Equal Opportunity/Affirmative Action

George Mason University is an Equal Opportunity/Affirmative Action institution. See General Policies section in this catalog for a full statement of the university's Equal Opportunity/Affirmative Action policies.

The Catalog

Although this catalog was prepared on the basis of the best information available at the time of publication, all information, including statements of tuition and fees, course offerings, and admissions and graduation requirements, is subject to change without notice or obligation.

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Programs of Study
Programs of Study

Undergraduate Degrees, Certificates, and Preprofessional Study
Existing or planned for 1992-93

Undergraduate Degrees
(Department offering degree is noted where not obvious.)

Accounting B.S.
Administration of Justice B.S. (Public Affairs Dept.)
American Studies B.A.
Anthropology B.A.
Area Studies B.A.
Art B.A.
Biology B.A., B.S.
Chemistry B.A., B.S.
Classical Studies B.A.
Computer Science B.S.
Dance B.A., B.F.A.
Decision Sciences and Management
   Information Systems B.S.
Economics B.A., B.S.
Electrical Engineering B.S.
English B.A.
Finance B.S.
Foreign Languages B.A.
General Business Administration B.S.
Geography B.A.
Geology B.A., B.S.
Government and Politics B.A.
   (Public Affairs Dept.)
Health Education B.S.Ed. (Human Services Dept.)
History B.A.
Individualized Study B.I.S. (Academic Affairs)
International Studies B.A. (Public Affairs Dept.)
Management B.S.
Marketing B.S.
Mathematics B.A., B.S.
Medical Technology B.S. (Biology Dept.)
Music B.A., B.M.
Nursing B.S.N.
Parks, Recreation, and Leisure Studies B.S.
   (Human Services Dept.)
Philosophy B.A.
Physical Education B.S.Ed. (Human Services Dept.)
Physics B.A., B.S.
Psychology B.A., B.S.
Public Administration B.S. (Public Affairs Dept.)
Social Work B.S. (Human Services Dept.)
Sociology B.A.
Speech Communication B.A.
Systems Engineering B.S. (Information Software and Systems Engineering Dept.)
Theater B.A.
Urban Systems Engineering B.S.

Certificate Programs
Applied Archaeology
Canadian Studies
Cartography
Environmental Management
Gerontology
Operations Research and Applied Statistics
Psychology Technician
Translation

Preprofessional Study
Predental
Predivinity
Prelaw
Premedical
Prepharmacy
Preteaching
Preveterinary
Graduate Degrees and Certificates

See the Graduate Catalog for complete information about admission to the Graduate School and descriptions of the programs listed here.

Graduate and Professional Degrees

(Department offering degree is noted where not obvious.)

Accounting M.S.
Applied and Engineering Physics M.S.
Biology M.S.
Business Administration M.B.A., E.M.B.A.
Chemistry M.S.
Community College Education D.A. (Center for Community College Education)
Computational Sciences and Informatics Ph.D. (Center for Computational Statistics)
Computer Science M.S.
Conflict Analysis and Resolution M.S., Ph.D. (Institute for Conflict Analysis and Resolution)
Counseling and Development M.Ed. (Graduate School of Education)
Creative Writing M.F.A. (English Dept.)
Curriculum and Instruction M.Ed. (Graduate School of Education)
Dance M.F.A.
Economics M.A., Ph.D.
Education D.A.Ed. (Graduate School of Education)
Education Leadership M.Ed. (Graduate School of Education)
Electrical Engineering M.S. (Electrical and Computer Engineering Dept.)
English M.A.
Environmental Science and Public Policy Ph.D. (Biology Dept.)
Foreign Languages M.A.
Geographic and Cartographic Sciences M.S. (Geography and Earth Systems Science Dept.)
History M.A. (History)
Information Systems M.S. (Information and Software Systems Engineering Dept.)
Information Technology Ph.D. (School of Information Technology and Engineering)
Interdisciplinary Studies M.A.I.S. (Graduate School)
International Transactions M.A.I.S. (Graduate School)
Law J.D. (School of Law)
Mathematics M.S.
Music M.A.
Nursing M.S.N., Ph.D.
Operations Research and Management Science M.S.
Physical Education M.S. (Human Services Dept.)
Psychology M.A., Ph.D.
Public Administration M.P.A. (Public Affairs Dept.)
Public Policy Ph.D.
Sociology M.A. (Sociology and Anthropology Dept.)
Software Systems Engineering M.S. (Information and Software Systems Engineering Dept.)
Special Education M.Ed. (Graduate School of Education)
Systems Engineering M.S. (Systems Engineering Dept.)
Taxation M.S. (Accounting and Business Legal Studies Dept.)
Telecommunications M.A. (Graduate School)

