credit hours.

### **FS 208 Instructor Methodology**

A study of the methods and tech-

niques of teaching fire safety and security to public safety and industrial employees. The use and development of visual aids. Actual teaching demonstrations and practice. 3 credit hours.

### **FS 301 Building Construction Codes and Standards**

Prerequisite: FS 102. An in-depth study of building construction with a particular emphasis on how each type of construction reacts to conditions present during a fire. Emergency responder safety will be a key issue. Potential signs of collapse will be studied in depth. The codes involved in building construction and fire/life safety. 3 credit hours.

### **FS 302 Chemistry of Hazardous Materials**

Prerequisite: FS 201. An in-depth study of the chemical and physical properties of a wide variety of hazardous materials to enable the student to establish the safety measures in a hazardous chemical environment. Basic properties of hazardous materials and appropriate handling methods. Explanation of chemical reactions, toxicity, oxidation, characteristics of explosives, plastics, resins, and fibers. 3 credit hours.

### **FS 303 Process and Transportation Hazards**

Prerequisite: FS 201. A strong overview of the types and properties of hazardous materials as well as their modes and methods of transportation, storage and use. Types and hazards of various containers. In-depth study of identification and control of emergencies involving hazardous materials. The various marking systems used to aid in iden-

tification. 3 credit hours.

### **FS 304 Fire Detection and Control**

Prerequisite: FS 102. An overview of fire detection and suppression equipment as well as the associated NFPA standards. Various types of fire detectors and detection/alarm systems. Basic electric circuits and the proper application, design, and installation of these systems. Non-water-based fire suppression systems. 3 credit hours.

### **FS 305 Fire Detection and Control Laboratory**

Corequisite: FS 304. Electrical circuitry as applied to fire alarm/detection systems. Practical experience with various panels and detectors. Advantages and disadvantages of open vs. closed circuits; methods of overcoming circuit disadvantages. 1 credit hour.

### **FS 307 Municipal Fire Administration**

Prerequisites: FS 102, FS 201, FS 207. Delineates the fire safety problem; explores accepted administrative methods for getting work done; covers financial considerations, personnel management, fire insurance rates, water supply, buildings and equipment, distribution of forces, communications, legal considerations, fire prevention, fire investigation, emergency medical services, and records and reports. Designed for individuals involved in providing fire protection and EMS services in the public or private sector as well as those in safety or insurance. 3 credit hours.

**FS 308 Industrial Fire Protection I**  
Prerequisite: FS 102. A study of fire hazards and potential fire causes in business and industry. Critical analysis of private protection measures available to reduce loss potential. Various methods of providing an acceptable level of protection for various industrial occupancies. 3 credit hours.

**FS 309 Industrial Fire Protection II**

Prerequisite: FS 308. An exploration of management and organizational principles with emphasis on industrial fire equipment, fire brigades, loss-control programs, and OSHA regulations dealing with industry. 3 credit hours.

**FS 311 Fire Protection Fluids and Systems**

Prerequisite: FS 102. Study of the fluids used in fire suppression systems as well as the systems and hardware utilized to distribute the agent. Chemical and physical properties of fluids used in fire suppression systems. Fundamentals of automatic sprinkler systems. The design and testing of fire protection water supplies. The codes involved in water-based fire suppression systems. 3 credit hours.

**FS 312 Fire Protection Fluids and Systems Laboratory**

Corequisite: FS 311. This course supplements FS 311 Fire Protection Fluids and Systems by providing a more in-depth study of the hydraulic principles used in designing water-based fire suppression systems. The process of designing and reviewing hydraulic-designed automatic sprinkler systems, including the use of computer pro-

grams for these purposes. Hands-on testing of fire protection water supplies. 1 credit hour.

**FS 313 Fire Investigation II**

Prerequisite: FS 204. An advanced course geared towards personnel who have or may have statutory responsibility for fire investigation in the public sector and for private sector persons who conduct or may conduct investigations for insurance companies or litigation purposes. Proper techniques for investigation of fires and explosions will be studied in depth along with the appropriate standards. 3 credit hours.

**FS 314 Fire Investigation II Laboratory**

Corequisite: FS 313. Experiments and practical experience in fire investigation with an emphasis on proper investigative techniques. 1 credit hour.

**FS 325 Fire/Life Safety Codes**

Study of NFPA-101 Life Safety Code in depth, along with the various occupancies involved within structures. The basic concepts, interrelationships of these requirements and the need for redundancy of safeguards provided. Application of this and other applicable codes; building codes and other reference codes. 3 credit hours.

**FS 404 Special Hazards Control**

Prerequisite: FS 102. Types of industrial processes requiring special fire protection treatment such as heating equipment, flammable liquids, gases, and dusts. Emphasis on fundamental theories involved, inspection methods, determination of relative hazard, application of

codes and standards, and economics of installed protection systems. 3 credit hours.

**FS 405 Emergency Incident Management**

Prerequisite: FS 106. A study of the effective organization and management of emergency resources at various fire and large-scale emergency incidents. Includes a review of national standards and federal regulations impacting emergency incident management. Case studies of actual and theoretical incidents will be used to reinforce command and control concepts. 3 credit hours.

**FS 408 Fire Protection Law**

A study of law in relation to fire protection, liability of personnel, civil service, the search of the fire scene, and criminal law related to arson and arson arrests. 3 credit hours.

**FS 409 Arson for Profit**

Prerequisite: FS 313/314. An overview of the financial techniques needed to investigate arson-for-profit fires with emphasis on sources of information, identification, and analysis of financial documents. 3 credit hours.

**FS 425 Fire Protection Plan Review**

Prerequisites: FS 301, FS 304/305, FS 311/312. The technical and hands-on practical experience necessary to complete a review of plans, specifications, and shop drawings for fire/life safety systems. Systems and topics include, but are not limited to, construction; fire resistance rated assemblies; means of egress; occupancy

classification; emergency systems; fire detection, alarm, and communication systems; automatic and manual extinguishing systems; and HVAC systems. 3 credit hours.

#### **FS 450 Fire Protection Heat Transfer**

Prerequisite: ME 301. The essentials of fire spread and fire behavior: the combustion process, heat transfer, limits of flammability, flames and fire plumes, burning of fuels, flaming combustion, spread of flame, flash-over, and production and movement of smoke. 3 credit hours.

#### **FS 460 Fire Hazards Analysis**

Prerequisites: FS 301, FS 304/305, FS 311/312. The application of systems analysis, probability, engineering economy, and risk management techniques to the fire problem. The basic principles of fire growth and spread in a building. Time lines will be established from the time of ignition to that of extinguishment. Various methods of modifying the time line. 3 credit hours.

#### **FS 497 Research Project**

Designed to allow fire science majors to research a topic of special interest to the individual student. Development of a student project and a written report in a specific area of fire science, with faculty supervision. Grade awarded upon completion of the project. 3 credit hours.

#### **FS 498 Research Project I**

Designed to allow fire science majors to research a topic of special interest to the individual student. Development of a student project and a writ-

ten report in a specific area of fire science, with faculty supervision. Grade awarded upon completion of the project. 1 credit hour.

#### **FS 499 Research Project II**

Designed to allow fire science majors to research a topic of special interest to the individual student. Development of a student project and a written report in a specific area of fire science, with faculty supervision. Grade awarded upon completion of the project. 2 credit hours.

#### **FS 500 Special Topics**

Selected topics in fire science on a variety of current problems and specialized areas not available in the regular curriculum. 3 credit hours.

#### **FS 501 Internship**

Prerequisite: consent of the director of the fire science program. The purpose of the fire science internship is to provide the student with real-life work experience. The student will be placed with an agency, the sponsor, who agrees to provide a meaningful work experience for the intern. The intern is required to spend a minimum of 128 hours with the sponsor and prepare a paper outlining the experience. 3 credit hours.

#### **FS 502 Emergency Medical Technician**

This course is designed to prepare the basic emergency medical technician in accordance with the U.S. Dept. of Transportation curriculum and Connecticut EMS guidelines. The course covers an introductory survey of emergency medical services including medical

and legal/ethical aspects, role of the EMT, CPR at the American Heart Association Basic Rescuer Level, patient assessment, care of wounds and fractures, airway maintenance, medical and environmental emergencies, patient transportation, emergency childbirth and basic extrication. Students can expect to spend some time involved in practical experiences. Laboratory fee; 6 credit hours.

#### **FS 510 Senior Seminar**

This course will integrate current and developing knowledge of the behavior of fire with the problems presented by today's building construction, building materials, and building codes. This course will use the seminar format with full student participation. 3 credit hours.

#### **FS 599 Independent Study**

Prerequisite: consent of the director of the fire science program. The independent study is designed to allow the fire science major to complete a fire science course that is not being offered or the student is otherwise unable to complete in the traditional manner. This self-study opportunity will be allowed only with permission of the director of fire science after determining that the student has sufficient background in the subject to complete the material in a satisfactory manner. 3 credit hours.

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## GERMAN

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#### **GR 101-102 Elementary German I and II**

Stresses pronunciation, aural and reading comprehension, basic con-

versation, and the fundamental principles of grammar. 3 credit hours each term.

#### **GR 201-202 Intermediate German I and II**

Prerequisites: GR 101-102 or the equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to read in their own areas of interest. 3 credit hours each term.

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## **HUMAN SERVICES**

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#### **HMS 100 Introduction to Human Services**

Survey of human service delivery systems including mental health, mental retardation, vocational rehabilitation, social services, child welfare, public safety, and private non-profit. Emphasis on history and development of current responses to human needs and problems of redundancy, competition, politics and net-widening. 3 credit hours.

#### **HMS 205 Interpersonal Relations**

Prerequisite: P 111. Theories, conceptual models and research related to interpersonal relations. Topics include reciprocal theory, attitudes and labeling theory. 3 credit hours. (See also CJ 205)

#### **HMS 250 Scientific Methods in Human Services**

Prerequisites: CJ/HMS 100; M 109 or M 127. Introduction to the use of scientific methods and logic in the human service professions.

Topics studied will include science and the scientific approach to problem solving, the logic of causal inference, problem and hypothesis formulation, the use of experimental designs, laboratory methods, survey research methods, and measurement issues in human services. 3 credit hours. (See also CJ 250)

#### **HMS 251 Quantitative**

**Applications in Human Services**  
Prerequisite: CJ/HMS 250. Introduction to the use of quantitative analysis through study of the basic statistical tools and databases used in human services. Emphasis will be on applied applications of quantitative methods in service delivery systems. 3 credit hours. (See also CJ 251)

#### **HMS 350 Leadership and Management in Human Services**

Prerequisite: junior or senior standing. An in-depth view of leadership and management skills in a variety of criminal justice and human service settings. Special focus will include problem solving and quality control in agencies. 3 credit hours. (See also CJ 350)

#### **HMS 351 Principles of Non-Profit Budgeting**

Prerequisite: junior standing in Human Services. This course provides the students with the fundamental knowledge and skills required to direct the fiscal affairs of a non-profit entity from the standpoint of the executive director. This includes grasping the basic concepts of budgeting and financial management and developing the ability to work with financial professionals

(e.g., accountants and auditors) to achieve the goals of the organization. The student will also understand how to use financial reports and comply with financial reporting requirements of finding sources. 3 credit hours.

#### **HMS 352 Resource Development and Fundraising**

Prerequisite: junior standing in Human Services, HMS 351. This course provides the student with a comprehensive overview of both the financial and non-financial resources that are required to operate a non-profit organization. Students will learn how to identify, seek-out and secure financial assistance in terms of grant awards, contacts, and fundraising efforts to support their provision of non-profit services. Non-financial resources, which are also essential to supporting non-profit organizations will also be covered. These include the use of volunteers, in-kind contributions of goods and services, and other non-financial contributions. 3 credit hours.

#### **HMS 400 Seminar in Human Services Administration**

Prerequisites: Human Services major with senior standing. This is a capstone course which examines current issues and problems in the Human Services field. "Best practices", and future directions are discussed. 3 credit hours.

#### **HMS 408 Child and Family Intervention Strategies**

Prerequisites: P 111, P 336, CJ 205, CJ 209, CJ 301. This course



is designed to introduce students to the application of investigation and critical thinking strategies to the problems of child abuse, neglect, and domestic violence. Assessment, decision-making, and case management strategies will be explored. 3 credit hours.

#### **HMS 409 Adult Intervention Strategies**

**Prerequisite:** HMS 409. A comprehensive investigation of mental health and correctional systems, including residential and community-based treatment. Particular attention will be placed on strategies for dealing with resistant clients. Students will develop critical thinking skills relating to best practices in a variety of settings. 3 credit hours.

#### **HMS 500A Pre-Internship**

**Prerequisite:** senior standing in Human Services. This course is designed to provide students with an opportunity to explore career options and develop employability skills. Students begin monitored field experiences to be continued in HMS 500B to a total of 300 hours. 3 credit hours.

#### **HMS 500B Human Services Internship**

**Prerequisites:** HMS 500A and senior standing in Human Services. Provides monitored field experience with private non-profit agencies and selected federal, state or local human services agencies. The course includes required classroom discussion meetings to facilitate a better understanding of the issues presented during the internship experiences. A minimum of 300 hours are required. This is considered to be

one of the “capstone courses” for this program and will emphasize establishing personal objectives and activities and professional responsibility. Performance evaluation and debriefing experiences are included. 3 credit hours.

#### **HMS 540 Computer Applications in Research and Program Evaluation**

**Prerequisites:** CJ/HMS 250, CJ/HMS 251; M 109 or M127. An advanced course reviewing major statistical packages and models employed in the analysis of criminal justice and human services data. Students will learn analytic techniques using real data sets. Program evaluation needs will be studied and tested. 3 credit hours.

#### **HMS 541 Problem Solving: Planning, Analysis, and Evaluation**

**Prerequisite:** senior standing. An advanced seminar utilizing the skills developed in preceding research methods and program evaluation courses. The focus will be on integrating and developing an effective yet flexible problem solving schema for criminal justice and human service agencies. Quantitative and qualitative solutions will be stressed to fit the appropriate problem. Field problems will be solicited. 3 credit hours. (See also CJ 541)

#### **HR 165 Introduction to Hospitality and Tourism**

This survey course gives overall direction to the hospitality and tourism professions, how they integrate with one another, and the various key aspects that are unique to the profession of tourism—the basis of the industry, with hotels and food service being its two main components. 3 credit hours.

#### **HR 200 Classical Techniques in the Culinary Arts**

The student will understand the principles of professional cooking techniques and the interaction of the different ingredients used in cooking. The course will be theoretical and will not include tasting of food or hands-on assignments. The student will follow a series of cooking demonstrations done by professional chefs, illustrating the techniques of classical professional cooking. 3 credit hours. (See also CA 200)

#### **HR 202 Hospitality Purchasing**

Introduction to the purchasing, receiving, and issuing of foods and food items. The identification of guides, preparation of specifications, and cost control procedures are stressed. 3 credit hours.

#### **HR 210 Applied Techniques in the Culinary Arts**

**Prerequisite:** HR 200. This course is designed to teach the basic classical cooking techniques, including the basic principles of baking, utilizing a hands-on format. The student will apply the theories and principles acquired in the prerequisite course in the context of a professional kitchen environment. The class will emphasize concepts

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## **HOTEL AND RESTAURANT MANAGEMENT**

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of efficiency, organization, cleanliness, and time management. 3 credit hours. (See also CA 210)

**HR 226 Front Office Procedures**  
Students will acquire an understanding of the principles regarding procedures and intradepartmental interactions—which include sales and marketing, housekeeping, maintenance(engineering), accounting, and the food and beverage segments – while maintaining high standards of guest service. Examination of how various hospitality computer hardware and software applications assist with the above responsibilities. 3 credit hours.

**HR 227 Guest Services Management**

Introduction to various management aspects of guest services, lodging, and assisted-care operations as applied to the hospitality industry. Staffing, budget preparation, materials planning, directing and controlling ongoing operations are significant sections of this course. 3 credit hours.

**HR 228 Human Resource**

**Management for the Hospitality and Tourism Industry**  
Prerequisite: HR 165. Provides the knowledge required to formulate and manage effectively the human resources in a hospitality-and-tourism-related operation. Manpower analysis, organizational needs, job designs, recruitment process, and other human resource topics are studied. 3 credit hours. (See also CA 228, TA 228)

**HR 235 Dining Room Management**

This course will provide the knowledge necessary to fully understand dining room management as essential to the success of commercial food operations. Students will practice various service techniques that include American, French, and Russian service standards as well as having the opportunity to demonstrate dining room organization, hospitality human resource and marketing techniques, and dining thematic decoration skills. 3 credit hours. (See also CA 235)

**HR 250 Lodging Operations**

Analysis and evaluation of lodging operations, including assisted-care facilities, to include rooms, divisions, food and beverage, sales and marketing, engineering/maintenance, human resources, accounting, and other major functional areas. 3 credit hours.

**HR 260 Club, Resort and Casino/Gaming Operations Management**

Typical organizational structures, and management technique, and the special aspects of operations for private clubs, resorts, casino/gaming. 3 credit hours.

**HR 280 Legal Aspects of Hospitality, Tourism, and Private Clubs**

An overview of specific issues and liabilities that the professional manager will face is presented. Classic and current case studies and issues will be presented to the student, including laws that affect personal and financial advancement.

3 credit hours. (See also TA 280)

**HR 304 Volume Food Production and Service**

Prerequisite: HR 200. This course is designed to teach the basic principles of volume food production and service, which are so critical to the commercial food industry. Students will be preparing meals that are consumed and analyzed by the public, applying the theories and principles acquired in the prerequisite course in the context of a professional kitchen environment. The class will emphasize concepts of efficiency, organization, cleanliness, and time management. 3 credit hours. (See also CA 304)

**HR 305 Wine Appreciation**

Considers the major wines and wine regions of the world, with emphasis on American, French, and German wines. Wine tasting is an integral part of the course. Students must be 21 years of age. 3 credit hours.

**HR 315 Beverage Management**

The beverage area is perceived as a profit center for hotels and restaurants. Themes, decor, and ambience that enhance the hospitality experience are explored. All management functions are examined; planning, staffing, accounting, marketing, and menu development are emphasized. Other pertinent topics are discussed, including liability and licensing issues. 3 credit hours.

**HR 321 Hospitality Accounting**

Financial and managerial accounting principles and practices for the

hospitality industry are examined. The Uniformed System of Accounts of the American Hotel and Motel Association will be followed. Included in this course will be hospitality financial statement analysis. 3 credit hours.

**HR 322 Marketing for Tourism, Hospitality, and Private Clubs**  
Development of general marketing skills as managers face more competitive forces; how managers need to better understand the marketing opportunities facing them and how best to compete in that evolving environment. The ability to communicate with internal and outside constituencies is reviewed in detail, giving consideration to newsletters, web-based or enhanced communications, and other media for interacting with employees, and the external community. 3 credit hours. (See also TA322)

**HR 330 Hospitality Property Management**  
Property and facilities management is crucial to the success of lodging and assisted-care facilities. Analysis of various components consisting of hospitality energy usage and environmental impacts on the hospitality industry will be presented. Included in the analysis will be how a hospitality manager creates and implements systematic control procedures for lodging properties. 3 credit hours.

**HR 375 Hospitality Entrepreneurship**  
Examination of the various aspects of marketing for the hospitality entrepreneur. Different segments

of the hospitality industry will be analyzed. 3 credit hours.

**HR 400 Leadership Theory for Hospitality and Tourism Professionals**  
The demand by industry management for critical decision-making skills within the hospitality and tourism professions is essential. Oral and written presentations comparing and contrasting management and leadership ideas based on classical models are used to evaluate the student's specific leadership style and how that style can be successful in the hospitality and tourism profession. 3 credit hours.

**HR 411 Hospitality Layout and Design**  
Prerequisite: HR 330. Prospectus and feasibility planning for hospitality and assisted-care facilities is emphasized. Overall property and building design is for hospitality entities, including equipment, receiving and storage space, accessibility design, and other factors is included in the course. The course will include a team-designed, scaled drawing project presentation. 3 credit hours.

**HR 450 Advanced Cuisine Management and Technique**  
This is the capstone course in food production and service. Students are provided an opportunity to practice advanced culinary techniques within various international and domestic cuisine themes. Students are divided into management teams and develop a meal manual that includes team mission statements, pre- and post-meal cost

analysis, personnel deployment, interaction with the dining room management teams, standardized recipe creations, and performance appraisal criteria. Student-managers prepare a dining experience that is offered to paying clientele. 3 credit hours. (See also CA 450)

**HR 491-499 Special Topics in Hospitality**  
Special studies of a variety of current topics and specialized areas in the field not available as part of the regular curriculum. 3 credit hours.

**HR 501 Leadership Applications for Hospitality and Tourism Professionals**  
Prerequisite: HR 400. Building on the theories presented in the prerequisite course, this course provides the opportunity to apply the knowledge of leadership models to hospitality and tourism current issues. Research and oral presentations based on team projects are the major focus of this course. 3 credit hours.

**HR 510 Hospitality Internship**  
Prerequisites: completion of 600 hours of practicum and consent of instructor. Interns are required to complete 400 hours of internship experience in conjunction with the designated internship coordinator. The internship experience will emphasize supervisory responsibilities whenever possible. This experience will be formulated by the faculty, the designated coordinator, the student, and an industry professional, a cooperative effort that helps to ensure the student's success. The internship will be augmented by written and oral reports, industry performance evaluations, and facul-

ty oversight. This is a designated course for the Culinary Arts Certificate program. 3 credit hours.

**HR 516 Advanced Financial Management and Policy Analysis for Hospitality and Tourism**  
Prerequisites: senior standing and consent of department chair. This course takes the experienced hospitality student through the certification process for designation as a Certified Hospitality Account Executive (CHAE) and includes the certification exam as a portion of the course and final grading process. Additionally, Hospitality Financial & Technology Professionals (HFTP) membership is included. Topics include investment trends and analysis, lease and purchase considerations, working capital finance, audit and financial management, and the CHAE exam preparation. Students are responsible for the cost and fees required for the CHAE examination and HFTP membership. 3 credit hours.

**HR 599 Independent Study**  
Prerequisite: permission of the department coordinator. Independent research projects or other approved phases of independent study. 3 credit hours.

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## HISTORY

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**HS 101 Foundations of the Western World**  
Traces the course of western civilization from its earliest beginnings in the ancient Middle East down to the eighteenth century. Includes major cultural trends, interactions

between society and economy, and analysis of the rise and fall of empires. 3 credit hours.

**HS 102 The Western World in Modern Times**  
Europe and its global impact from the eighteenth century to the present. Includes revolutionary movements, the evolution of mass democracy, and the world wars of the twentieth century. 3 credit hours.

**HS 108 History of Science**  
The development of science and technology from antiquity to the present. Their impact on society and the world. 3 credit hours.

**HS 110 American History Since 1607**  
A one-semester survey course covering such major topics as colonial legacies, the American Revolution, nation-state building, sectional tensions, urbanization, industrialization, the rise to world power status, social and cultural developments, and post-World War II. Not open to those who have had HS 211 or 212. 3 credit hours.

**HS 120 History of Blacks in the United States**  
The history and background of black people in the United States. Social, political, and cultural development. 3 credit hours.

**HS 207 World History Since 1945**  
Survey of major events and trends since World War II. Advanced industrial societies are emphasized. Includes decolonization, East-West conflicts, and patterns of economic cooperation and competition.

3 credit hours.

**HS 211 United States to 1865**  
Survey of American social, economic, political, and diplomatic developments from colonial times to 1865. Not open to those who have had HS 110. 3 credit hours.

**HS 212 United States Since 1865**  
Survey of American history from 1865 to the present. Institutional and industrial expansion, periods of reform and adjustment. The U.S. as a world power. Not open to those who have had HS 110. 3 credit hours.

**HS 260 Modern Asia**  
The ideological, cultural, and traditional political, economic, and diplomatic history of east, south, and southeast Asia from the sixteenth century to the present. 3 credit hours.

**HS 262 Modern Chinese History**  
A study of China from 1800, including the impact of the West and Japan; its transformation from monarchy to civil war to the People's Republic of China up to the present; the Republic of China on Taiwan; the incorporation of Hong Kong in the PRC. 3 credit hours.

**HS 264 Modern Japanese History**  
An analysis of the diverse political, economic, social, military, and cultural factors which influenced the emergence of Japan as a modern nation in the 19th and 20th centuries; its post-World War II growth into an economic giant, and its current evolution. 3 credit hours.

**HS 270 Europe from Renaissance Through Enlightenment**

Europe from 1300 to 1800; from feudal states to nation states; development of cultural, political, social, and economic life; religious unity and religious diversity. 3 credit hours.

**HS 306 Modern Technology and Western Culture**

The development of the modern technological world and its relationship to social, economic, and

cultural changes from the Industrial Revolution to the present. 3 credit hours.

**HS 312 United States in the Twentieth Century**

The interaction of political, economic, social, and intellectual events and their impact on twentieth century America. 3 credit hours.

**HS 345 Europe in the Nineteenth Century**

European history from the Napoleonic period to World War I; its internal development and world impact. 3 credit hours.

**HS 351 Russia and the Soviet Union**

The development of czarist Russia from 1200 to the Revolution of 1917; the former USSR from 1917 to the present. 3 credit hours.

**HS 353 Modern Britain**

The development of British history from the Restoration of 1660 to the present. Includes Britain's role in international affairs. Special emphasis on social and economic topics. 3 credit hours.

**HS 355 Modern Germany**

German civilization from the seventeenth century to the present; its impact on Europe and the world. 3 credit hours.

**HS 381-389 Selected Studies in History**

Special topics in history dealing with the modern world. An in-depth study of vital historical issues. 3 credit hours.

**HS 446 Europe in the Twentieth Century**

Recent and contemporary European history beginning with World War I. Institutional development and its changing role in politics. 3 credit hours.

**HS 491 Senior Seminar**

The undertaking of an independent study and research project. Required of all history majors in their senior year. 3 credit hours.

**HS 599 Independent Study**

Prerequisites: consent of faculty member and department chair. Opportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 6.

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## HUMANITIES

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**HU 300 The Nature of Science**

Prerequisites: E 110, HS 102, a laboratory science course, and a social science course. Investigates science as a human activity, as a social institution, and as an instrument for acquiring and using

knowledge. The nature of scientific knowledge, the organization of scientific activity, and the interaction of science with technology and culture. A course about science and the process of generating new knowledge. 3 credit hours

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## INTERNATIONAL BUSINESS

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**IB 413 International Marketing**

Prerequisites: EC 200, MK 300. Applied marketing decision making in international firms. The development of marketing strategy and techniques in foreign markets. Study of key multinational marketing skills, especially research, product policy, pricing, promotion, and distribution. 3 credit hours.

**IB 421 Operation of the Multinational Corporation**

Prerequisites: EC 200, FI 313, MG 310. Specific problems encountered by multinational firms. Topics include investment decisions, environmental scanning, planning and control, and the social responsibilities of firms in host nations. 3 credit hours.

**IB 422 International Business Negotiations**

Prerequisites: EC 200, MG 310. An analysis of the various stages involved in the international business negotiating process, beginning with planning and ending with post-contract adjustments. A survey and evaluation of the various primary and secondary sources negotiators can go to for information needed in the negotiating process. 3 credit hours.

**IB 450 Special Topics**

Prerequisites: EC 200, junior-level standing required unless otherwise specified in course schedule description. Selected topics of special or current interest in the study of international business. 3 credit hours.

**IB 549 Global Business Strategy**

Prerequisite: IB 413. Identification and relation of the elements involved in the dynamics of a company and its international environment through case analysis. This is a capstone course in international business. 3 credit hours.

**IB 598 Internship**

Prerequisite: EC 200. Supervised field experience for qualified students in areas related to their major. 3 credit hours.

**IB 599 Independent Study**

Prerequisite: EC 200. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

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## INDUSTRIAL ENGINEERING

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**IE 204 Engineering Economics**

Prerequisites: M 117 and CS 107 or equivalent. A quantitative analysis of applied economics in engineering design; the economy study for comparing alternatives; interest formulae; quantitative methods of comparing alternatives; intangible considerations; selection and replacement economy for machines and structures; break-even and minimum cost points; depreciation; effect of

income taxes on the economy study; review of current industrial practices. Promotes logical decisions through the consideration of alternative courses of action. 3 credit hours.

**IE 243 Work Design**

Prerequisite: sophomore status. Introductory course in the design and evaluation of efficient work methods and working environments. Techniques useful in problem definition, design of alternative work methods, and evaluation of alternative designs, including process charting, operation analysis, and principles of motion economy. Emphasis placed on human factors and safety implications of alternative work method designs. Equitable time standards are developed for work method designs through the use of time study procedures including stopwatch time study, computerized predetermined-time systems, and work sampling. 3 credit hours.

**IE 302 Ergonomics**

Prerequisite: junior standing. Covers basic terminology and application of ergonomic principles to the workplace. Topics include repetitive motion injuries, cumulative trauma disorders, carpal tunnel syndrome, anthropometry, human error analysis, channel capacity, reaction time, human-machine interaction, and current ergonomics news and applications. 3 credit hours.

**IE 303 Cost Control**

Prerequisites: junior status and M 118. Basic analysis of cost control techniques. Designed to give members of the management team the

underlying rudiments of cost estimating and control systems. Theory of standard costs, flexible budgeting, and overhead handling techniques emphasized by analytical problem solution. Life-cycle costing. Value engineering. 3 credit hours.

**IE 304 Production Control**

Prerequisites: IE 243, M 118. The basic principles that govern the design of production control systems in an industrial plant. The principles used in solving problems of procuring and controlling materials, in planning, routing, scheduling, and dispatching, are considered. Familiarizes the student with existing and new methods used in this field including MRP, JIT, computer-aided process planning, and group technology. 3 credit hours.

**IE 311 Quality Assurance**

Prerequisite: junior status. Quality considerations in product design and manufacturing; product inspection and process control; total quality management principles as applied to process design, control, and improvement; product safety and liability issues. 3 credit hours.

**IE 344 Human Factors Engineering**

Prerequisite: IE 347. Covers psychological and physiological aspects of people at work, including work physiology, information processing, motor skills and movement control, signal detection theory, and anthropometry with the aim of improvements in workplace design. 3 credit hours.

**IE 346 Probability Analysis**

Prerequisite: M 203. Develops the theory of probability and related applications. Covers combinations and permutations, probability space, law of large numbers, random variables, conditional probability. Bayes' Theorem, Markov chains, and stochastic processes. 3 credit hours.

**IE 347 Statistical Analysis**

Prerequisites: IE 346 and CS 107 or equivalent. Provides an introduction to the application of statistical techniques to engineering problems. Measures of central tendency and dispersion, estimation, hypothesis testing, correlation and regression, elementary analysis of variance. 3 credit hours.

**IE 348 Manufacturing Processes**

Corequisite: IE 304. Provides a basic understanding of manufacturing processes as applied to conventional manufacturing. Properties of material; machining fundamentals; tool geometry; surface finish; forces; material removal processes; casting, forging, and extrusion processes; measurement and inspection; process capability and quality control; ferrous and nonferrous metals; chip/type machining processes; machining economics in turning, milling, and drilling. 3 credit hours.

**IE 402 Operations Research**

Prerequisites: IE 346 and CS 107 or equivalent. The operations research area is oriented to various mathematical methods for solving certain kinds of industrial problems. Topics included are linear programming, including simplex method; transportation and assignment problems;

queuing; dynamic programming; simulation. 3 credit hours.

**IE 403 Operations Research II**

Prerequisite: IE 402 or equivalent. Advanced coverage of Bayesian statistics, utility and game theory, logistics and distribution, theory of scheduling, graph theory, and stochastic processes, with applications in manufacturing and service industries. 3 credit hours.

**IE 407 Reliability and Maintainability**

Prerequisite: IE 346 or equivalent. Reliability measures: hazard models and product life, reliability function; static reliability models; inference theory and reliability computation; dynamic reliability models, reliability design examples. 3 credit hours.

**IE 408 Systems Analysis**

Prerequisites: senior status and IE 347. Presents the analytical and conceptual techniques upon which systems analysis and development are based, as applications to business and industrial fields. Development of case studies and their application, oriented to improved designs. 3 credit hours.

**IE 414 Engineering Management**

Prerequisite: senior status. Provides insight into the elements of the managerial process and develops a rational approach to the problems of managing productive processes and the engineering function. Focusing largely on complex problems of top and middle-level management, students will investigate the modern tools managers use under given circumstances, stressing the ongoing activities of man-

agement as part of an integrated, continuous process. 3 credit hours.

**IE 435 Simulation and Applications**

Prerequisites: IE 346 and CS 107 or equivalent. Corequisite: IE 402. Techniques for modeling of a system (business or scientific/engineering) using computer simulation. Simulation principles will be emphasized. Student exercises and design projects will be run using a modern simulation package. 3 credit hours.

**IE 436 Quality Control**

Prerequisite: IE 347. Economics of quality control; modern methods used by industry to achieve quality of product; preventing defects; organizing for quality; locating chronic sources of trouble; coordinating specifications, manufacturing and inspection; measuring process capability; using inspection data to regulate manufacturing, processes; statistical methods, control charts, selection of modern sampling plans. 3 credit hours.

**IE 437 Metrology and Inspection in Manufacturing**

Prerequisite: IE 436. The study of metrology and inspection practices in manufacturing. Emphasis on the design and development of different types of gauging for inspection in manufacturing. 3 credit hours.

**IE 440 Synchronous Manufacturing**

Prerequisites: IE 204 and IE 304. Group technology in design and manufacturing; manufacturing environment, resources, products, constraints, and decisions; synchronized manufacturing operations and

process improvement. 3 credit hours.

#### IE 443 Facilities Planning

Prerequisites: senior IE status and IE 243, IE 304. Factors in plant location, design, and layout of equipment. Techniques for obtaining information essential to the development and evaluation of alternative facility layout designs are presented with an emphasis on environmental and safety considerations. Design of departmental areas, resource allocation and flow, materials handling, storage, and the economic implications of alternative designs are discussed. Students work in small groups on the design of a manufacturing facility to produce an actual consumer product. Project culminates in both written and oral presentation of the proposed facility design. CAD techniques are used extensively in the development of the final facility layout. 3 credit hours.

#### IE 448 Advanced Manufacturing Engineering Operations

Prerequisites: ME 200 and IE 348. A course for understanding machining economics and the basic principles of the theory of metal cutting and metal working to improve manufacturing engineering operations. Course emphasizes design and operation of better tooling for different types of manufacturing operations. Experimental investigation of metal cutting and metal working methodologies stressed. 3 credit hours.

#### IE 450 Special Topics in Industrial Engineering

Prerequisite: consent of instructor. Selected topics of current interest

in the field of industrial engineering. 3 credit hours.

#### IE 460 Computer-Aided Manufacturing

Prerequisites: IE 348 and CS 107 or equivalent. Topics covered include Computer-Aided Manufacturing (CAM), Numerical Control (NC), industrial robot applications, Flexible Manufacturing Systems (FMS), Group Technology (GT), integration of CAD/ CAM, Computer Aided Process Planning (CAPP), and applications software for manufacturing. 3 credit hours.

#### IE 465 Robotics in Manufacturing

Prerequisite: IE 460. Topics covered include: applications of robotics in manufacturing, robot classification, introduction to a high-level robot language, task planning, and laboratory projects with industrial robots. 3 credit hours.

#### IE 498 Internship

Prerequisites: consent of faculty supervisor and approval of department chair. Supervised project-work related to industrial engineering with local industries. 3 credit hours.

#### IE 504 Senior Project

Prerequisites: senior status and permission of department. The student, in conjunction with a faculty advisor, selects and works on a project. Work is presented at a seminar at the end of the semester. 3 credit hours.

#### IE 599 Independent Study

Prerequisite: junior status. A planned program of individual study under the supervision of a member

of the faculty. 3 credit hours.

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## JOURNALISM

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#### J 101 Journalism I

A survey of journalism designed to acquaint students with the profession. The American newspaper as a social institution and a medium of communication. 3 credit hours.

#### J 201 News Writing and Reporting

Prerequisite: CO 102 or permission of instructor. The elements of news, the style and the structure of news stories, news-gathering methods, copyreading and editing, reporting. 3 credit hours.

#### J 202 Advanced News Writing and Reporting

Prerequisite: J 201. Intensive practice in news writing and reporting. 3 credit hours.

#### J 311 Copy Desk

Prerequisite: J 201. Intensive practice in copyreading, editing and revising, headline writing, photograph selection, page make-up, and reporting. Regular critiques of the copy-desk work of major newspapers. 3 credit hours.

#### J 351 Journalistic Performance

Prerequisite: J 201. Students follow the coverage in the media given to selected topics and prepare to make judgments of the coverage by doing research and becoming knowledgeable about the particular topic chosen. The course stresses analytic reading and responsible, informed criticism. 3 credit hours.



**J 367 Interpretive and Editorial Writing**

Prerequisite: J 201. Practice in the writing of considered and knowledgeable commentaries on current affairs and in writing of interpretive articles based on investigation, research, and interviews. 3 credit hours.

**J 450-454 Special Topics in Journalism**

Selected topics in journalism which are of current or special interest. 3 credit hours.

**J 599 Independent Study**

Prerequisites: consent of instructor and department chair. Opportunity for a student, under the direction of a faculty member, to explore an area of interest. 3 credit hours.

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## BUSINESS LAW

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**LA 101 Business Law and the Regulatory Environment**

An overview of the legal system as it relates to the operation of a business. Topics will include those relating to the establishment and continuity of business relationships, including contracts, sales, partnerships, corporations, agency law, and business ethics, and those regulating business activities, including consumer protection, environmental, employment, and antitrust laws. 3 credit hours.