Certificate Programs

Command, Control, Communications, and Intelligence (C3I) Systems Engineering
Community College Education (diploma)
Federal Statistics
Gerontology
International Nursing
Nursing Administration
Nursing Education
Software Systems Engineering
Teaching of English as a Second Language
Translation
Academic Calendar
Academic Calendar, 1992-93

Fall Semester 1992

August 31
First day of classes.

September 7
Labor Day; university closed.

September 15
Last day for schedule adjustment and registration.

October 2
Last day to drop without dean's permission.

October 11-13
Columbus Day recess (Monday classes and laboratories meet on Wednesday this week only).

October 30
Incomplete work from Spring and Summer 1992 semesters due to instructor.

November 6
Incomplete grades due to registrar.

November 26-29
Thanksgiving recess; university closed.

December 12
Last day of classes.

December 14-19
Examinations (for times, see Schedule of Classes).

January 25
First day of classes.

February 8
Last day for schedule adjustment and registration.

February 26
Last day to drop without dean's permission.

March 14-21
Spring recess.

March 26
Incomplete work from Fall 1992 semester due to instructor.

April 2
Incomplete grades due to registrar.

May 8
Last day of classes.

May 10-15
Examinations (for times see Schedule of Classes).

May 22
Commencement.

May 31
Memorial Day observed; university closed.

June 1
Summer Term begins.

Spring Semester 1993

January 16
Winter degree date.

Refer to the Schedule of Classes for specific term-related information such as filing dates for commencement, last day to pay tuition, pre-registration dates, etc.
Summer Term 1993
Summer Term consists of three sessions of five or eight weeks from June 2 to August 6. More than 650 day or evening classes are scheduled, making it possible to earn up to 14 credits. For details, consult the Summer Term Catalog, available in early March.

Testing Calendar for National Exams
On-Campus Testing Calendar for 1992-93.

GMAT 10/17, 1/16, 3/20, 6/19
GRE 10/10, 12/12, 2/6, 4/17, 6/5
LSAT 10/3, 12/5, 2/13
MCAT 4/17, 9/18
MAT Monthly

To request registration booklets for GMAT, GRE, NTE, and TOEFL, call Educational Testing Service, Washington, D.C., (202) 659-0620
To request MCAT registration booklets, call: (319) 337-1276.
Profile of George Mason University
Profile of George Mason University

George Mason University is a dynamic, forward-looking institution that provides a diverse and interactive curriculum to educate students for life in a rapidly changing, highly technical world. More than 21,000 students study in almost 100 degree programs at the undergraduate, master's, doctoral, and professional levels. By emphasizing high technology, public policy, and the fine and performing arts, the university has formed links with the community by meeting its needs while taking advantage of the best it has to offer in people and resources. Its innovative programs and visionary outlook have attracted a faculty of world-renowned scholars and teachers.

Both George Mason and surrounding Fairfax County have experienced phenomenal development over the past several years. From its beginning in 1957 as a two-year branch of the University of Virginia, George Mason has grown into a comprehensive institution offering degrees through the doctoral level. From a rural suburb of Washington, D.C., Fairfax County has developed into a center of high technology enterprise, promising to rival the West Coast's Silicon Valley and the Boston area's Route 128 corridor.

The university's growing stature and reputation are exemplified by the presence of Virginia's first Nobel laureate, economist James Buchanan. The George Mason professor won the 1986 Nobel Prize in economics for his public choice theory of political decision-making. Buchanan is executive director of the university's Center for Study of Public Choice, which applies scientific economic methods to the "public choice behavior" of voters, party leaders, and other politicians, lobbyists, and bureaucrats. This center and 70 other GMU centers and institutes enhance university scholarship and contribute, both directly and indirectly, to the intellectual growth of the George Mason student.

Location

Located in Northern Virginia, George Mason is convenient to all the resources of the nation's capital and the greater Washington, D.C., metropolitan area. Situated on 583 wooded acres near the City of Fairfax, the university's Fairfax Campus combines the quiet of a suburban setting with accessibility to Washington's libraries, galleries, and museums; Virginia's historic sites; and Fairfax County's high-technology firms. Metrorail, the Washington area's subway system, enables GMU riders to reach the U.S. Capitol in 35 minutes. It also provides a quick ride to GMU's 5.2-acre Arlington Campus, which houses the law school, a professional center, and a conference center.

Programs

The university's main academic divisions are the College of Arts and Sciences, Institute of the Arts, Graduate School of Education, School of Business Administration, School of Information Technology and Engineering, School of Nursing, Graduate School, and School of Law. GMU offers more than 100 degree programs, including 53 undergraduate, 35 master's, 11 doctoral, and a juris doctor degree.

Many innovative and distinctive programs are available. For example, the university's Plan for Alternative General Education (PAGE), an interdisciplinary program, received the 1986 G. Theodore Mitau Award for Innovation and Change in Higher Education from the American Association of State Colleges and Universities. The George Mason English Department, with several noted writers on its faculty, is establishing a national reputation. Its seminars and workshops attract many internationally known authors as workshop leaders and seminar speakers.

Students

The majority of the university's approximately 21,000 students are from Virginia, with the other 49 states and 88 foreign countries well represented in the student body. While full-time undergraduates, 18 to 24 years in age, make up the largest student group, part-time graduate and undergraduate students, 25 and up, are growing in numbers. George Mason welcomes qualified students with a wide range of interests and backgrounds.
Faculty
The university's 643 full-time instructional faculty members are experts in a broad range of fields, who have published widely, contributed to major research findings, and consulted with government and business. The faculty includes a Nobel laureate, winners of awards from the Guggenheim Foundation and the National Endowments for the Arts and the Humanities, and winners of Fulbright Awards and Mellon Fellowships.

Of particular interest to undergraduates are the Robinson Professors, outstanding scholars in the liberal arts and sciences who have come to George Mason from prestigious positions elsewhere. They are concerned with broad and fundamental intellectual issues, and are dedicated to undergraduate teaching. The Schedule of Classes printed every semester gives details about courses being taught by Robinson Professors.

Campus Facilities
George Mason has matched its rapid development with a carefully planned building program. Its academic facilities include modern classroom buildings and state-of-the-art scientific laboratories and computer centers supporting student class work and faculty research.

A leader in the use of information technology, Mason's several state-of-the-art mainframe computers, including IBM 4381 and Digital VAX 6420 and 8530 systems, provide large-scale, contemporary software environments. Several hundred microcomputers (primarily IBM PC compatibles) are available for student use in general-purpose, open-access computer laboratories in many of the academic classroom buildings, the library, residence halls, and other key locations, providing access to a variety of microcomputer-based software and to the mainframes. Additional computing facilities, used for special applications such as artificial intelligence, computer graphics, elementary and secondary teacher education, library searching, and English composition, are also available in their specific academic departments and research centers. Students have ready access to computing throughout the campus by means of MASONet, a campus-wide data communications network. All academic buildings are linked to the central Computer Center through MASONet, and a student with the capability at home can dial-in to the network.

Automation also aids students using the university's library facilities. The five-story Fenwick Library is a leader in the field of applying computer technology to library functions and services. XLibris, the on-line library information system, is available for patron use in the library and from other campus locations, and includes the university's on-line catalog, the Washington Research Library Consortium catalog, and numerous periodical indexes. Also available is CD-ROM and dial-up access to more than 300 data bases of interest to researchers in all fields.

Combined university library facilities, including Fenwick Library on the Fairfax Campus and the Law Library at the Arlington Campus, house collections of approximately 900,000 volumes, with annual additions of 14,000 books. Periodical subscriptions total 6,700. In addition, the library is a member of the Washington Research Library Consortium.

A second Science and Technology Building has been newly constructed on the Fairfax Campus, and the Center for the Arts, opened in 1990, is into its third successful season of providing world-class entertainers and is rapidly becoming a cultural focal point in Northern Virginia. The Harris Theater, TheaterSpace and the Black Box Theater in the new Performing Arts Building, the 2,000-seat Concert Hall, and the Dance Performance Studio provide ample space for performing arts presentations on campus.