**LA 112 Accounting Business Law**

Prerequisite: LA 101. Law of agency, employer/employee, partnerships, corporations, security and governmental regulation; real,

and person property law; creditors rights and bankruptcy; wills and trusts. 3 credit hours.

**LA 599 Independent Study**

Prerequisites: LA 101 and junior standing. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

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## LOGISTICS

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**LG 300 Defense Sector Logistics**

Prerequisites: EAS 345 and CS 107 or equivalent. Introduction to logistics as practiced in the defense industry, the military, and multinational corporations operating foreign installations. Overview of logistics, elements, nomenclature, techniques, management, and computer support. Survey of regulations, standards, and logistics products. Identification of logistics and its place in defense-related systems. 3 credit hours.

**LG 310 Introduction to Logistics Support Analysis**

Prerequisite: LG 300. Definition and description of logistics support analysis with reference to MIL-STD-1388-IA and derivative requirements. Survey of integrated logistics support theory and practice and the role of LSA. The role of a logistics support analysis plan, its method of construction, and its use in real systems. 3 credit hours.

**LG 320 Reliability and Maintainability Fundamentals**

Prerequisite: LG 300. Basic description and analysis of the concepts of reliability and maintain-

ability in large high-technology systems. Introduction to quantitative techniques and quality assurance. Strategies for optimizing effectiveness and in-service support. 3 credit hours.

**LG 410 Life Cycle Concepts**

Prerequisite: LG 320. Introduction to life cycle concepts in product design, quality engineering, field support, maintenance, training, and end-use disposal. Techniques of life cycle costing and the construction of life cycle forecasts. Product and system warranties, and their interface with logistics support. 3 credit hours.

**LG 440 Data Management in Logistics Systems**

Prerequisite: LG 310. Review of the role of data collection, analysis, and report generation in logistics systems management. Uses of computer-aided management information systems, technical data acquisition, and software support in logistics organization. Requirements for documentation, data renewal, and the generation of integrated logistics support plans and reports. 3 credit hours.

**LG 490 Logistics Seminar**

Upon completion of LG 300, LG 310, LG 320, LG 410, and LG 440 students pursuing the certificate in logistics will be required to take this capstone seminar. Each student will develop an experiential case study in conjunction with a faculty advisor. This case study will draw on material learned in prerequisite courses and the student's work experience. Each student will be required to present the case study

for critique by colleagues and industrial engineering faculty. 1 credit hour.

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## LEGAL STUDIES

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### LS 100 Introduction to Legal Concepts

Overview of the American legal system in context of historical underpinnings. Structural make-up, purpose, and functions of legal system in American society; distinction between civil and criminal law systems. Introduction to major civil law substantive areas, including torts, contracts and property, legal concepts, and reasoning. 3 credits hours.

### LS 201 Legal Ethics & Professional Responsibilities

Prerequisite: PL 222. Study of legal ethics, including codes of professional responsibility and the legal professional's responsibilities in different types of organizations and occupational settings. Analysis and discussion of case studies and role playing. 3 credits hours.

### LS 226 Family Law

A study of legal relations between husband and wife including marriage, annulment, divorce, alimony, separation, adoption, custody arrangements, and basic procedures of family law litigation. 3 credit hours.

### LS 229 Legal Communications

Familiarization with the kinds of legal documents and written instruments employed by participants in the legal process. Recognition and understanding of the pur-

pose of writs, complaints, briefs, memoranda, contracts, wills, and motions. 3 credit hours.

### LS 238 Civil Procedure I

Prerequisite: LS 100. Study of procedural law governing civil legal actions. Includes overview of civil legal actions in state and federal courts with focus on legal principles that affect commencing and maintaining lawsuits. 3 credit hours.

### LS 239 Civil Procedure II: Litigation

Prerequisite: LS 238. An examination of civil litigation from commencement of a lawsuit through trial, including pleadings, motions, discovery, and evidence. A combination of theory and practice. 3 credit hours.

### LS 240 Legal Research and Writing I

Prerequisites: LS 100, E 105. An introduction to legal research and writing. Students will learn to find and use primary and secondary legal authority in the law library and computerized legal research databases to solve legal research problems and assignments. Further study of legal reasoning and case and statutory analysis. 3 credit hours.

### LS 241 Legal Research and Writing II

Prerequisites: LS 240, E 110. Through more advanced assignments, students further develop legal research, analytic, and writing skills. Includes research and analysis of realistic legal problems with

preparation of opinion letters, legal memoranda, and briefs. 3 credit hours.

### LS 244 Estates and Trusts

An examination of the legal principles and techniques of effective estate planning and administration. Topics covered include inheritance statutes, preparation and execution of wills, and record keeping practices. 3 credit hours.

### LS 301 Administrative Law and Regulation

Study of the basic principles of law for government agencies, structure of federal and Connecticut agencies, and major laws governing these agencies, including the state and federal Administrative Procedure Acts and Freedom of Information Acts. Overview of the role of legal professionals in administrative practice with practical applications. 3 credits hours.

### LS 326 Real Estate Law

A variety of legal skills in real estate law. Special attention given to title, operations, mortgages, deeds, leases, property taxes, closing procedures and documents. 3 credit hours.

### LS 328 Management and Administrative Skills

An examination of the procedures and systems necessary to run a law office efficiently. Students will learn such administrative skills as how to interview clients, conduct legal correspondence and maintain legal records. Proven management techniques for keeping track of filing dates and fees,

court dockets and calendars are also examined. 3 credit hours.

### LS 330 Legal Investigation

Examines skills needed to conduct investigations that are a routine part of the practice of law, such as principles of fact-gathering in a wide range of cases (e.g., criminal, divorce, custody, housing). 3 credit hours.

### LS 401 Alternative Dispute

**Resolution: Models and Practice**  
Study of current models of conflict resolution, emphasizing mediation and restorative justice; applications in legal and organizational settings. Using simulations, students will learn basic negotiation and mediation skills. 3 credit hours.

### LS 405 Environmental Law

Study of environmental law and regulation at the federal, state, and local levels. Includes review of major federal environmental protection laws, state common law protections, local land use controls, and international law. Role of regulatory agencies and the courts examined. 3 credit hours.

### LS 430 Computers and the Law

Analysis of special problems arising from use of computers and the Internet. Exploration of topics such as the impact of mass data banks on the right to privacy, copyright infringement, personal and social security concerns, and the tension between the First Amendment and protecting vulnerable populations. 3 credit hours.

### LS 450-454 Special Topics

Prerequisite: consent of department chair. A study of selected issues of particular interest to the student and the instructor. 3 credit hours.

### LS 498 Research Project

Prerequisites: senior standing and consent of department chair. The student carries out an original research project in a legal setting and reports findings. 1-6 credit hours.

### LS 501/502 Legal Studies

#### Internship I and II

Prerequisite: senior standing and completion of common courses for the major. Pre-placement classroom review of professional office procedures, including maintaining applicable legal records and files, responsibilities in handling oral and written communications, ethical responsibilities, and time and workflow management; followed by internship placement. Regular class discussion sessions for analysis, problem solving, and skill building during the internship placement. 4 credit hours each semester.

### LS 599 Independent Study

Prerequisites: consent of department chair. An opportunity for the student, under the direction of a faculty member, to explore and acquire competence in a special area of interest. 1-3 credit hours.

### M 103 Fundamental Mathematics

Required at the inception of the program of study of all students (day and evening) who do not show sufficient competency with fundamental arithmetic and algebra, as determined by placement examination. Arithmetic operations, algebraic expressions, linear equations in one variable, exponents and polynomials, Cartesian coordinates, equation of a straight line, and simultaneous linear equations. (Students placed in M 103 must successfully complete this course before taking any other course having mathematical content.) Students who take M 103 will have the total number of credits required for graduation increased by 3. 3 credit hours (4 to 6 meeting hours per week).

### M 109 Intermediate Algebra

Prerequisite: a grade of C or higher in M 103 or placement by the department. A review of the fundamental operations and an extensive study of functions, exponents, radicals, linear and quadratic equations. Additional topics include ratio, proportion, variation, progression, and the binomial theorem. *This course is intended primarily for students whose program of study requires calculus. Other students, see M 127.* 3 credit hours.

### M 115 Pre-Calculus

Prerequisite: a grade of C or higher in M 109 or placement by the department. Offers the foundation needed for the study of calculus. Polynomials, algebraic functions, elementary point geometry, plane analytic trigonometry, and proper-

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## MATHEMATICS

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*All prerequisites for the following mathematics courses must be strictly observed unless waived with permission of the mathematics department.*

ties of exponential functions. 4 credit hours.

#### M 117 Calculus I

Prerequisite: a grade of C or higher in M 115 or placement by the department. The first-year college course for majors in mathematics, science, and engineering; the basic prerequisite for all advanced mathematics. Introduces differential and integral calculus of functions of one variable, along with plane analytic geometry. 4 credit hours.

#### M 118 Calculus II

Prerequisite: a grade of C or higher in M 117. Continuation of first-year calculus, including methods of integration, the fundamental theorem of calculus, differentiation and integration of transcendental functions, varied applications, infinite series, and indeterminate forms. 4 credit hours.

#### M 121 Algebraic Structures

A first course in an orientation to abstract mathematics: elementary logic, sets, mappings, relations, operations, elementary group theory. Open to all freshmen and sophomores. 3 credit hours.

#### M 127 Finite Mathematics

Prerequisite: M 103 or placement by the department. Functions and lines, linear systems, linear programming, mathematics of finance, sets and counting, and an introduction to probability. Numerous applications and an introduction to computing and computers. *This course is intended primarily for students whose program of study does not require calculus. Students preparing to take calculus, see M 109.* 3 credit hours.

#### M 203 Calculus III

Prerequisite: a grade of C or higher in M 118. The calculus of multiple variables, covering three-dimensional topics in analysis, and vector analysis, partial differentiation, maxima and minima for functions of several variables, line integrals, multiple integrals, spherical and cylindrical polar coordinates. 4 credit hours.

#### M 204 Differential Equations

Prerequisite: M 203. The solution of ordinary differential equations, including the use of Laplace transforms. Existence of solutions, series solutions, matrix methods, nonlinear equations, and varied applications. 3 credit hours.

#### M 228 Elementary Statistics

Prerequisite: M 127. A noncalculus based course which includes basic probability theory, random variables and their distributions, estimation and hypothesis testing, regression and correlation. Emphasis on an applied approach to statistical theory with applications chosen from many different fields of study. Students will be introduced to and make use of the computer package SPSS for data analysis. *Not open to students who have taken calculus.* 4 credit hours. (See also P 301)

#### M 301 Geometry from a Modern Viewpoint

Prerequisite: M 117. A modern approach to Euclidean geometry with emphasis on proofs; basic results on lines, planes, angles, polygons, circles, spheres; coordinate and vector viewpoints. 3 credit hours.

#### M 303 Advanced Calculus

Prerequisite: M 204. A survey

course in applied mathematics. Vector calculus: line and surface integrals, integral theorems of Green and Stokes, and the divergence theorem. Complex variables: elementary functions, Cauchy-Riemann equations, integration, Cauchy integral theorem, infinite series, calculus of residues and conformal mapping. 3 credit hours.

#### M 305 Discrete Structures

Prerequisite: M 118. Corequisite: M 203. Methods of proof, the integers, induction, prime numbers, recursive algorithms, greatest common divisors, the Euclidean algorithm, the fundamental theorem of arithmetic, congruences. 3 credit hours.

#### M 308 Introduction to Real Analysis

Prerequisite: M 204. Sets and functions, the real numbers, topology of the line, limits, continuity, completeness, compactness, connectedness, sequences and series, the derivative, the Riemann integral, the fundamental theorem of calculus, sequences and series of functions. 3 credit hours.

#### M 309 Advanced Differential Equations

Prerequisite: M 204. Theoretical analysis and applications of nonlinear differential equations. Phase plane and space, perturbation theory and techniques, series and related methods, stability theory and techniques, and relaxation phenomena. 3 credit hours.

#### M 311 Linear Algebra

Prerequisite: M 203. Matrices, systems of linear equations and their

solutions, linear vector spaces, linear transformations, eigenvalues and eigenvectors. Applications. 3 credit hours.

### M 321 Modern Algebra

Prerequisite: M 305 or M 311. Groups, rings, integral domains, fields, polynomials. 3 credit hours.

### M 325 Number Theory

Prerequisite: M 305. Topics are selected from the following: mathematical induction, Euclidean algorithm, integers, number theoretic functions, Euler-Fermat theorems, congruences, quadratic residues, and Peano axioms. 3 credit hours.

### M 331 Combinatorics

Prerequisite: M 311 or permission of the department. Problem solving using graph theory and combinatorial methods. Topics include counting methods, recurrence, generating functions, enumeration, graphs, trees, coloring problems, network flows and matchings. Special emphasis on reasoning which underlies combinatorial problem solving, algorithm development, and logical structure of programs. 3 credit hours.

### M 338 Numerical Analysis

Prerequisites: M 203 and a standard programming language. Topics include solutions of algebraic and transcendental equations by iterative methods; system of linear equations (matrix inversion, etc.); interpolation, numerical differentiation, and integration; solution of ordinary differential equations. Scientific and engineering applications. 3 credit hours.

### M 361 Mathematical Modeling

Prerequisites: at least junior status and M 311. Problem solving through mathematical model building. Emphasis on applications of mathematics to the social, life, and managerial sciences. Topics are selected from probability, graph theory, Markov processes, linear programming, optimization, game theory, simulation. 3 credit hours.

### M 371 Probability and Statistics I

Prerequisite: M 203. Axiomatic study of probability: sample spaces, combinatorial analysis, independence and dependence, random variables, distribution functions, moment generating functions, central limit theorem. 3 credit hours.

### M 381 Real Analysis

Prerequisite: M 308. Foundation of analysis, sets and functions, real and complex number systems; limits, convergence and continuity, sequences and infinite series, differentiation. 3 credit hours.

### M 403 Techniques in Applied Mathematics

Prerequisite: M 204. Techniques in applied analysis including Fourier series; orthogonal functions such as Bessel functions, Legendre polynomials, Chebychev polynomials, Laplace and Fourier transforms; product solutions of partial differential equations and boundary value problems. 3 credit hours.

### M 423 Complex Variables

Prerequisite: M 204. For mathematics, science, and engineering students. Review of elementary functions and Euler forms; holomorphic functions, Laurent series, singularities, calculus of residues,

contour integration, maximum modulus theorem, bilinear and inverse transformation, conformal mapping, and analytic continuation. 3 credit hours.

### M 441 Topology

Prerequisite: M 381 or permission of department chair. Topics selected from the following: Hausdorff neighborhood relations: derived, open, and closed sets; closure; topological space; bases; homeomorphisms; relative topology; product spaces; separation axioms; metric spaces; connectedness and compactness. 3 credit hours.

### M 450-453 Special Topics in Mathematics

Selected topics in mathematics of special or current interest. 3 credit hours.

### M 472 Probability and Statistics II

Prerequisite: M 371. Elements of the theory of point estimation, maximum likelihood estimates, theory of testing hypotheses, power of a test, confidence intervals, linear regression, experimental design and analysis of variance, correlation, and nonparametric tests. 3 credit hours.

### M 473 Advanced Statistical Inference

Prerequisite: M 472. This course is designed to provide an in-depth treatment of statistical inference. Topics include distribution of functions of one or several random variables, N-P structure of tests of hypothesis, properties of "good" estimators, and the multivariate normal distribution. 3 credit hours.

**M 481 Linear Models I**

Prerequisite: M 472. This course is designed to provide a comprehensive study of linear regression. Topics

include simple linear regression, inference in simple linear regression, violations of model assumptions, multiple linear regression, and the Extra Sum of Squares Principle. 3 credit hours.

**M 482 Linear Models II**

Prerequisite: M 481. Continuation of M 481, with an emphasis on experimental design. Topics include single-factor designs, two-factor designs, multiple-factor designs, and randomized block designs. 3 credit hours.

**M 491-499 Department Seminar**

A study of a mathematical topic or topics not covered in the above courses. Subject of study will be announced by the mathematics department in advance. A paper and/or seminar talk, suitable for presentation to all interested mathematics faculty, will be required. 3 credit hours.

**M 599 Independent Study**

Prerequisites: consent of faculty member and department chair. Opportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

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## MECHANICAL ENGINEERING

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*Design elective/required choices are indicated by (D) following course title.*

**ME 200 Engineering Materials**

Prerequisite: CH 103. A study of the properties of the principal engineering materials of modern technology: steels and nonferrous alloys and their heat treatment, concrete, wood, ceramics, and plastics. Gives engineers sufficient background to aid them in selecting materials and setting specifications. 3 credit hours.

**ME 201 Engineering Graphics**

Prerequisites: EAS 107, EAS 109. Corequisite: M 118. Orthographic/Multiview projections. Isometric, auxiliary, and sectional views. Dimensioning and tolerancing practices. Working drawings. Computer-aided drafting and solid modeling using contemporary software (e.g., AutoCAD, SolidWorks). 2 credit hours.

**ME 204 Dynamics**

Prerequisites: M 118, PH 150. Free-body diagrams, equilibrium of forces, friction. Kinematics and dynamics of particles and rigid bodies with emphasis on two-dimensional problems. Vector representation of motion in rectangular, polar, and natural coordinates. Impulse-momentum and work-energy theorems. Rigid bodies in translation, rotation and general plane motion. 3 credit hours.

**ME 215 Instrumentation Laboratory**

Prerequisites: CE 205, E 225 (may be taken concurrently), ME Skills Workshop. Laboratory experiments introducing equipment and techniques used to measure force, static displacement, dynamic motion, stress, strain, fluid flow, pressure, and temperature. Introduction to statistical methods, data

acquisition, data analysis and control using microcomputers. 2 credit hours.

**ME 222 Methods of Mechanical Design (D)**

Prerequisites: CE 205, ME 101. Introduction to the mechanical design process including planning, phases of design, methods, and documentation. Understanding the design problem, planning a project, concept generation and evaluation, design matrix and Pugh's method. Product design and generation, manufacturing processes, cost estimation, concurrent design. Product evaluation. Implementation of methods via hardware design project. 3 credit hours.

**ME 300 Rigid Body Dynamics**

Prerequisite: EAS 222. Planar and 3-D kinematics and kinetics of rigid bodies. Work-energy methods impulse-momentum theorem. Inertia tensor, Euler angles, and gyroscopic motion. 3 credit hours.

**ME 301 Thermodynamics I**

Prerequisites: M 118, PH 150. Classical thermodynamics treatment of first and second laws. Thermal and caloric equations of state. Closed and open systems, and steady flow processes. Absolute temperature, entropy, combined first and second laws. Power and refrigeration cycles. 3 credit hours.

**ME 302 Thermodynamics II**

Prerequisites: CS 110, M 203 (may be taken concurrently), ME 301. Extensions and applications of first and second laws; availability, combustion process, ideal gas mixtures. Maxwell's relations. HVAC topics. Advanced thermodynamic cycles. 3

credit hours.