The Patriot Center, a 10,000-seat sports and entertainment arena, provides a spacious home for George Mason's major campus and varsity athletic activities, and benefits the larger Northern Virginia community. The center is designed for basketball, indoor soccer, concerts, and other sports and entertainment events, as well as large convocations such as commencement.

The multipurpose Sports and Recreation Complex features 64,000 square feet of space indoors, including a 200-meter track; basketball, tennis, handball/racquetball, and volleyball courts; a baseball and softball diamond and batting cage; a weight room; saunas; and golf and archery nets. Outdoor features include a 400-meter track, a baseball diamond, and soccer and other playing fields.

The university's residence halls house approximately 3,000 students. A variety of dining facilities, meeting rooms, a bank, the campus bookstore, and other student services are available in George Mason's two student unions.

Arlington Campus Professional Center and Conference Center
The Arlington Campus Professional Center and Conference Center are on the third floor of the Arlington Campus building, 3401 North Fairfax Drive, near the Virginia Square-GMU Metro Station (Orange Line).
Both graduate and undergraduate courses are offered at the Professional Center, including several liberal arts undergraduate courses. Most credit courses are taught in convenient one-per-week sessions, with beginning times of 4:30, 6:00, and 7:20 p.m. Non-credit courses are scheduled from 8 a.m. to 4 p.m. Approximately 500 non-credit courses are taught in the Professional Center. More than 11,000 credit and non-credit students are served.

The 200-seat Conference Center hosts an additional 15,000 persons annually, who participate in university and community programs and business and professional conferences. The Metro Gallery holds 12 professional art shows annually and is the site of many community cultural events.

The GMU Information Center on the Kirkwood Drive side of the building provides university publications and information on programs and activities at both campuses, including catalogs and applications. The Information Center is open from 9 a.m. to 9 p.m. weekdays. The telephone number is (703) 993-8140.

Professional Programs and Activities

School of Law

The School of Law is at the Arlington Campus, 15 minutes from downtown Washington via the Metrorail's orange line. The school offers programs leading to the first professional degree in law, the juris doctor. Full-time faculty members teach most courses in both the day and evening divisions. The school is fully accredited by the American Bar Association and is a member of the Association of American Law Schools.

The curriculum provides the basic knowledge and skills necessary for practice in any state. Many courses are problem oriented or involve extensive writing. The faculty includes perhaps the largest concentration of law and economics scholars in the United States.

The School of Law offers an innovative series of specialty tracks—in patent law, corporate and securities law, and financial services and real estate—that allow students to supplement their general legal education with in-depth study of a specialized area of practice. Two additional tracks, litigation and international business transactions, are being offered in the 1992-93 academic year.

For more information, see the School of Law catalog or write or call George Mason University School of Law, Admissions Office, 3401 N. Fairfax Drive, Arlington, VA 22201-4498; (703) 993-8010.

George Mason University Press

The George Mason University Press provides a scholarly publishing dimension to the university's overall mission of creating and disseminating knowledge through teaching, research, and publications. The GMU Press publishes monographs, books, research reports, conference proceedings, symposia, and reference works developed by local faculty and by authors throughout the world of scholarly endeavor. Among its publications, the press issues an annual series of lectures presented on The Legacy of George Mason. GMU Press books are advertised, exhibited, promoted, and sold worldwide by the exclusive agent of the press, University Publishing Associates.

Visiting the Campuses

Visitors are always welcome at the university, and prospective students are especially encouraged to visit the campuses, preferably while the university is in session. Administrative offices are open Monday through Friday, but because hours vary, appointments are suggested.

Parking on campus is by permit or decal only, Monday through Friday from 7 a.m. to 8 p.m. A limited number of metered parking spaces are also available throughout the campus. Decals are not required on weekends. Parking places are provided for disabled persons. Parking permits and assistance in parking are available at both campuses through the Parking Services office and Finley Circle information booth.

Accreditation

George Mason University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award bachelor's, master's, and doctoral degrees, and is a member of the Council of Graduate Schools in the United States.