### ME 304 Mechanical Behavior of Materials

Prerequisite: ME 200. Detailed study of elastic and plastic deformation of materials at room temperature and elevated temperatures. Dislocation theory and microplasticity models considered. 3 credit hours.

### ME 305 Engineering Thermodynamics

Prerequisites: EAS 224, M 203. Use of 1st and 2nd Laws of Thermodynamics to investigate processes involving vapors and gases in closed and open systems. Analysis of vapor and gas power and refrigeration cycles. Exergy analysis. Psychrometrics. Combustion processes. 4 credit hours.

### ME 307 Solid Mechanics

Prerequisites: CE 205, M 203. Elastic behavior of structural elements such as beams, columns, and shafts. Stress and strain at a point. Plane stress and plane strain. Stress and strain transformations, Mohr's circle. Theories of yielding and failure. Introduction to the finite element method of stress analysis and computer-aided engineering. 3 credit hours.

### ME 308 Applied Elasticity

Prerequisites: EAS 222, M 203. Stress and strain tensors. Equilibrium equations. Transformation equations for stress and strain. Principal stresses and maximum shear stress. Stress-strain relations. Measurement of strain. Theories of yielding and fracture. Introduction to matrix methods of structural

analysis, the finite element method, and computer-aided engineering. 4 credit hours.

**ME 315 Mechanics Laboratory**  
Prerequisites: CE 205, ME 204, ME 215. Laboratory experiments in mechanics of materials, vibrational analysis, computer-aided data acquisition and analysis. Emphasis placed on measurement techniques, report writing, and error/statistical analysis. 2 credit hours.

### ME 321 Incompressible Fluid Flow

Prerequisites: M 204, ME 204. Fluid kinematics, continuity equation, vector operations. Momentum equation for frictionless flow, Bernoulli equation with applications. Irrotational flow, velocity potential, Laplace's equation, dynamic pressure and lift. Stream function for incompressible flows. Rotational flows, vorticity, circulation, lift and drag. Integral momentum analysis. Navier-Stokes equation, stress tensor. Newtonian fluid. Boundary layer approximations. 3 credit hours.

### ME 330 Fundamentals of Mechanical Design (D)

Prerequisite: CE 205. Review of methods of mechanical design. Development of fundamental engineering analysis involving static and fatigue failure. Topics include the maximum shear and Von Mises theories of static design, safety factor, Soderberg and Goodman diagrams for fatigue design, modified endurance limit, reliability analysis, statistical considerations, and stress concentration. Introduction

to codes and standards. Practical applications. 3 credit hours.

### ME 343 Mechanisms (D)

Prerequisite: ME 204. Graphic and analytic methods for determining displacements, velocities, and accelerations of machine components. Applications to simple mechanisms such as linkages, cams, gears. Design project. 3 credit hours.

### ME 344 Mechanics of Vibration

Prerequisites: M 204, ME 204. The mathematical relationships necessary for the solution of problems involving the vibration of lumped and continuous systems. Damping, free and forced motions, resonance, isolation, energy methods, balancing. Single, two, and multiple degrees of freedom. Vibration measurement. 3 credit hours.

### ME 355 Interfacing and Control of Mechanical Devices (D)

Prerequisites: CS 110, EE 212 or consent of instructor. A practical, hands-on approach to connecting, monitoring, and control of thermo sensors, motors, encoders, and other sensors and transducers using a PC and a multipurpose expansion board. Topics include hardware connections, voltage input and output, motor-generator and motor-encoder feedback, stepper motors, thermal control, and digital switching. 3 credit hours.

### ME 404 Heat and Mass Transfer

Prerequisites: M 204, ME 302; Corequisite: ME 321. Conduction in solids, solution of multidimensional conduction problems, unsteady conduction, radiation,

boundary layer and convection. Introduction to mass transfer. Lectures include occasional demonstrations of convection, radiation, heat exchangers. 3 credit hours.

**ME 407 Solar Energy Thermal Processes (D)**

Corequisite: ME 404. Introduction to the fundamentals of solar energy thermal processes including solar radiation, flat plate and focusing collectors, energy storage, hot water heating, cooling and auxiliary system components. Emphasis on the design and evaluation of systems as they pertain to commercial and residential buildings. 3 credit hours.

**ME 408 Advanced Mechanics**

Prerequisites: M 204, ME 204. Plane and spatial motion of particles and rigid bodies, inertia tensor, relative motion, gyroscopes, central force motion. Lagrangian and Hamiltonian methods. 3 credit hours.

**ME 411 Fundamentals of Thermo/Fluid Design (D)**

Corequisites: ME 302, ME 330. Introduction to the design of specific thermal, heat and fluid devices and systems as they apply to practical design problems. Review of design methodology and basic equations in thermal sciences. Group design studies in each of the three basic areas of heat exchangers, prime movers, and piping systems. 3 credit hours.

**ME 415 Thermo/Fluids Laboratory**

Prerequisites: ME 215, ME 321; Corequisite: ME 404. A survey of experiments and laboratory investigations covering the areas of fluid

mechanics, thermodynamics, heat transfer, and gas dynamics. Analog and digital data acquisition and analysis. 2 credit hours.

**ME 422 Compressible Fluid Flow**

Prerequisites: ME 302, ME 321, ME 404. Compressible fluid flow with emphasis on one-dimensional ducted steady flows with heat transfer, frictional effects, shock waves, and combined effects. Introductory considerations of two- and three-dimensional flows. Applications to propulsive devices. Occasional demonstrations accompany the lectures. 3 credit hours.

**ME 426 Turbomachinery (D)**

Prerequisites: ME 302, ME 321. Review of basic thermodynamics and fluid mechanics. Dimensional analysis. Specific speed. Classification of turbomachines. Cavitation. Losses. Definitions of efficiency. Theories of turbomachines. Design considerations for stator blades and rotor blades. Computer-aided design. 3 credit hours.

**ME 427 Computer-Aided Engineering (D)**

Prerequisite: ME 307. Integration of computers into the design cycle. Interactive computer modeling and analysis. Geometrical modeling with wire frame, surface, and solid models. Finite element modeling and analysis. Problems solved involving structural, dynamic, and thermal characteristics of mechanical devices. 3 credit hours.

**ME 431 Mechanical Engineering Design I (D)**

Prerequisites: ME 330 and senior status or instructor's consent. Basic aspects of power transmission. Top-

ics include friction train, belt and chain drives, gear drive, planetary and differential trains. Study of air and hydraulic components and analysis of machine elements including shafts, springs, clutches, bearings, gears. In-house and industrial projects in solids and thermal/fluids areas. Student groups determine problem requirements and objectives and decide on the best design alternatives. Oral project presentations. Course available only in fall semester. 3 credit hours.

**ME 432 Mechanical Engineering Design II (D)**

Prerequisite: ME 431. Projects initiated in ME 431 are carried to completion by the same groups. Detailed design drawings and prototype construction, testing and evaluation. Midterm and final oral presentations and comprehensive written reports. Course available only in spring semester. 3 credit hours.

**ME 435 Advanced Mechanical Design (D)**

Prerequisites: ME 321, ME 431. Selected advanced topics related to the design of machine elements such as hydrodynamic theory of lubrication and principles of hydraulic machines with application to hydraulic couplings. 3 credit hours.

**ME 438 Systems Dynamics and Control**

Prerequisite: ME 321. Modeling, analysis, and design of dynamic systems with feedback. Response and stability analysis. Methods include Routh-Hurwitz, root locus, Bode plots, Nyquist stability criterion. Design and compensation methods. Applications in



mechanical, thermal, electrical systems. Project. 3 credit hours.

#### ME 443 Introduction to Flight Propulsion

Prerequisite: ME 422 or consent of instructor. A senior course designed for those students who intend to work or pursue further studies in the aerospace field. Among the topics covered are detonation and deflagration, introductory one-dimensional non-steady gas flows, basic concepts of turbomachinery, and survey of contemporary propulsive devices. Shock tube, supersonic wind tunnel, and flame propagation demonstrations accompany the lectures. 3 credit hours.

#### ME 450 Special Topics in Mechanical Engineering

Prerequisite: consent of instructor. In-depth study of topics chosen from areas of particular and current interest to mechanical engineering students. 1-6 credit hours.

#### ME 512 Senior Seminar

Open to seniors with coordinator's approval. Individual oral presentations by students of material researched on topics selected by students and faculty at the beginning of the term. 3 credit hours.

#### ME 599 Independent Study (D)

Prerequisites: consent of faculty supervisor and approval of program coordinator. Independent study provides an opportunity for the student to explore an area of special interest under faculty supervision. 1-3 credit hours per semester, with a maximum of 12.

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## MANAGEMENT

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#### MG 115 Fundamentals of Management

A course in introductory management that explores the basics of both theory and practice. Topics include and are related to the five functions of management: planning, organizing, staffing, leading, and controlling. *Enrollment limited to nonbusiness majors and/or AS Business Administration students only.* 3 credit hours.

#### MG 120 Development of American Sports

A survey of the American sports industry and how it relates to society: issues and problems in national and international sport activities. An analysis of current sports issues and trends. 3 credit hours.

#### MG 230 Management of Sports Industries

Prerequisites: MG 120 and sophomore-level standing. A survey of the principles of management applicable to the administration of aspects of sports enterprises: planning, controlling, organizing, staffing, and directing of the various activities necessary for effective functioning. 3 credit hours.

#### MG 235 Marketing and Public Relations in Sports

Prerequisites: MG 120 and sophomore-level standing. This course introduces students to marketing and public relations skills crucial to success in every sport business and examines the unique features of sport marketing and public relations that set sport apart from other industries. Students develop

a strategic sports marketing plan that includes an emphasis on public relations. 3 credit hours.

#### MG 310 Management and Organization

Prerequisites: A101, A102 or A 112, EC 133, EC 134, and junior standing. A study of management systems as they apply to all organizations. Managerial functions, principles of management, and other aspects of the management process are examined. 3 credit hours.

#### MG 317 Entrepreneurship and New Business Development

Prerequisite: MG 310. Covers the entrepreneurial process from conception to operation of a new business. Concentrates on the characteristics of entrepreneurs and the process by which they turn ideas into new business. Students will also learn about the process of new business development in the large corporation and study the effect of corporate culture on the success of new ventures. 3 credit hours.

#### MG 320 Sports Industries and the Law

Prerequisite: MG 120. Legal aspects as they relate to professional and amateur sport institutions. An analysis of legal problems and issues confronting the sports manager: suits against the organizational structure, safety, collective bargaining and arbitration, and antitrust violations. 3 credit hours.

#### MG 325 Sports Facility Management

Prerequisites: MG 120, MG 310. An examination of how sports facilities like coliseums, municipal and college stadiums, and multi-

purpose civic centers are managed. Among the topics included are financial management of sports facilities, booking and scheduling events, box office management, staging and event production, personnel management, concessions and merchandising management. 3 credit hours.

#### **MG 327 Business Planning**

Prerequisite: MG 317. Covers the elements of planning for a new business. Identifies the goals, objectives and strategies that an entrepreneur must articulate for the fulfillment of that entrepreneurial dream. The main focus of the course is to highlight the milestones toward the success of the new venture. 3 credit hours.

#### **MG 331 Management of Human Resources**

Prerequisite: MG 310. A survey of the industrial relations and the personnel management system of an organization. Manpower planning/forecasting, labor markets, selection and placement, training and development, compensation, government/employer and labor/management relations. 3 credit hours.

#### **MG 332 Labor Management Relations**

Prerequisites: MG 310, MG 331. A study of the development of American trade unions and the various stages of their relationship with business ownership and management, their structure and strategies, labor legislation, and impact. Negotiations strategies; causes of and strategies for resolving labor conflict. Attaining union-management cooperation. 3 credit hours.

#### **MG 333 Management of Compensation**

Prerequisites: MG 310, MG 331. A study of all aspects of the compensation process: criteria used in developing pay scales, merit systems, and fringe benefits; techniques for administration and control of established systems. 3 credit hours.

#### **MG 350 Management of Workforce Diversity**

Prerequisite: MG 310. This course explores issues of social identity, social and cultural diversity, and societal manifestations of oppression as they relate to the workplace. Workforce demographics are rapidly evolving due to changes in birthrates, immigration, legal systems, social attitudes, and economic expansion. Managing businesses and other organizations will require not just contemporary knowledge and technology but the expertise to manage increasing workforce diversity. 3 credit hours.

#### **MG 415 Multinational Management**

Prerequisites: IB 312, MG 310. An analysis and examination of management and organizational behavior against a background of diversified cultural systems. 3 credit hours.

#### **MG 417 Managing an Entrepreneurial Venture**

Prerequisites: FI 313, MG 317. Covers the principles of managing a growing entrepreneurial business. Students will learn how to anticipate and deal with problems peculiar to a growing business. The emphasis will be on innovation, creativity, and managing opportunities, in contrast to management

of ongoing business that is based on efficiency and effectiveness. 3 credit hours.

#### **MG 430 Financial Management for Sports Administration**

Prerequisites: FI 313, MG 310. Methods and procedures as they apply to sports administration, taxation, purchasing, cost analysis, budgeting, and the financial problems dealing with mass media. 3 credit hours.

#### **MG 450-454 Special Topics in Business**

Prerequisites: MG 310; junior-level standing required unless otherwise specified in course schedule description. Special studies in business and public administration. Work may include study and analysis of specific problems within units of business or government and application of theory to those problems, programs of research related to a student's discipline, or special projects. Several sessions may run concurrently. 3 credit hours.

#### **MG 455 Total Quality Management**

Prerequisites: MG 310, QA 217. This course is an introduction to Total Quality Management concepts and techniques. Achieving employee involvement, low cost production, reducing low quality deficiencies, and increasing customer satisfaction will be the main focus of the course. 3 credit hours.

#### **MG 457 Family Business Management**

Prerequisite: MG 310. Provides a fundamental understanding of

family business management, including historical and theoretical rudiments; transition stages, conflict resolution; family systems; and succession. Case studies of classic family businesses will be used for discussion and analysis. 3 credit hours.

#### **MG 467 Franchising**

Prerequisites: FI 313, MG 310. Covers the franchising operation from both the franchiser's and franchisee's perspectives. Provides the student the framework to evaluate the feasibility of extending a new business into a franchise and the potential profitability of engaging in a franchise operation. 3 credit hours.

#### **MG 470 Management of Corporate Culture**

Prerequisite: MG 310. A study of corporate culture. Its development and influence on business strategies, organizational performance, development and change, and effects on managerial effectiveness. 3 credit hours.

#### **MG 475 Sport Event Management**

Prerequisite: MG 120, junior standing. This course will help students develop the skills necessary to manage virtually any aspect of a sporting event, including contingency planning, logistics, working with vendors, financing, ticketing and admissions, seating design and controls, sponsor and supplier agreements, risk management and insurance, marketing events and licensed merchandise, finding sponsorship, working with governmental agencies, and scheduling tournaments and matches. Focus

on events ranging from cycling and running races to the Super Bowl and the World Series. A requirement will be that students be directly involved with organizing a sports event during the semester. 3 credit hours.

#### **MG 512 Contemporary Issues in Business and Society**

Prerequisites: MG 310 and senior standing. A rigorous examination of competing concepts of the role of business in society. A capstone, integrative course relating the firm to its environment, including issues arising from aggregate social, political, legal, and economic factors. 3 credit hours.

#### **MG 515 Management Seminar**

Prerequisites: MG 310 and senior standing. Introduction to contemporary publications and the findings of research study reports. Analysis, interpretation, and determination of impact of publications on the theory and practice of management. 3 credit hours.

#### **MG 517 Practical Field Studies**

Prerequisites: MG 417 and senior standing. Practical training for students minoring in Entrepreneurship. Students will have an opportunity to apply their conceptual knowledge to a real business situation. 3 credit hours.

#### **MG 520 Current Issues in Human Resource Management**

Prerequisites: MG 310, MG 331. Examines research findings and current literature relevant to issues affecting personnel functions in the organization. 3 credit hours.

#### **MG 550 Business Policy**

Prerequisites: FI 313, MG 310, MK 300. An examination of orga-

nizational policies from the viewpoint of top-level executives; development of analytic frameworks for achieving the goals of the total organization. Discussion of cases and development of oral and written skills. 3 credit hours.

#### **MG 598 Internship**

Prerequisite: MG 320 or MG 310. On-the-job experience in selected organizations in management. 3 credit hours.

#### **MG 599 Independent Study**

Prerequisite: MG 310. Independent study on a project of interest to the student under the direction of a faculty member designated by the department chair. 3 credit hours.

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## MARKETING

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#### **MK 300 Principles of Marketing**

Prerequisites: EC 133 or EC 134 and junior standing. The fundamental functions of marketing involving the flow of goods and services from producers to consumers. Marketing methods of promotion, pricing, product decisions and distribution channels. 3 credit hours.

#### **MK 302 Organizational Marketing**

Prerequisite: MK 300. Practices and policies in the distribution of industrial goods, including purchasing, market analysis, channels of distribution, pricing, competitive practices, and operating costs. 3 credit hours.

#### **MK 305 Consumer Behavior**

Prerequisite: MK 300. A study of

the principal comprehensive marketing models which focus on buyer decision processes. Topics include brand switching decisions, measures of media effectiveness, market segmentation, and other marketing techniques. 3 credit hours.

#### **MK 307 Advertising and Promotion**

Prerequisite: MK 300. The design, management, and evaluation of the various communications programs involved in marketing and public relations. 3 credit hours.

#### **MK 316 Sales Management**

Prerequisite: MK 300. The management of a sales organization. Recruiting, selecting, training, supervision, motivation, and compensation of sales personnel. 3 credit hours.

#### **MK 321 Retail Management**

Prerequisite: MK 300. Survey of the problems and opportunities in the retail distribution field, including a basic understanding of buying, selling, and promotion of the retail consumer market. 3 credit hours.

#### **MK 326 Overview of E-Commerce**

Prerequisites: MK 300 and junior standing. A review of issues in e-commerce. Technologies available for digitalization and transmission are surveyed. Different uses of internets, intranets, extranets, and Web pages are discussed. B2B sales and supply chain management are introduced. Available security and payment systems are compared. The impacts of e-commerce and e-tail on business structure, channel conflicts, and alliances are introduced. 3 credit hours.

#### **MK 327 E-Commerce**

##### **Consumer Applications**

Prerequisites: MK 300 and junior standing. E-commerce marketing to consumers sells physical, digital, and service products through the Internet. Key issues in selling these products will be discussed, including advertising, privacy, intellectual property, and contract issues. Website usability will be examined. Students will create a simple Web page. Then, e-business software will be discussed and demonstrated for online catalog, inventory databases (ERP), transaction processing, customer records, shipping, and security. 3 credit hours.

#### **MK 402 Marketing of Services**

Prerequisite: MK 300. The marketing of services, including services-based market planning, marketing mix, core marketing strategies and trends, and the essential differences between product-and services-based marketing. 3 credit hours.

#### **MK 442 Marketing Research in the Global Environment**

Prerequisites: MK 300, QA 217. Research as a component of the marketing information system. Research design, sampling methods, data interpretation, and management of the marketing research function. 3 credit hours.

#### **MK 450 Special Topics**

Prerequisites: MK 300, junior standing. Coverage of new and emerging topics and applications in marketing theory and practice. The format may include both traditional classroom activities and innovative group projects. 3 credit hours.

#### **MK 470 Marketing Channels**

Prerequisite: MK 300. The design and administration of relationships for the successful distribution, shipping, and inventory management of products, both domestically and internationally. Also included are channel conflicts and channel control. 3 credit hours.

#### **MK 515 Marketing Management**

Prerequisites: MK 300 and senior standing. The analysis, planning, and control of the marketing effort within the firm. Emphasis on case analysis. A marketing capstone course. 3 credit hours.

#### **MK 598 Marketing Internship**

Prerequisite: MK 300. Supervised field experience for qualified students in areas related to their major. 3 credit hours.

#### **MK 599 Independent Study**

Prerequisite: MK 300. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

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## MULTIMEDIA

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#### **MM 301 Introduction to Multimedia**

Prerequisite: introductory computer course (core curriculum requirement). The three goals of this course are (1) to provide students with the necessary multimedia background and theory; (2) to discuss the basic building blocks of multimedia—text, images, animation, video, and sound; and (3) to teach the practical elements of making multimedia and the use of authoring software. 3 credit hours.

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## MARINE BIOLOGY

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**MM 311 Advanced Multimedia**  
Prerequisite: MM 301. This course will first deal with the advanced elements of multimedia. Hardware and software tools will be described in detail. Students will then be introduced to the step-by-step creative and organizing process that results in a finished multimedia project: the technology, user interface design, and graphic production techniques. The course will emphasize such topics as how to structure information, how to anticipate user experience, and how to generate visually compelling interfaces. 3 credit hours.

**MM 312 Website Creation**  
Prerequisite: MM 301 or permission of instructor. An introduction to webpage creation and design. This course will address some of the most important topics for website designers: site evaluation and design, content, structure, layout, and audience. 3 credit hours.

**MM 401 Multimedia Seminar**  
Prerequisite: MM 311. This course will cover more advanced elements of multimedia. Current technical advances and artistic trends will be discussed in detail. Students will be reintroduced to the creative and organizing process that results in a finished multimedia project, and they will become familiarized with some of the software tools (HTML editors) used to design and implement an interactive webpage. 3 credit hours.

**MM 450 Special Topics in Multimedia**  
Study of selected topics of special or current interest. 3 credit hours.

### **MR 101 Introduction to Marine Biology**

An introduction to the field of marine biology and the marine environments of southern Connecticut. Students will learn basic marine sampling techniques and basic organism identification. Students will also explore the different components of the marine environment, in particular Long Island Sound. This course is intended for marine biology majors and other students interested in learning about the field. Students are required to have hip waders. 1 credit hour.

### **MR 102 Seminar in Marine Biology**

An introduction to careers and research topics in marine biology. Every week students will explore new scientific questions in marine biology and learn about potential occupations within the field. This course is intended for marine biology majors and other students interested in learning about ongoing issues in the field of marine biology. 2 credit hours.

### **MR 200 Oceanography with Laboratory**

Prerequisites: BI 121-122 or BI 253-254, Math 109 or higher, and high school chemistry. This course investigates the major aspects of physical, geological, chemical, and biological oceanography. Human impacts on the ocean environment are considered as well. The laboratory component provides hands-on experience with marine sampling, mapping, and measurements, as well as with computer simulations of ocean cur-

rents, tides, waves, and other oceanographic phenomena. 4 credit hours.

### **MR 260 Marine Vertebrate Zoology with Laboratory**

Prerequisite: BI 122 or BI 254. A survey of marine vertebrate phyla, focusing on taxonomy, evolutionary relationships, structure and function, physiological adaptations, and life modes. Laboratory includes real and virtual examination of the structure and anatomy of representative taxa from the phyla, laboratory experiments, and observations on the behavioral responses of certain organisms to environmental stimuli. 4 credit hours.

### **MR 300 Marine Ecology with Laboratory**

Prerequisites: BI 250, BI 320. Investigation of ecological structure and dynamics in marine and estuarine habitats at organismal, population, community, and ecosystem levels. Geographic aspects and human interactions with marine ecosystems are also considered. Designed around specific topics covered in lecture, the laboratory includes investigation of different types of estuarine and coastal habitats, field and laboratory techniques, and design of basic and applied marine ecological investigations. Some required weekend field classes. Laboratory fee; 4 credit hours.

### **MR 310 Marine Botany with Laboratory**

Prerequisites: BI 122 or BI 254; MR 200. A survey of plant and algae taxa inhabiting the marine and estuarine environment.

Emphasis will be placed on the form and function of the major groups and their adaptation to the marine environment. The laboratory section will include exercises in lower plant taxonomy and morphology. Experiments in plant physiology and field trips to study intertidal plant communities will be included. Laboratory fee; 4 credit hours.

#### MR 320 Marine Pollution

Prerequisite: MR 300. A classification of the different forms of pollution in the marine environment. The fate and transport of different pollutants will be discussed as will the effects of pollutants on coastal and open marine ecosystems. 3 credit hours.

#### MR 330 Coastal Resources and Management

Prerequisite: MR 300. Examination of natural coastal resources, human uses and alterations, federal and international regulations shaping activities in the coastal zone, and coastal management at the international, federal, state, and local levels. Some weekend field classes may be required. 3 credit hours.

#### MR 331 Marine Conservation and Restoration

Prerequisite: MR 300. An investigation into the conservation of marine resources and the science of habitat recovery and restoration. Topics will include fisheries conservation, case studies of restored coastal habitats, assessment procedures, and evaluation of ecological function in restored habitats. 3 credit hours.

#### MR 410 Marine Aquaculture and Biotechnology

Prerequisite: MR 300. An examination of marine aquaculture and the use of marine resources in developing biotechnological products. The history of aquaculture and current aquaculture practices throughout the world are reviewed. Lectures are augmented by visits to commercial establishments and aquaculture research laboratories. The second portion of the course will focus on the development of marine biotechnology, marine products, and the relationship between aquaculture and marine biotechnology. Some required weekend field classes. 3 credit hours.

#### MR 420 Marine Biogeochemistry with Laboratory

Prerequisites: CH 115-118, MR 300. A comprehensive study of the biogeochemistry of marine waters and sediments. Emphasis will be on biogeochemical cycling of key elements in marine and estuarine ecosystems and their role in global processes. Chemical analysis and field collection techniques together with experimentation into the partitioning of chemical species between sediment, water, and biota will be conducted in the laboratory portion of the class. Laboratory fee; 4 credit hours.

#### MR 501-502 Senior Project in Marine Biology I and II

Prerequisites: marine biology major with senior standing. Individual/group-based research in marine biology. Students will develop specific research projects, conduct literature searches, plan and conduct experiments, analyze the

data, and present their findings in a written report and at a student conference at the end of the second semester. 3 credit hours each term.

#### MR 599 Independent Study

Prerequisites: marine biology major, consent of the department. Weekly conferences with advisor. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. A written report of the work carried out is required. 3 credit hours.

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## MUSIC

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#### MU 106 Chorus

Styles of group singing, survey of choral music literature from around the world. 3 credit hours.

#### MU 111 Introduction to Music

Basic forms and styles of music in the Western world: music appreciation. 3 credit hours.

#### MU 112 Introduction to World Music

Non-Western musical styles, their cultures and aesthetics; music of the indigenous cultures of the Americas and the advanced musics of the Near East and Far East; emphasis on India, the Orient, Southeast Asia, Africa, and Indonesia. 3 credit hours.

#### MU 116 Performance

Open to all students interested in ensembles or private instruction. Students with adequate scholastic standing may carry this course for credit in addition to a normal program. 1-8 credit hours; maximum 3 credit hours per semester.

### MU 125 Elementary Music Theory

A one-semester introduction to the basic principles of music, primarily for students who wish to gain insight into the fundamental structures and workings of the art form. Music majors who have not successfully passed the department placement examination must enroll in MU 125 and MU 126. Topics include notation, scales, key signatures, time signatures, staff recognition, intervals, triads. Non-music majors are not required to enroll in the laboratory. 3 credit hours.

### MU 126 Elementary Music Theory Laboratory

Exercises in sight-singing, solfege, melodic and rhythmic dictation, and music notation. Should be taken concurrently with MU 125. 1 credit hour.

### MU 150-151 Introduction to Music Theory I and II

Fundamentals of music: notation, physical and acoustical foundations; harmony and melody; modality, tonality, atonality; consonance and dissonance; tension; introductory composition; and ear training. 3 credit hours each term.

### MU 175-176 Musicianship I and II

Prerequisites: MU 111 or MU 112; MU 150. Development of practical skills essential to performers and ensemble directors: ear training, sight-singing, dictation, transcription, arranging, notation, score writing. 3 credit hours each term.

### MU 198-199 Introduction to American Music I and II

Music of the North American continent from the Puritans to the present day; both European and non-European musical traditions, with emphasis on twentieth-century developments. 3 credit hours each term.

### MU 201-202 Analysis and History of European Art Music I and II

Prerequisites: MU 150, MU 151.

The growth of Western art music from its beginnings to the present day. Analysis of musical masterpieces on a technical and conceptual basis. 3 credit hours each term.

### MU 211 History of Rock

Study of rock music as a musical tradition and social, political, and economic phenomenon. Ethnomusicological and historical examination of rock from its pre-1955 roots to the present. 3 credit hours.

### MU 221 Film Music

Designed for both music and communication majors. Introduction to the art, science, and history of musical scores in film. Classwork includes viewing and analysis of films with significant cuing and an introduction to the musical repertoire available to the filmmaker. 3 credit hours.

### MU 250-251 Theory and Composition I and II

Investigation of music theory in various parts of the world, including the Western art tradition. Exercises in the composition of music within these theoretical constructs. Ear training and keyboard harmony. 3 credit hours each term.

### MU 261 Introduction to the Music Industry

An introduction to the music industry from the artist's point of view. Provides guidance to musicians and/or songwriters trying to break into the record industry. Topics include overview of the music industry, songwriting and publishing, the copyright law, music licensing, artist management: agents and attorneys, and recording contracts. 3 credit hours.

### MU 299 Problems of Music

Music as an art form throughout the world. Music aesthetics and its relationship to the performance and composition of music. 3 credit hours.

### MU 300 Studies in Music I

Area studies in music and its parent culture. Cultural theory as related to the music; instruments of the area and their etymologies; performance practices; the social role of music, both art and folk. Areas offered depend on availability of staff: China, Japan, the Near East, the Indian subcontinent, Africa, American Indian, Afro-American, Latin American, the Anglo-Celtic tradition, and others. 3 credit hours.

### MU 301 Recording Fundamentals

Prerequisites: CO 103; PH 100 or PH 150. A study of the fundamentals of sound recording technique and methodology: acoustics, basic electronics, the decibel, magnetism, microphones, microphone placement, tape recorders, tape formats, mixers, signal processing and monitoring systems. This course also emphasizes the importance of sound aesthetics and ethics in the sound recording process. 3 credit hours.

**MU 311-312 Multitrack Recording I and II**

Prerequisite: MU 301. Two-semester course in the technique and methodology of multitrack studio and live recording. Includes detailed study of multiple tracking, mixing consoles, microphones, tape recorders, signal processors, studio procedures, sound synthesis, MIDI and digital audio. Also emphasizes the use of computers in the recording studio. Laboratory fee; 3 credit hours per semester.

**MU 321 Sound Synthesis/MIDI**  
Prerequisite: MU 301. A study of the use of synthesizers, drum machines, sound modules, and computers in the recording studio. Using a combination of lecture/demonstrations as well as lab hours, students will explore the physics of sound, sound synthesis, instrument control, Musical Instruments Digital Interface (MIDI), and computers. Special emphasis will be placed on current sequencing, notation, and printing software. 3 credit hours.

**MU 322 Sound System Design and Maintenance**

Prerequisite: MU 311. This course covers the basics of sound system troubleshooting and maintenance. Topics include sound systems, the decibel, reading specs and diagrams, basic electronics, cabling, and test equipment. 3 credit hours.

**MU 350 Studies in Music II**

Area studies in musical forms; their history, evolution, and resultant metamorphoses; performance practices and extant forms. Areas offered depend upon availability of staff. 3 credit hours.

**MU 361 Production, Promotion, and Distribution**

Prerequisite: MU 261. An overview of the music industry from the record company's perspective. Provides guidance to music enthusiasts who want to become record company executives, sales managers, producers, etc. Topics include record company administration; business aspects of record production; promotion, publicity, and distribution; recording studio management; radio station programming and management; music videos; the retail music store. 3 credit hours.

**MU 362 Legal Issues, Copyrights, and Contracts**

Prerequisite: MU 261. A comprehensive overview of the legal procedures, timings, and agreements used in the music industry. Includes detailed study of the current copyright law, publishing contracts, licensing, the manager and/or agent agreement, the record company contract, AFM and AFTRA agreements, and ethical considerations in the music industry. 3 credit hours.

**MU 401-402 Recording Seminar/Project I and II**

Prerequisite: MU 312. Each student will complete a professional-quality recording production or research and development project. Work may consist of internship or Co-op experience in a professional recording studio. Seminar will also include presentations on areas of professional interest such as career opportunities and new development in studio technique and technology. Laboratory fee; 3 credit hours each term.

**MU 416 Advanced Performance**  
Prerequisites: consent of the department staff and a faculty advisor. Preparation and presentation of an instrumental or vocal performance indicating sufficient proficiency to warrant the awarding of a degree in music. 3 credit hours.

**MU 450 Special Topics in Music**  
Study of selected topics of special or current interest. 3 credit hours.

**MU 461-462 Internship in the Music Industry I and II**

Prerequisites: MU 361 and MU 362. The purpose of this course is to provide the student with advanced on-the-job training via placement as an apprentice/intern in music industry companies such as recording studios, radio stations, music stores, record companies, etc. 3 credit hours each term.

**MU 500-502 Seminars in Advanced Research**

Prerequisite: permission of instructor. Bibliographical studies of major world music areas; investigation of current and historical musicological theories; analysis and criticism of musicological area literatures. 3 credit hours each term.

**MU 550 Studies in Urban Ethnic Music**

Prerequisite: consent of instructor. The music tradition of inner-city ethnic groups; emphasis on the operation of the oral tradition in the preservation of cultural values and customs as evidenced through music. Classroom discussion will be balanced by field research in the urban vicinity. 3 credit hours.



**MU 599 Independent Study**  
Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours per semester, with a maximum of 12 hours.

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## PSYCHOLOGY

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### **P 111 Introduction to Psychology**

Understanding human behavior. Motivation, emotion, learning, personality development, and intelligence as they relate to normal and deviant behavior. Applying psychological knowledge to everyday personal and societal problems. 3 credit hours.

### **P 212 Business and Industrial Psychology**

Prerequisite: P 111. Psychological principles and research as they apply to the problems of working with people in organizations. Analysis of problems and decisions in this use of human resources, including selection and placement, criterion measurement, job design, motivation. 3 credit hours.

### **P 216 Psychology of Human Development**

Prerequisite: P 111. Human development over the life cycle—conception through death: the changing societal and institutional framework, key concepts and theoretical approaches, understanding development through biography, child rearing and socialization here and abroad. 3 credit hours.

### **P 301 Statistics for the Behavioral Sciences**

Prerequisite: M 127. Concepts and assumptions underlying statistical methods essential to design and interpretation of research on human subjects. Fundamental descriptive and inferential methods. This course includes training in the use of a computer statistics program. 4 credit hours. (This course is cross-listed with M 228 Elementary Statistics.)

### **P 305 Experimental Methods in Psychology**

Prerequisite: P 301. Methods of designing and analyzing psychological experiments. The scientific method as applied to psychology. Consideration of research techniques, experimental variables, design problems, data analysis. This course includes training in the use of a computer statistics program. 3 credit hours.

### **P 306 Psychology Laboratory**

Prerequisite: P 305. Group and individual experiments to be carried out by students. Research techniques for studying learning, motivation, concept formation. Data analysis and report writing. Offered only in spring semester of odd-numbered years. 3 credit hours.

### **P 315 Human and Animal Learning**

Prerequisite: P 111. Different types of human and animal learning. Learning as an adaptive mechanism. Psychological principles underlying learning. Practical applications of learning principles. 3 credit hours.

### **P 316 The Psychology of Health and Sport**

Prerequisite: P 111. The role of psychological factors in the cause and prevention of physical illness. The modification of unhealthful behaviors. The study of stress and the management of stress, particularly during athletic competition. The nature of pain and pain management. The role of emotion in athletic performance. The use of psychology in athletic performance enhancement. Threats to the health of athletes. 3 credit hours.

### **P 321 Social Psychology**

Prerequisites: P 111, SO 113. The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development, and modification; group interaction analysis; social conformity; social class and human behavior. Offered only in the spring semester of odd-numbered years. 3 credit hours. (Same course as SO 320)

### **P 330 Introduction to Community Psychology**

Prerequisite: P 111. Key concepts of community psychology/community mental health. Community problems, needs, and resources. The helping relationship. Intervention techniques. Programming services. Understanding behavioral differences. Careers in community psychology. 3 credit hours.

### **P 331-332 Undergraduate Practicum I and II in**

**Community/Clinical Psychology**  
Corequisite: P 330 or permission of instructor. Supervised field experience in community psycholo-

gy/mental health settings. Exploration of service delivery. Development of basic repertoire of helping skills. Behavioral log. Project reporting. Understanding helping roles at individual, small-group and institutional levels. 1-6 credit hours, with a maximum of 3 credit hours per semester.

### **P 336 Abnormal Psychology**

Prerequisite: P 111. Psychological and organic factors in personality disorganization and deviant behavior. Psychodynamics and classifications of abnormal behavior. Disorders of childhood, adolescence, and old age. Evaluation of therapeutic methods. 3 credit hours.

### **P 341 Psychological Theory**

Prerequisite: P 111. Contemporary theory in psychology. Emphasis on those theories which have most influenced thinking and research in sensation, perception, learning, motivation, personality. Offered only in fall semester of odd-numbered years. 3 credit hours.

### **P 350 Human Assessment**

Prerequisite: P 301. Basic principles of measurement, applied to problems of the construction, administration, and interpretation of standardized tests in psychological, educational, and industrial settings. Offered only in fall semester of odd-numbered years. 3 credit hours.

### **P 351 Behavior Therapies**

Prerequisite: P 111. Principles of therapeutic behavior management. Alteration of maladaptive behavior patterns in institutional, neighborhood, home, educational, and social settings by operant and

respondent reinforcement techniques. Habit management in oneself and in one's children. Offered only in the spring semester of even-numbered years. 3 credit hours.