Mission

The mission statement of the Board of Visitors reads as follows:

George Mason University will be an institution of international academic reputation providing superior education enabling students to develop critical, analytical, and imaginative thinking and to make well-founded ethical decisions. It will respond to the call for interdisciplinary research and teaching not simply by adding programs but by rethinking the traditional structure of the academy.

The university will prepare students to address the complex issues facing them in society and to
discover meaning in their own lives. It will encourage diversity in its student body and will meet the needs of students by providing them with undergraduate, graduate, and professional courses of study that are interdisciplinary and innovative. The university will energetically seek ways to interact with and serve the needs of the student body. The university will nurture and support a faculty that is diverse, innovative, and excellent in teaching, active in pure and applied research, and responsive to the needs of students and the community. The faculty will embody the university's interactive approach to change both in the academy and in the world.

The university will be a resource of the commonwealth of Virginia serving private and public sectors and will be an intellectual and cultural nexus between Northern Virginia, the nation, and the world.

Student Life
Student Support Services

George Mason University provides many support services to enable students to take full advantage of the university's educational and personal enrichment opportunities.

Student Unions

The two student unions are the centers for co-curricular life on the campus. They emphasize educational programs, student activities and services, and act as a focal point to bring together all members of the GMU community. The unions have one basic goal—to enrich university life outside of the classroom.

SUB I serves as the center for student life. It is home to 200 student organizations and several administrative offices. Students and staff can relax in the gameroom, meet in the meeting rooms, study in the Quiet Study Lounge, write papers in the Typing and Computer Lab, and socialize in the Patriot's Lounge. SUB I houses the Mini-Mall, which includes a bank, credit union, copy shop, sports boutique, and a school supply and gift store. Food is available at H.B. Quick's, the Rathskeller, and the Pizza Hut Express. The Quickstop serves as a one-stop shopping convenience store.

SUB II serves primarily as a conference and event center, housing a ballroom and 10 fully equipped meeting rooms. The university Bookstore and University Dining Services by Marriott are also located there. Students and staff can eat in the Resident Dining Hall, the Marketplace, the University Room, and the brand new Court Cafe.

Both unions have a scheduling office for room reservations and an information desk to provide current information on campuswide events. Call SUB I, 993-2855, or SUB II, 993-2859, for details about union services.

Sports and Recreational Facilities

The Patriot Center, a 10,000-seat arena, is home to the university's men's and women's basketball teams, as well as a center of activity for Northern Virginia. Large gatherings such as commencement are held there, as are community activities and recreational events. Among 1990s Patriot Center events were the Moscow Circus, NCAA Volleyball Championships, James Taylor, Michael Bolton, and Randy Travis.

Facilities of the Sports and Recreation Complex are available at no charge to university students. These include indoor and outdoor tracks and playing fields, a weight room and sauna, and other sports facilities.

Performing Arts Facilities

The Concert Hall, built to seat 2,000, can present full-scale music, dance, and theater productions. Designed by renowned theater architect George C. Izenour, it can be converted to an intimate, 800-seat space by lowering a light bridge and curtain between the orchestra and the grand tier sections. TheaterSpace and the Black Box Theater provide two of the most versatile performance spaces in the complex and can accommodate almost any seating configuration and staging specifications. Harris Theater, adjacent to the Concert Hall, is a proscenium venue seating 500. Three dance studios are each equipped with sprung wooden floors, mirrors, barres, marley floor coverings, and floor-to-ceiling mirrors. One studio also converts to a dance performance space.

Writing Center

The Writing Center offers one-to-one conferencing on all stages of the writing process. Conferences are available, free of charge, to all GMU students, faculty, staff, and alumni. Writing Center tutors, who are graduate teaching assistants in the English Department, have been trained in the current methods of composition instruction. They help clients overcome writer's block, develop organizational and revision strategies, and learn useful strategies for editing their own work.

Appointments should be made in advance by calling 993-1200 or by coming to Robinson I, Room A116, to schedule a session.
Student Health Center

A Student Health Center is operated through a partnership between the Office of Student Services and the School of Nursing. The principal mission of the Student Health Center is the provision of high-quality primary health care services for the students of George Mason University. The Health Center offers a comprehensive, confidential health service for students, targeted to their particular primary health care needs, including components of self care, health promotion, health maintenance, and disease prevention.