### **P 361 Behavioral Neuroscience**

Prerequisites: P 111; BI 121 and BI 122. Endocrinological, neural, sensory, and response mechanisms involved in learning, motivation, adjustment, emotion, and sensation. Offered only in spring semester of even-numbered years. 3 credit hours.

### **P 370 Psychology of Personality**

Prerequisites: P 111, junior class status. Theory and method in the understanding of normal and deviant aspects of personality; theories of Freud, Jung, Rogers, neo-Freudians, and others. 3 credit hours.

### **P 375 Foundations of**

**Clinical/Counseling Psychology**  
Prerequisite: P 336. Foundations of clinical/counseling psychology will review the humanistic, psychoanalytic, and behaviorist views on the emergence and treatment of psychopathology. The fit between theory and technique will be explored. 3 credit hours.

### **P 480-484 Special Topics in Psychology**

Selected topics of special or current interest. 3 credit hours.

### **P 599 Independent Study**

Prerequisites: consent of faculty member and department chair. Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated

by the student after conferring with the faculty member who has agreed to supervise the project. 1-3 credit hours.

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## **PUBLIC MANAGEMENT**

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### **PA 101 Introduction to Public Administration**

The nature of and problems involved in the administration of public services at the federal, state, regional, and local levels. 3 credit hours.

### **PA 302 Public Administration Systems and Procedures**

The major staff management functions in government and in non-profit agencies: planning, budgeting, scheduling, and work analysis. 3 credit hours.

### **PA 305 Institutional Budgeting and Planning**

Budgeting as an institutional planning tool, as a cost control device, and as a program analysis mechanism is stressed. Attention is given to the salary expense budget, the revenue budget, the capital budget, and the cash budget. 3 credit hours.

### **PA 307 Urban and Regional Management**

Methods and analysis of decision making related to urban and regional problems. Topics include housing, land use, economic development, transportation, pollution, conservation, and urban renewal. 3 credit hours.

**PA 308 Health Care Delivery Systems**

An examination of the health care delivery systems in the U.S., including contemporary economic, organizational, financing, manpower, cost, and national health insurance issues. 3 credit hours.

**PA 404 Public Policy Analysis**

Using the public perspective, examines the nature of the public policy process from policy formation through policy termination. Major emphasis on the techniques commonly used in analyzing public policy, including cost/benefit analysis and comparison of expected and actual outcomes. An opportunity to gain hands-on experience in the analysis and evaluation of public policy. 3 credit hours.

**PA 405 Public Personnel Practices**

Study of the civil service systems of the federal, state and local governments, including a systematic review of the methods of recruitment, evaluation, promotion, discipline, control, and removal. 3 credit hours.

**PA 408 Collective Bargaining in the Public Sector**

Analysis of collective bargaining in the public sector, with emphasis on legislation pertaining to government employees. 3 credit hours.

**PA 450-455 Special Topics**

Selected topics of special or current interest in the field of public management. 3 credit hours.

**PA 490 Public Health Administration**

An examination of public health

activities, including public health organization, environmental health, disease control, use of information systems, and social services. 3 credit hours.

**PA 512 Seminar in Public Administration**

Selected topics related to public administration are chosen for study in depth. 3 credit hours.

**PA 598 Public Administration Internship**

Prerequisite: consent of the coordinator. Monitorial field experience with public and not-for-profit agencies. Minimum of 3 credit hours.

**PA 599 Independent Study**

Independent study on a project of interest to the student under the direction of a faculty member approved by the department chair. 3 credit hours.

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## PHYSICS

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*"+" denotes courses offered on a "as needed" basis*

**PH 100 Introductory Physics with Laboratory**

Prerequisite: M 109/M 127 or equivalent math competency. A one-semester introduction to the science of physics primarily for liberal arts, business, and hospitality/tourism students. The course provides a broad, algebra-based understanding of the basic laws of nature, their application to our everyday lives, and their impact on our technological society. Laboratory fee; 4 credit hours.

**PH 101 Energy—Present and Future**

Prerequisite: M 109/M 127 or equivalent math competency. Intended primarily for business and liberal arts students. Explores the nature, role, and economic impact of energy in our society. Topics include the nature and growth of energy consumption, physical limits to energy production and consumption, environmental effects, and comparisons of energy alternatives. Special emphasis on the technical, environmental, and economic aspects of nuclear power as well as energy sources of the future such as fast-breeder reactors, fusion, solar, and geothermal power. 3 credit hours.

**PH 103-104 General Physics I and II with Laboratory**

Prerequisite: M 109/M 127 or equivalent math competency. Primarily for life science majors with no calculus background. Basic concepts of classical physics: fundamental laws of mechanics, heat, electromagnetism, optics, and conservation principles. Introduction to modern physics: relativity and quantum theory; atomic, nuclear, and solid-state physics. Application of the physical principles to life sciences. Laboratory fee; 4 credit hours per term.

**PH 150 Mechanics, Heat, and Waves with Laboratory**

Prerequisite: M 117. Introductory course for physical science and engineering majors. Kinematics, Newton's laws, conservation principles for momentum, energy and angular momentum. Thermal physics. Basic properties of waves, simple harmon-

ic motion, superposition principle, interference phenomena, and sound. Laboratory fee; 4 credit hours.

**PH 203 The Physics of Music and Sound with Laboratory**

Prerequisites: PH 100, PH 103, PH 150 or equivalent. A second-semester course in physics for students with music and sound recording majors and others with a special interest in music, acoustics, or sound and hearing. Study of the physics underlying such things as the production of sound by musical instruments, electromagnetic storage and reproduction of sound, human hearing, and acoustics of concert halls and other spaces. Integrated laboratory experiments provide hands-on experience of these phenomena. Laboratory fee; 4 credit hours.

**PH 205 Electromagnetism and Optics with Laboratory**

Prerequisites: PH 150, M 118. Basic concepts of electricity and magnetism; Coulomb's law, electric field and potential, Gauss's law, Ohm's law, Kirchoff's rules, capacitance, magnetic field, Ampere's law, Faraday's law of induction, Maxwell's equations, electromagnetic waves. Fundamentals of optics; light, laws of reflection and refraction, interference and diffraction phenomena, polarization, gratings, lenses and optical instruments. Laboratory fee; 4 credit hours.

**PH 207 Engineering Physics**

Prerequisites: one full year of non-calculus physics with laboratories, two semesters of calculus. A one-semester course primarily for engineering transfer students who had

one-year non-calculus physics sequence in two-year colleges and technical schools. All the major topics of PH 150-PH 205 are covered with an ample use of calculus. PH 207 should not be used as a technical elective. 4 credit hours.

**PH 211 Modern Physics**

Prerequisite: PH 205. Modern physics fundamentals. Twentieth century developments in the theory of relativity and the quantum theory. Atomic, nuclear, solid-state, and elementary particle physics. 3 credit hours.

**+PH 270 Thermal Physics**

Prerequisite: PH 103 or PH 150. Basic thermodynamics and its applications. Major emphasis on the efficiency of energy conversion and utilization. Topics include the laws of thermodynamics, entropy, efficiency of heat engines, solar energy, the energy balance of the earth, energy systems of the future, economics of energy use. 3 credit hours.

**+PH 280 Lasers**

Prerequisite: PH 205. Laser theory, holography, construction, and application to latest engineering and scientific uses. 3 credit hours.

**+PH 285 Modern Optics**

Prerequisite: PH 205. Introduction to optical theories. Topics on the latest developments in optics. Application to life sciences and engineering. 3 credit hours.

**PH 301 Analytical Mechanics**

Prerequisites: PH 150, M 204, or instructor's consent. This is an intermediate-level course in Newtonian mechanics. Selected topics

include the formulation of the central force problem and its application to planetary motion and to scattering, theory of small oscillations, dynamics of rigid body motion, and an introduction to Lagrangian and Hamiltonian formalism. 3 credit hours.

**PH 303 Radioactivity and Radiation**

Prerequisite: a college chemistry course or permission of instructor. Intended for students in occupational safety and health, fire science, forensic science, and related fields as well as for science and engineering students with interest in this area. Topics include the nature of radiation and radioactivity, the interaction of radiation with matter, biological effects of radiation, detection and measurement of radiation, shielding considerations, dosimetry, and standards for personal protection. 3 credit hours.

**+PH 401 Atomic Physics**

Prerequisite: PH 211. Structure and interactions of atomic systems including Schrodinger's equation, atomic bonding, scattering and mean free path, radiative transitions, and laser theory. 3 credit hours.

**+PH 406 Solid-State Physics**

Prerequisite: PH 211. Introduction to the physics of solids with emphasis on crystal structure, lattice vibrations, band theory, semiconductors, magnetism and superconductivity. Applications to semiconductor devices and metallurgy. 3 credit hours.

**+PH 415 Nuclear Physics**

Prerequisite: PH 211 or consent of instructor. Elementary nuclear physics. Nuclear structure, natural radioactivity, induced radioactivity, nuclear forces and reactions, fission and fusion, reactors, and topics of special interest. 3 credit hours.

**PH 450 Special Topics in Physics**

Study of selected topics of special or current interest. 3 credit hours.

**+PH 451 Elementary Quantum Mechanics**

Prerequisite: PH 211 or consent of instructor. An elementary treatment of nonrelativistic quantum mechanics. Schrodinger's equation, with its applications to atomic and nuclear structure; collision theory; radiation; introductory perturbation theory. 3 credit hours.

**+PH 470 Theory of Relativity**

Prerequisite: PH 211 or consent of instructor. Introduction to Einstein's theory of relativity. Special theory of relativity; Lorentz transformations, relativistic mechanics and electromagnetism. General theory of relativity; equivalence principle, Einstein's three tests, graviton, black hole, and cosmology. 3 credit hours.

**PH 599 Independent Study**

Prerequisites: consent of faculty member and department chair. Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours.

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## PHILOSOPHY

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**PL 101 Introduction to Philosophy**

The nature of reality and how it may be known, according to the great thinkers of the Occident and the Orient. 3 credit hours.

**PL 205 Classical Philosophy**

The origins of philosophy and the continuing influence of classical thought on the development of ideas. 3 credit hours.

**PL 206 Modern Philosophy:**

**Descartes to the Present**  
Philosophical theories that have dominated the modern age. Stress on a central figure of the period. 3 credit hours.

**PL 210 Logic**

Modern symbolic logic and its applications. 3 credit hours.

**PL 215 Nature of the Self**

Investigation of personal identity, human nature, and the mind from ancient, modern, Western, and Eastern perspectives. 3 credit hours.

**PL 222 Ethics**

How shall one live? Critical examination of answers proposed by classic and modern philosophers of the major world traditions. 3 credit hours.

**PL 240 Philosophy of Science and Technology**

Scientific method, the logic of scientific explanation, the application of science to practical problems and questions peculiar to the social sciences. 3 credit hours.

**PL 250 Philosophy of Religion**

An examination of some philosophical notions used in religious discourse, such as meaning, truth, faith, being, God, the holy. 3 credit hours.

**PL 333 Professional Ethics**

Prerequisite: Junior or senior standing or permission of instructor. What does it mean to be a professional? This course examines the relationship between technical competence financial gain, and ethical responsibility. 3 credit hours.

**PL 356 Philosophy of Art**

Corequisite: A course in one of the arts or junior or senior standing. Comparative study of beliefs in cultures around the world about art, beauty, and aesthetics. Topics include definitions of art, natural beauty versus artifice, the nature of aesthetic experience, cultural relativism, and the value of art in an age of science and globalization. 3 credit hours.

**PL 450 Special Topics in Philosophy**

Study of selected topics of special or current interest. 3 credit hours.

**PL 599 Independent Study**

Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

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## POLITICAL SCIENCE

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(†) *indicates Institute of Law and Public Affairs courses.*

**PS 101 Introduction to Politics**

A basic course introducing students to the discipline of political science and its subjects: political theory, law, national government, international relations, comparative government, and political economy. 3 credit hours.

**PS 121 American Government and Politics**

A basic study of the American political system. Constitutional foundations, the political culture, Congress, the Presidency, the judicial system, political parties, interest groups, news media, individual liberties, federalism, the policy-making process. 3 credit hours.

**PS 122 State and Local Government and Politics**

Problems of cities, revenue sharing, community power structures, welfare, public safety, the state political party, big-city political machines, interest groups, state legislatures, the governor, the mayor, courts, and judicial reform. 3 credit hours.

**PS 203 American Political Thought**

Pre-Revolutionary and Revolutionary political thought; classical conservatism, liberalism, Jacksonian democracy, civil disobedience, social Darwinism, progressive individualism, and pluralism. 3 credit hours.

**PS 205 The Politics of the Black Movement in America**

The political development of the Black Movement in America emphasizing ideological, legal, and cultural perspectives. 3 credit hours.

**PS 216 Urban Government and Politics**

A study of the urban political process. Structures and organizations of urban governments, decision making, public policy, the "urban crisis," crime and law enforcement, party politics and elections, taxation and spending patterns, environmental problems, management of urban development. 3 credit hours.

**PS 222 United States Foreign Policy**

An examination of the global foreign policy of the United States and of the process of policy making involving governmental and non-governmental actors. A review of the political, economic, military, and cultural tracks of policy. 3 credit hours.

**†PS 224 Public Attitudes and Public Policy**

A study of the sources of mass political attitudes and behavior and their effect upon public policy. The course will examine the techniques for influencing opinion, including propaganda and mass media communications. 3 credit hours.

**†PS 228 Public Interest Groups**

Examination of group institutions of the American political culture. Emphasis on the legal nature, purpose, and function of each operational organization in the political process. 3 credit hours.

**†PS 229 Legal Communications**

Familiarization with the kinds of legal documents and written instruments employed by participants in the legal process. Recognition and understanding of the purpose of writs, complaints,

briefs, memoranda, contracts, wills, and motions. 3 credit hours.

**†PS 230 Anglo-American Jurisprudence**

Surveys ideas about the nature of law. Legal philosophers examined include Plato, Aristotle, St. Thomas Aquinas, John Austin, William Blackstone, Benjamin Cardozo, L.A. Hart, and Oliver Wendell Holmes. The contribution to legal theory made by various schools of jurisprudence (e.g., positivism, legal realism). 3 credit hours.

**†PS 231 Judicial Behavior**

Examination of the American court system as a political policy-making body. Topics considered include: the structure of the judicial system, the influence of sociological and psychological factors on judicial behavior, and the nature and impact of the judicial decision-making process. 3 credit hours.

**PS 232 The Politics of the First Amendment**

Prerequisite: PS 121. Examination of the political implications of the First Amendment freedoms of speech, press, and religion; Supreme Court adaptation of the First Amendment to changing political and social conditions. 3 credit hours.

**PS 241 International Relations**

Forces and structures operating in the modern nation-state system, the foreign policy process, decision-making process, the impact of decolonization on traditional interstate behavior, economic and political developments since World War II. 3 credit hours.

**PS 243 International Law and Organization**

Prerequisite: PS 241. Traditional and modern approaches to international law and organization; major emphasis on the contribution of law and organization to the establishment of a world of law and world peace. The League of Nations system and the United Nations system are analyzed. 3 credit hours.

**PS 261 Modern Political Analysis**  
Introduction to political analysis, including quantitative and qualitative techniques, systems and data analyses, role and group theory, simulations and projections using computerized models. 3 credit hours.

**PS 281 Comparative Political Systems: Asia**

Traditional and modern political and social structures of China, Japan, Korea, and other Asian states, including the function of the political system within each country. 3 credit hours.

**PS 282 Comparative Political Systems: Europe**

Political characteristics of modern European states. Emphasis on political, social, and economic institutions and structures. Special attention to European integration and the European Union; changes in Eastern Europe and the former USSR. 3 credit hours.

**PS 283 Comparative Political Systems: Latin America**

Political modernization, development in Latin America, political institutions, national identity, leadership, integration, political social-

ization, and political ideologies. 3 credit hours.

**PS 285 Comparative Political Systems: Middle East**

Analysis of the Arab and non-Arab states in the region with particular attention to the political systems, violence, and the problems of tradition vs. modernity. 3 credit hours.

**PS 304 Political Parties**

Prerequisite: PS 121. Voting and electoral behavior, nominations and campaign strategy, pressure groups, political party structure and functions of the party system in the American political community. 3 credit hours.

**PS 308 Legislative Process**

Prerequisite: PS 121. Legislative process in the American political system; legislative functions; selection and recruitment of candidates; legislative leadership, the committee system; lobbyists, decision-making; legislative norms, folkways, and legislative executive relations. 3 credit hours.

**PS 309 The American Presidency**

The role of the President as commander-in-chief, legislative leader, party leader, administrator, manager of the economy, director of foreign policy, and advocate of social justice; nature of presidential decision making, authority, power, influence, and personality. 3 credit hours.

**PS 331 Theory and the Supreme Court**

An examination of the ways in which the Supreme Court exercises judicial review with particular emphasis on the various theories of review as they have evolved from

John Marshall to the present. 3 credit hours.

**PS 332 Constitutional Law**

Prerequisite: PS 121. Principles and concepts of the United States Constitution as revealed in leading decisions of the Supreme Court and the process of judicial review. 3 credit hours.

**†PS 340 Campaign Management: Procedures and Operations**

A study of the procedures and operations of the contemporary political campaign, including issue development, voter registration, canvassing, media usage, fundraising, scheduling, campaign data, etc. 3 credit hours.

**†PS 341 Campaign Management: Structure and Organization**

Exploration of the structure, organization, and management of the campaign operation and the handling, roles, and tasks of the campaign personnel. 3 credit hours.

**†PS 344 Campaign Management: Survey Research, Polling, and Computers**

A study of the uses and interpretation of survey research, polling projects, and computer techniques and their application to political campaigns. 3 credit hours.

**†PS 346 Campaign Management: Financing and Election Laws**

Exploration of the methods used to finance a political campaign; the nature of campaign costs; the role of political action committees; the effects of campaign finance laws; and the technical aspects and political implications of election laws at the federal,

state, and local levels. 3 credit hours.

**PS 350 Public Policy:**

**U.S. National Security**

The development and operation of U.S. military and national security policy from George Washington to the present with major emphasis on the 20th century and post-World War II. 3 credit hours.

**PS 355 Terrorism**

Examination of the modern application of terrorism in international affairs, paying special attention to ideological and infrastructure determinants. 3 credit hours.

**PS 390 Political Modernization**

Comparative analysis of political change and development. Political transition, political integration and nation building; institutional developments; political parties; military elites; youth; intellectuals; the bureaucracy; economic development; and political culture. 3 credit hours.

†**PS 415 Internship in Legal and Public Affairs**

Prerequisite: permission of the instructor is required. Students will have the opportunity to work as paraprofessionals in legislatures, government agencies, and party organizations and to share their experiences with other interns in legal and public affairs. 3 credit hours.

†**PS 450 Campaign**

**Management: Internship**

Actual work experience in campaign management. 3 credit hours.

**PS 461 Political Theory:**

**Ancient and Medieval**

Foundations of Western political thought from the Greek, Roman and medieval experiences as it applies to the total discipline of political science. 3 credit hours.

**PS 462 Political Theory:**

**Modern and Contemporary**

A continuation of the study of political thought from the High Middle Ages to contemporary theorists. 3 credit hours.

**PS 494-498 Special Topics in Political Science**

Special studies on a variety of current problems and specialized areas in the field not available in the regular curriculum. 3 credit hours per course.

**PS 499-500 Senior Seminar**

**in Political Science I and II**

Prerequisite: permission of department chair. Capstone course in which students use the tools of their discipline to examine a selected problem. May be conducted as a proseminar. Required of all political science majors. 3 credit hours per term.

**PS 599 Independent Study**

Directed research on special topics to be selected in consultation with the department chair and a sponsoring faculty member. 3 credit hours.

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## QUANTITATIVE ANALYSIS

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**QA 118 Business Mathematics**

Prerequisite: M109/M127 or successful completion of qualifying math department placement test.

An introduction to mathematical programming and probability and statistics. Topics include solutions to linear equations, break-even analysis, graphical solutions to linear programming problems, mathematical modeling, measures of central tendency and variability, and basic probability concepts. The course presents introductory material to QA 216. 3 credit hours.

**QA 216 Probability and Statistics**

Prerequisite: QA 118 or equivalent. A course in elementary probability and statistical concepts with emphasis on data analysis and presentation; frequency distributions; probability theory; probability distributions, sampling distributions, statistical inference, hypothesis testing. 3 credit hours.

**QA 217 Advanced Statistics**

Prerequisite: QA 216. A course in advanced statistical methods for business. Topics include the analysis of variance, multiple regression, an introduction to the econometric model, times series analysis, chi-square and other nonparametric measures, and an introduction to robust estimation. Students will be required to use personal computers to apply the various statistical techniques covered. 3 credit hours.

**QA 328 Quantitative**

**Techniques in Management**

Prerequisites: QA 217 and junior standing. An introduction to quantitative techniques in management. Topics include linear programming, assignment problems, transportation algorithms, network and inventory models, and decision theory. 3 credit hours.



**QA 350 Quantitative Techniques**  
Prerequisites: QA 217 and junior standing. Advanced applications of quantitative techniques to the solution of business problems. Topics include classical optimization techniques, non-linear programming, topics in mathematical programming, and graph theory. 3 credit hours.

**QA 380 Operations Management**  
Prerequisite: QA 217. Basic review of service and production systems designs and performance evaluation. Topics include operations strategy, staff and production scheduling, Just-in-Time and time-based competition, project management, and the role of technology in service and manufacturing operations. 3 credit hours.

**QA 428 Forecasting for Decision Making**  
Prerequisite: QA 217. Review of different approaches to forecasting used by management at different levels of decision making. Techniques will include smoothing and decomposition, causal and judgmental methods. Computer applications and modeling will be emphasized. 3 credit hours.

**QA 480 Project Management**  
Prerequisite: QA 217. Survey of management techniques applicable to a wide variety of business-related project types. Emphasis on the project management cycle, including selecting, scheduling, budgeting, and controlling projects. Desired qualifications and roles of project managers. Extensive use of project management software will be required. 3 credit hours.

**QA 598 Internship**  
Prerequisite: QA 217. Supervised field experience for qualified students in an area related to operations management or quantitative analysis. 3 credit hours.

**QA 599 Independent Study**  
Prerequisites: QA 118, QA 216, QA 217, and junior standing. Independent research projects or other approved forms of independent study. 3 credit hours.

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## RUSSIAN

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**RU 101-102 Elementary Russian I and II**  
Stresses pronunciation, aural and reading comprehension, basic conversation, and the fundamental principles of grammar. 3 credit hours per term.

**RU 201-202 Intermediate Russian I and II**  
Prerequisites: RU 101-102 or the equivalent. Stresses reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to read in their own areas of interest. 3 credit hours per term.

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## SCIENCE

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*Courses that are marked with an asterisk (\*) are usually scheduled every other academic year. Courses marked with † are offered at the discretion of the department.*

†SC 111-112 Physical Science I and II  
The meaning of scientific concepts and terms and their relation to

other areas of learning and to daily living. Development and unity of physical science as a field of knowledge. Includes astronomy, physics, chemistry, and geology. 3 credit hours per term.

\*SC 126 Astronomy  
An introduction to present concepts concerning the nature and evolution of planets, stars, galaxies, and other components of the universe. The experimental and observational bases for these concepts are examined. 3 credit hours.

†SC 135 Earth Science  
A dynamic systems approach to phenomena of geology, oceanography, and meteorology. Emphasis on interrelations of factors and processes and on importance of subject matter to human affairs. Suitable for non-science as well as science majors. 3 credit hours.

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## OCCUPATIONAL SAFETY AND HEALTH

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**SH 100 Safety Organization and Management**  
History and development of the safety movement, nature and extent of the problem, development of worker's compensation, development of safety programs, cost analysis techniques, locating and defining accident sources, analysis of the human element, employee training, medical services and facilities, and the "what" and "how" of the Occupational Safety and Health Act. 3 credit hours.

**SH 110 Accident Conditions and Controls**

Prerequisite: SH 100. Mechanical hazards, machine and equipment guarding, boilers and pressure vessels, structural hazards, materials handling hazards and equipment use, electrical hazards, personal protective equipment. 3 credit hours.

**SH 200 Elements of Industrial Hygiene**

Prerequisites: PH 103, SH 110; CH 103 or CH 115. Analysis of toxic substances and their effect on the human body. Analysis and effect of chemical hazards, physical hazards of electromagnetic and ionizing radiation, abnormal temperatures and pressure, noise, ultrasonic and low-frequency vibration; sampling techniques including detector tubes, particulate sampling, noise measurement, and radiation detection; governmental and industrial hygiene standards and codes. 3 credit hours.

**SH 210 Sound/Hearing/Noise**

Prerequisite: SH 200. An analysis of three major factors associated with the noise issue; the physics of sound, the biological phenomenon of hearing, and the engineering processes of noise abatement including a review of the OSHA legal standards for noise exposure. 3 credit hours.

**SH 400 Occupational Safety and Health Legal Standards**

Prerequisite: SH 100. All aspects of the legal constraints applicable to the occupational safety field. Includes OSHA, federal laws not under OSHA jurisdiction, selected state legislation, current and pending product liability laws, environmen-

tal protection law, and fire safety codes. Emphasizes particular legal areas as requested. 3 credit hours.

**SH 401 Industrial Hygiene Measurements**

Prerequisite: SH 200. Current methods and techniques used in evaluating the occupational environment. Instruction on how to use the instruments necessary to measure ventilation, nonionizing radiation, airborne contaminants, noise and heat stress. Instruction on how to present data and prepare reports will also be included. 3 credit hours.

**SH 500 Special Topics**

Selected study topics of special or current interest. 3 credit hours.

**SH 599 Independent Study**

Prerequisites: consent of faculty member and chair of department. Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

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## SOCIOLOGY

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**SO 113 Sociology**

The role of culture in society, the person, and personality; groups and group behavior; institutions; social interaction and social change. 3 credit hours.

**SO 114 Contemporary Social Problems**

Prerequisite: SO 113 or consent of instructor. The major problems which confront the present social order; the methods now in practice

or being considered for dealing with these problems. 3 credit hours.

**SO 115 Women in Society**

An overview of women's role in the social system. Discussion includes myths and realities of sex differences. Areas covered include analysis of the relationships of women to the economy, the arts, and the sciences and how these affect the behavior of women in the contemporary world. 3 credit hours.

**SO 214 Deviance**

Prerequisite: SO 113 or consent of the instructor (offered in the spring semester only). Centered around deviance as a social product. The problematic nature of the stigmatization process is explored in such areas as alcoholism, crime, mental illness, and sexual behavior. 3 credit hours.

**SO 218 The Community**

Prerequisite: SO 113 or consent of instructor. The community and its provisions for health, education, recreation, safety, and welfare. Theoretical concepts of community, plus ethnographic studies of small-scale human communities, introduce students to fundamental concepts of community. 3 credit hours.

**SO 220 Physical Anthropology and Archaeology**

An introduction to the study of human evolution and of present physical variations among humankind. Includes geologic time, primate evolution, and early humans and their culture. 3 credit hours.

**SO 221 Cultural Anthropology**

A systematic study of the culture of preliterate and modern societies and of cultural change. Includes analyses of religion, economics, language, social and political organization, and urbanization. 3 credit hours.

**SO 231 Juvenile Delinquency**

Prerequisites: SO 113, P 111. An analysis of delinquent behavior in American society; examination of the theories and social correlates of delinquency and the sociolegal processes and apparatus for dealing with it. 3 credit hours. (See also CJ 221)

**SO 250 Research Methods**

Prerequisite: sophomore status. The student develops the concepts necessary for selection and formulation of research problems in social science, research design and techniques, analysis and interpretation of research data. 3 credit hours.

**SO 310 Primary Group****Interaction**

Prerequisite: SO 113. Exploration of communication in group process. Building a group and analyzing group structure and interaction; the ways people communicate emotionally and intellectually. 3 credit hours.

**SO 311 Criminology**

Prerequisites: P 111, SO 113. An introduction to the principles and concepts of criminology; analysis of the social context of criminal behavior, including a review of criminological theory, the nature and distribution of crime, the sociology of criminal law, and the societal reactions to crime and crimi-

nals. 3 credit hours. (See also CJ 311)

**SO 312 Marriage and the Family**

Prerequisite: SO 113 or consent of instructor. The formation, functioning, and dissolution of relationships in contemporary American society is examined from an applied sociology perspective. 3 credit hours.

**SO 313 Sociology of Sport**

Prerequisite: SO 113 or consent of instructor. A study of the relationships among sport, culture, and society. Emphasis is on both amateur and professional sports and their impact on the larger social order. Course will examine sport from a comparative and historical perspective but also focus on problems confronting the world of sport in contemporary American society. 3 credit hours.

**SO 315 Social Change**

Prerequisite: SO 113 or consent of instructor. Sources, patterns, and processes of social change with examination of classical and modern theories of major trends and developments as well as studies of perspectives on microlevels of change in modern society. 3 credit hours.

**SO 320 Social Psychology**

Prerequisites: P 111, SO 113. The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development, and modification; group interaction analysis; social conformity; social class and human behavior. 3 credit hours. (See also P 321.)

**SO 321 Social Inequality**

Prerequisite: SO 113 or consent of instructor. Organization of social class: status, power, and process of social mobility in contemporary society. Social stratification, its functions and dysfunctions, as it relates to the distribution of opportunity, privilege, and power in society. 3 credit hours.

**SO 331 Population and Ecology**

Prerequisite: SO 113 or consent of instructor. Societal implications of population changes and trends; impact of humans as social animals on natural resources, cultural values, and social structures; influence on environmental ethics. 3 credit hours.

**SO 333 Sociology of Aging**

Prerequisite: SO 113 or consent of instructor. The sociological phenomena connected with aging in America. Discussion of the connections between personal troubles and social issues encountered by members of this society as they age. An examination of age stratification and the resultant problems of ageism, prejudice, and discrimination. Systematic review of major theoretical framework and research studies; emphasis will be placed on the application of sociological theory and research in the field of aging. 3 credit hours.

**SO 337 Human Sexuality**

Prerequisite: SO 113 or consent of instructor. A scientific study of human sexual behavioral patterns, social class attitudes, and cultural myths. Topics include reproductive systems, sexual attitudes and behavioral patterns, abortion and sexual laws, and variations in sexu-

al functioning. 3 credit hours.

#### SO 340 Medical Sociology

Prerequisite: SO 113 or consent of instructor. An analysis of a major social institution, the health care field. Emphasis placed on socio-cultural aspects of the field; general overview of the organization and delivery of health care services and current problems and issues. 3 credit hours.

#### SO 350 Social Survey Research

Prerequisite: P 301 or M 228. Introduction to the logic of social science by a survey research project. Emphasis on the use of computer software in analyzing large data sets. Topics include theory development, survey design, sampling, methods of data collection, and statistical analysis of social science data. This course is part of the computer literacy component of the University Core Curriculum. 3 credit hours.

#### SO 390 Sociology of Organizations

Prerequisite: SO 113 or consent of instructor. Classic sociological theories of organization with emphasis on the concepts of bureaucracy, scientific management, human relations, and decision theory. The relevance of these ideas to concrete organization contexts; e.g., civil service, business, social movements and political parties, charitable institutions, hospitals. 3 credit hours.

#### SO 400 Minority Group Relations

Prerequisite: SO 113 or consent of instructor. An interdisciplinary analysis of minority groups with particular attention paid to those regional, religious, and racial fac-

tors that influence interaction. Designed to promote an understanding of subgroup culture. 3 credit hours.

#### SO 413 Social Theory

Prerequisites: nine semester hours in sociology. An analysis of the development of sociology in the nineteenth and twentieth centuries with particular emphasis on the theories of Comte, Durkheim, Simmel, Weber, Marx, deTocqueville, and others. 3 credit hours.

#### SO 418 Public Opinion and Social Pressure

Prerequisites: SO 113, P 111. An intensive analysis of the nature and development of public opinion with particular consideration of the roles, both actual and potential, of communication and influence. 3 credit hours.

#### SO 440 Undergraduate Seminar

Prerequisite: consent of department chair. A detailed examination of selected topics in the field of sociology and a critical analysis of pertinent theories with emphasis on modern social thought. 3 credit hours.

#### SO 441 Sociology of Death and Suicide

Prerequisite: SO 113 or consent of instructor. A confrontation with individual mortality and an academic investigation of such phenomena as funerals, terminal illness, and crisis intervention, among many others. 3 credit hours.

#### SO 450 Research Seminar

Prerequisite: P 301 or M 228. The student develops and carries out an

original research project in social science, reporting this procedure to the class. 3 credit hours.

#### SO 451-455 Special Topics in Sociology, Social Services, Anthropology

Prerequisites: SO 113, SO 221, or permission of instructor. Special topics in sociology, anthropology, or social welfare on a variety of current problems and specialized areas not available in the regular curriculum. 3 credit hours.

#### SO 501-502 Practicum I and II

Prerequisite: consent of department chair. Field experience in sociology or anthropology. Seminars in conjunction with this experience before off-campus field work is undertaken. Contact during the field work experience and guidance by the mentor provide an opportunity for understanding group and individual dynamics and their repercussions. Follow-up seminars and a paper are required. 1-6 credit hours.

#### SO 599 Independent Study

Prerequisites: consent of instructor and department chair. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours.

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## SPANISH

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#### SP 101-102 Elementary Spanish I and II

Focuses on the fundamental principles of grammar. Extensive vocabulary and pronunciation exercises. In SP 102 aural comprehension

and pronunciation are tested by oral examination. 3 credit hours per term.

**SP 201-202 Intermediate Spanish I and II**

Prerequisites: SP 101-102 or equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to read in their own areas of interest. 3 credit hours per term.

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## SOCIAL WELFARE

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**SW 220 Introduction to Social Services**

Introduction to social services explores two basic questions from a historical perspective: Why are people poor, and how have societies responded to the conditions of poverty? Focus on how the different economic, political, psychological, and sociological arrangements of society and its social institutions create conditions which stimulate and necessitate differing social welfare responses. 3 credit hours.

**SW 340 Group Dynamics**

Prerequisite: consent of instructor. Designed for students who seek to develop their leadership skills in working with groups of various types. Explore cognitive and behavioral mastery of a range of complex variables for role effectiveness, including a working knowledge of personal, group, and organizational dynamics; professional skills of facilitation; and values of one's professional identity. 3 credit hours.

**SW 401-402 Field Instruction I and II**

Supervised experience relevant to specific aspects of social services in human service agencies, institutions, and organizations at the local, state, and federal levels. Seminars to assist students with the integration of theoretical knowledge and field techniques through lectures and class presentations. Students are required to spend eight hours a week in the field. 3 credit hours each term.

**SW 415-416 Methods of Intervention I and II**

Basic social work theory in conjunction with practice of skills to help students begin to develop professional techniques for intervention at both the macro and micro levels of practice. 3 credit hours each term.

**SW 599 Independent Study**

Prerequisite: consent of the instructor. Designed to permit students to pursue specific areas of interest which may not be available in the regular curriculum. 1-3 credit hours.

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## THEATRE ARTS

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**T 131 Introduction to the Theatre**

Play analysis from a literary standpoint and as it relates to special problems of the actor, director, designers, and backstage personnel. Practical work in all phases within the classroom. Fall semester. 3 credit hours.

**T 132 Theatrical Style**

Study of dramatic genres and theatrical conventions through script

and critical reading, as well as practical work in class. Spring semester. 3 credit hours.

**T 241 Early World Drama and Theatre**

Dramatic literature in theatrical contexts from Classical Greece through Restoration England. 3 credit hours.

**T 242 Modern World Drama and Theatre**

Dramatic literature in theatrical contexts from Realism through the nineteenth century to the present. Includes ethnic drama. 3 credit hours.

**T 341 Acting**

Developing of acting skills for the stage through games, improvisation, and scene study. 3 credit hours.

**T 342 Play Directing**

Prerequisite: consent of instructor. Fundamentals of directing, staging techniques, working with actors, and direction of a one-act play for workshop presentation. 3 credit hours.

**T 491-492 Production Practicum I and II**

Prerequisite: consent of instructor. Practicum in various areas of theatre: acting, directing, administration, technical theatre, and design. Will be directly related to departmental productions. 3 credit hours each.

**T 599 Independent Study**

Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 3 credit hours.

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## TOURISM ADMINISTRATION

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**TA 165 Introduction to Tourism**  
All major elements of tourism will be examined, including customer travel patterns, transportation systems, major tourism suppliers, and distribution systems. The role of the hospitality industry will be explored in relationship to domestic and foreign tourism. 3 credit hours.

**TA 166 Touristic Geography I – The Western Hemisphere**  
A study of travel patterns and destinations in the Western Hemisphere. Included are the major highlights of North America, Central America, the Caribbean, South America, and the Antarctic. 3 credit hours.

**TA 167 Touristic Geography II – The Eastern Hemisphere**  
In this second course in touristic geography, the emphasis is on major destinations in the Eastern Hemisphere – the Middle East, South and East Asia, South Pacific, Pacific Islands, and Africa. The study gives the student a well-founded knowledge of these areas. 3 credit hours.

**TA 228 Human Resource Management for the Hospitality and Tourism Industry**  
Prerequisite: TA 165. Provides the knowledge required to formulate and manage effectively the human resources in a hospitality-and-tourism related operation. Manpower analysis, organizational needs, job designs, recruitment

process, and other human resource topics are studied. 3 credit hours. (See also CA 228, HR 228)

**TA 260 Transportation Systems I – Air, Rail and Vehicular**  
As travelers journey to their destinations, whether national or international, various means of transportation are essential. Studied are the global airline industry, the resurgence of worldwide rail services, the international shipping industry, and the numerous modes of vehicular travel, from the automobile to the motor coach and the phenomenal surge in sports utility vehicles. 3 credit hours.

**TA 261 Transportation Systems II – Shipping and Cruising**  
Cruising the high seas has become one of the best methods of relaxation for holiday travel. Innovations for the 21st Century include larger ships, now carrying almost 3,000 passengers, with such on-board amenities as ice skating rinks, incredibly furnished spas and exercise rooms, shopping “streets” with sidewalk cafes, Las Vegas shows and gambling casinos. An in-depth study of these floating resorts is conducted. 3 credit hours.

**TA 275 Connecticut Tourism in the 21st Century**  
How did Connecticut emerge as a viable tourism destination from its former connotation as a drive-through state? What now makes travelers stop to visit the state? How did Connecticut become a favorite weekend destination for New Yorkers and Bostonians? How did one of its many inns gain

the reputation as being “the finest in New England?” Included are visits to heritage sites, parks, and the two casinos at Foxwoods and Mohegan Sun. 3 credit hours.

**TA 280 Legal Aspects of Hospitality, Tourism, and Clubs**  
One of the most intricate studies is that of tourism law. The ever-changing regulations not only impact the global traveler but also the airlines, ships, railways, hotels, automotive services, and motor coaches. Newcomers to the field are ecotourism and the environment. This course studies the complexity of these interrelated industries. 3 credit hours. (See also HR 280)

**TA 322 Marketing for Tourism, Hospitality, and Private Clubs**  
Prerequisite: TA 165. An analysis of the essential marketing principles as currently applied in the hospitality, tourism and club industries. The hospitality marketing mix will be evaluated in terms of specific applications used in all three industry segments. 3 credit hours. (See also HR 322)

**TA 335 Convention and Meeting Planning**  
As corporate meetings and conventions continue to increase in the worldwide tourism market, one of the newer and important career paths is that of professional meeting planners. Included in their sphere of responsibility are the meeting/organization agenda, site selection, meal planning, transportation, schedule of events, break-out sessions, leisure activities, finances, and evaluation. 3 credit hours.

**TA 340 Tourism Planning and Policy**

A comprehensive review of the tourism planning and policy process used to develop or modify major tourism destinations. Aspects of the process include goals and objectives; the use of environmental, economic, marketing, topographical, and political studies; and monitoring and control procedures to assure proper planning and policy implementation. Focus on considering both tourism benefits and costs in assessing net impacts. 3 credit hours.

**TA 345 Tourism Economics**

Prerequisite: EC 133 or 134 or consent of instructor. An application of economic principles and research methods to tourist and tourism industry behavior. Practical research methods for assessing economic, social, and environmental benefits and costs of tourism development are examined. 3 credit hours.

**TA 360 Corporate Travel Planning**

As airlines and hotels are funneling most of their energy, services, and amenities toward the corporate traveler, bidding for a corporate account (RFP) and servicing it successfully are exacting arts. Every aspect of the industry is covered, including automation, cost-cutting strategies, and professionalism. 3 credit hours.

**TA 370 Tourism and the Gaming Industry**

This course provides an introduction to the casino industry and examines its phenomenal growth and relationship to tourism and

community development. Focus is on the concepts and definitions essential for understanding the industry and on links of its history to current gaming practices. Particular attention is paid to noted casinos in Monte Carlo, Las Vegas, and Atlantic City as well as Connecticut's Foxwoods and Mohegan Sun. 3 credit hours.

**TA 380 Resort Operations**

A comprehensive review of resort operations. Content covered includes the history and development of resorts, guest services, and resort recreation functions. Students are expected to create innovative resort facilities and programs. Field trips to local resort properties may be required. 3 credit hours.

**TA 410 International Tourism**

Institutions which run the international tourism industry are reviewed. The relationship between these institutions and various nations will be discussed. Participants will become familiar with the policy implications of operating in a multinational political, social, and economic environment. 3 credit hours.

**TA 420 The Impact of Tourism on the International System**

Tourism impacts the destination community and the tourist. Topics will cover the effect of tourism development on the destination environment. This course assesses the international response to the local effects of tourism. 3 credit hours.

**TA 430 Special Interest and Adventure Tourism**

Investigates the extraordinary and ever-increasing field of special

interest tourism. Provides an overview of the niche that each aspect of special interest tourism contributes to the development of the tourism industry. Adventurous travel from dog sledding in Greenland to dugout canoes in the tropics, from ballooning in the French chateaux country and Masai Mara to heli-hiking and sightseeing in the Rockies. Included also is travel for the disabled and the adventurer. 3 credit hours.

**TA 445 Cultural Heritage Tourism**

An in-depth examination of the concepts and issues relevant to the development of tourism based on cultural, historic, and natural resources. Included is the contribution of historic preservation, the arts, and the humanities to tourism and the tourist, along with opportunities for the growth of this segment of the industry. Interactions with various cultures and the complexity of these interactions are discussed. 3 credit hours.

**TA 450 Tourism Dimensions in Contemporary Society**

This course reviews the dynamics of the multifaceted tourism industry, often described as a 17-part conglomerate. Worldwide tourism is studied from historical, social, international, economic and environmental perspectives. Tourism's impact on the community and fundamental changes in the future of tourism are explored. 3 credit hours.

**TA 470 Tour Design, Marketing, and Management**

This course studies the design,

operation, and management of the escorted tour. Instruction covers the entire process for the tour operator from initial contact to finished product. During the semester, each student plans a tour from beginning to end, designs and writes the brochure, prices the arrangements, and shows how to successfully operate the finished product. 3 credit hours.

#### TA 480 Ecotourism

This course draws together information on the rapidly evolving field of ecotourism. Examined are the effects of tourism on indigenous wildlife and human cultures, natural resource management, and techniques for developing sustainable tourism for future generations. 3 credit hours.

#### TA 490-494 Special Topics

These courses provide additional detailed instruction on selected topics. Topics include, but are not limited to, the legal ramifications of tourism, tourist behavior, and sustainable development. 3 credit hours.

#### TA 495-499 Advanced Special Topics

Specialized courses in topics not previously covered. Subject matter may include, but is not limited to, advances in tourism research, technology and tourism, and exotourism. 3 credit hours.

#### TA 510 Internship

Prerequisites: 600 hours of practicum and consent of the instructor. Interns are required to complete 600 hours of field experience in tourism or a related indus-

try. The internship will emphasize supervisory responsibilities whenever possible. Faculty, students, and industry professionals will actively cooperate to help ensure the student's success with this experience. The internship will be augmented by selected management readings, written and oral reports, daily journals, and faculty/professional industry management appraisals and conferences. 3 credit hours.

#### TA 599 Independent Study

Prerequisite: permission of the department coordinator. Independent research projects or other approved forms of independent study. 3 credit hours.



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# UNDERGRADUATE ACADEMIC CALENDAR 2004 – 2006

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## FALL SEMESTER 2004

<b>August</b>	Tuition and residence charges due Residence halls open for new students at 10 a.m. Orientation Residence halls open for returning students	Monday, Aug. 2 Sunday, Aug. 29 Sunday-Tuesday, Aug. 29-31 Monday, Aug. 30
<b>September</b>	Classes begin Labor Day—no classes Last day to submit an ADD card	Wednesday, Sept. 1 Monday, Sept. 6 Wednesday, Sept. 15
<b>October</b>	Last day to petition for January graduation Last day to drop a course	Friday, Oct. 15 Friday, Oct. 15
<b>November</b>	Residence halls close at 5:30 p.m. Thanksgiving Weekend—no classes	Tuesday, Nov. 23 Wednesday-Saturday, Nov. 24-27
<b>December</b>	Classes end Reading days Evening exams begin Day exam period Last day of the semester Residence halls close at 7 p.m.	Monday, Dec. 13 Tuesday-Wednesday, Dec. 14-15 Wednesday, Dec. 15 Thursday-Tuesday, Dec. 16-21 Tuesday, Dec. 21 Tuesday, Dec. 21
<b>January</b>	Commencement, 2 p.m.	Saturday, Jan. 15, 2005

## INTERSESSION 2005

<b>January</b>	Classes begin	<b>Monday, Jan. 3</b>
	Martin Luther King Day–no classes	<b>Monday, Jan. 17</b>
	Classes end	<b>Thursday, Jan. 20</b>

## SPRING SEMESTER 2005

<b>January</b>	Tuition and residence charges due	<b>Monday, Jan. 3</b>
	Residence halls open for new students	<b>Wednesday, Jan. 19</b>
	Orientation	<b>Thursday, Jan. 20</b>
	Residence halls open for returning students	<b>Thursday, Jan. 20</b>
	Classes begin	<b>Friday, Jan. 21</b>
<b>February</b>	Last day to submit an ADD card	<b>Friday, Feb. 4</b>
	Presidents' Day–no classes	<b>Monday, Feb. 21</b>
<b>March</b>	Last day to petition for May graduation	<b>Tuesday, Mar. 1</b>
	Last day to drop a course	<b>Friday, Mar. 4</b>
	Residence halls close at 5:30 p.m.	<b>Friday, Mar. 4</b>
	Spring Recess–no classes	<b>Monday-Saturday, Mar. 7-12</b>
	Classes resume	<b>Monday, Mar. 14</b>
	No Classes	<b>Friday, Mar. 25</b>
<b>May</b>	Classes end	<b>Monday, May 9</b>
	Reading days	<b>Tuesday-Wednesday, May, 10-11</b>
	Evening exams begin	<b>Wednesday, May 11</b>
	Day exam period	<b>Thursday-Tuesday, May 12-17</b>
	Last day of the semester	<b>Tuesday, May 17</b>
	Residence halls close at 5:30 p.m.	<b>Tuesday, May 17</b>
	Commencement, 10 a.m.	<b>Saturday, May 21</b>

## SUMMER SESSIONS 2005

<b>May</b>	First Summer Session classes begin	<b>Wednesday, May 18</b>
	Memorial Day–no classes	<b>Monday, May 30</b>
<b>June</b>	Last day to petition for August awarding of degrees	<b>Wednesday, June 15</b>
	First Summer Session ends	<b>Tuesday, June 28</b>
<b>July</b>	Independence Day–no classes	<b>Monday, July 4</b>
	Second Summer Session classes begin	<b>Tuesday, July 5</b>
<b>August</b>	Second Summer Session ends	<b>Monday, Aug. 15</b>

## FALL SEMESTER 2005

<b>August</b>	Tuition and residence charges due	<b>Monday, Aug. 1</b>
	Residence halls open for new students at 10 a.m.	<b>Sunday, Aug. 28</b>
	Orientation	<b>Saturday-Tuesday, Aug. 28-30</b>
	Residence halls open for returning students	<b>Monday, Aug. 29</b>
	Classes begin	<b>Wednesday, Aug. 31</b>
<b>September</b>	Labor Day–no classes	<b>Monday, Sept. 5</b>
	Last day to submit an ADD card	<b>Wednesday, Sept. 14</b>
<b>October</b>	Last day to petition for January graduation	<b>Monday, Oct. 17</b>
	Last day to drop a course	<b>Friday, Oct. 21</b>
<b>November</b>	Residence halls close at 5:30 p.m.	<b>Tuesday, Nov. 22</b>
	Thanksgiving Weekend–no classes	<b>Wednesday-Saturday, Nov. 23-26</b>
<b>December</b>	Classes end	<b>Monday, Dec. 12</b>
	Reading Days	<b>Tuesday-Wednesday, Dec. 13-14</b>
	Evening exams begin	<b>Wednesday, Dec. 14</b>
	Day exam period	<b>Thursday-Tuesday, Dec. 15-20</b>
	Last day of the semester	<b>Tuesday, Dec. 20</b>
	Residence halls close at 7 p.m.	<b>Tuesday, Dec. 20</b>
<b>January</b>	Commencement, 2 p.m.	<b>Saturday, Jan. 17, 2006</b>

## INTERSESSION 2006

<b>January</b>	Classes begin	<b>Tuesday, Jan. 3</b>
	Martin Luther King Day—no classes	<b>Monday, Jan. 16</b>
	Classes end	<b>Wednesday, Jan. 24</b>

## SPRING SEMESTER 2006

<b>January</b>	Tuition and residence charges due	<b>Tuesday, Jan. 3</b>
	Residence halls open for new students	<b>Tuesday, Jan. 24</b>
	Orientation	<b>Tuesday-Wednesday, Jan. 24-25</b>
	Residence halls open for returning students	<b>Wednesday, Jan. 25</b>
	Classes begin	<b>Thursday, Jan. 26</b>
<b>February</b>	Last day to submit an ADD card	<b>Thursday, Feb. 9</b>
	Presidents' Day—no classes	<b>Monday, Feb. 20</b>
<b>March</b>	Last day to petition for May graduation	<b>Wednesday, Mar. 1</b>
	Last day to drop a course	<b>Friday, Mar. 10</b>
	Residence halls close at 5:30 p.m.	<b>Friday, Mar., 10</b>
	Spring Recess—no classes	<b>Monday-Saturday, Mar. 13-18</b>
	Classes resume	<b>Monday, Mar. 20</b>
<b>April</b>	No Classes	<b>Thursday-Friday, Apr. 13-14</b>
<b>May</b>	Classes end	<b>Monday, May 15</b>
	Reading days	<b>Tuesday-Wednesday, May 16-17</b>
	Evening exams begin	<b>Wednesday, May 17</b>
	Day exam period	<b>Thursday-Tuesday, May 18-23</b>
	Last day of the semester	<b>Tuesday, May 23</b>
	Residence halls close at 7 p.m.	<b>Tuesday, May 23</b>
	Commencement, 10 a.m.	<b>Saturday, May 27</b>

## SUMMER SESSIONS 2006

<b>May</b>	First Summer Session classes begin Memorial Day–no classes	<b>Wednesday, May 24</b> <b>Monday, May 29</b>
<b>June</b>	Last day to petition for August awarding of degrees First Summer Session ends	<b>Thursday, June 15</b> <b>Friday, June 30</b>
<b>July</b>	Independence Day–no classes Second Summer Session classes begin	<b>Tuesday, July 4</b> <b>Wednesday, July 5</b>
<b>August</b>	Second Summer Session ends	<b>Friday, Aug. 11</b>

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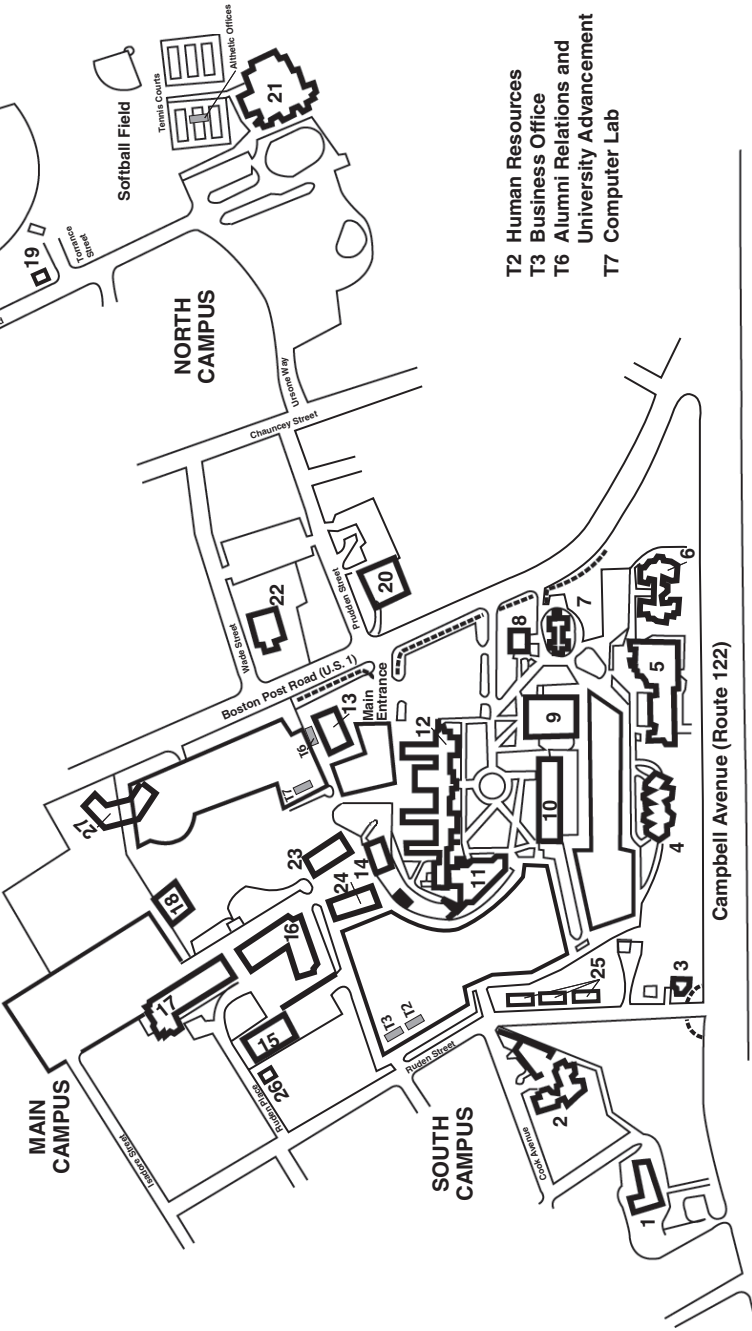
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**CAMPUS MAP KEY**

- 1 Harugari Hall—The Tagliatela School of Hospitality & Tourism
- 2 South Campus Hall—School of Public Safety & Professional Studies/Registrars
- 3 1124 Campbell Avenue
- 4 Kaplan Hall—classrooms
- 5 Dodds Hall—Dodds Theatre/classrooms/Henry Lee Institute of Forensic Science
- 6 Bethel Hall (residential)
- 7 Gate House—Graduate Admissions
- 8 Campus Store/University Police
- 9 Bartels Hall—the campus center
- 10 Buckman Hall—School of Engineering & Applied Science
- 11 Marvin K. Peterson Library
- 12 Maxcy Hall—Administration/ Faculty/classrooms College of Arts & Sciences/School of Business

- 13 Bayer Hall—Undergraduate Admissions & Financial Aid
- 14 Psychology Building
- 15 Dunham Hall (residential)
- 16 Sheffield Hall (residential), Health Services
- 17 Winchester Hall (residential)
- 18 Arbeiter Maenner Chor
- 19 Athletic Offices
- 20 Echlin Hall—EMBA/computer center
- 21 Charger Gymnasium
- 22 Dental Hygiene Clinic
- 23 Norman I. Botwinik Hall (residential)
- 24 Roland M. Bixler Hall (residential)
- 25 Ruden Street Apartments (residential)
- 26 15 Ruden Place
- 27 New Residence Hall

- T2 Human Resources
- T3 Business Office
- T6 Alumni Relations and University Advancement
- T7 Computer Lab





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