Referral services are incorporated as needed for concerns exceeding the capabilities of the clinic. Students with medical insurance policies should bring that information with them to the center. A student health and dental insurance plan is available through the center. The center’s full-time staff includes a registered Nurse clinic coordinator and administrative personnel. A part-time physician and several nurse practitioners provide full-time medical/health care coverage.

The Student Health Center is located on the Fairfax Campus in Student Union I, Room 232 (993-2830). Hours are 8:30 a.m. to 5 p.m., Monday through Friday (except the noon hour) when the university is in session. Students born in 1957 or later must submit documentation of two MMR (measles) immunizations via the Confidential Health History Form to the center.

Health Education Center

The Health Education Center provides educational programs and resources on a variety of health-related topics including sexual assault, acquaintance rape, HIV/AIDS, safer sex, life skills, contraception, nutrition, and eating disorders. The programs are designed to support the student’s personal growth and to encourage healthy lifestyle decisions. Seminars are provided for residential students, student organizations, and scheduled classes; seminars are open to all faculty, staff, and students.

Campus Networks, a group of peer educators, are supported by the Health Education Center. The peer educators present seminars across campus and provide individual assistance to students. Additionally, a collection of resources is available to assist students with class presentations, papers, and projects. The center is located on the Fairfax Campus in Student Union I, Room 255A.

Health Insurance and Dental Plan

All George Mason University students are eligible, on a voluntary basis, to enroll in the university-endorsed Accident and Sickness Health Insurance Plan and the university-sponsored dental plan made available through DENTICARE of Virginia.

The health insurance policy includes provisions for major medical coverage, outpatient laboratory fees, and x-ray coverage, as well as the usual provisions for hospital room and board and surgical expenses. At minimal cost, this policy covers the insured student 12 months per year, 24 hours per day, worldwide, at the university or elsewhere. For a minimal yearly fee, the dental plan provides x-rays, teeth cleaning, and office visits at no charge, and various dental procedures such as fillings, crown and bridgework, and root canal therapy at reduced costs.

Health insurance brochures, enrollment applications, and claim forms, as well as dental plan information, may be obtained at the Student Health Center or by calling (703) 993-2827.

Disability Support Services

Students with disabilities, including learning disabilities, have access to a wide range of services and assistance. Because students who need special consideration in curriculum, assignments, or testing must provide documentation of their disabilities, they are advised to forward existing documentation to Disability Support Services. Please contact the adviser to disabled students at (703) 993-2474 (voice/TDD) for more information.

Students with disabilities who feel they are being discriminated against on the basis of disability and who have been unable to resolve their problems through conventional channels should use the following:

Grievance Procedure for Disabled Students

A student who feels that reasonable accommodation, as provided through Section 504 of the Rehabilitation Act of 1973, has been denied may seek remedy by contacting the Disability Support Services Office, in writing, explaining the nature of the complaint and the actions previously undertaken to resolve the complaint. This document should include a detailed account of all contacts with members of the university community as they relate to the specific complaint.

A complainant will be required to provide appropriate documentation of the disability and its relationship to the specific complaint. If appropriate documentation is not available, processing of the
complaint may be delayed until such time as documentation is provided.

A complainant who is not satisfied with the outcome achieved through the Disability Support Services Office, or who prefers not to work through the Disability Support Services Office, may appeal the decision or initiate the same procedure through the Affirmative Action Office.

All complaints will be processed in a timely and efficient manner. It is the student's responsibility to file complaints within a reasonable period of time (no more than 189 days) from the time of the action(s) that led to the complaint.

Housing

The university has on-campus housing for approximately 3,000 students. The majority of the freshman class has opted to live in the residence halls, recognizing the affordability, convenience, and educational benefits that the residence hall experience can provide.

Six residential complexes offer a variety of accommodations designed to meet the needs of a diverse population. The university provides traditional residence halls with double accommodations as well as suite-style residence halls. Student apartments and townhouses are also very popular. All facilities are carpeted and fully furnished.

The residence life staff includes both students and full-time professionals who operate under a philosophy of education and service. Their primary goal is to provide an atmosphere conducive to learning and growth in both areas.

For information about opportunities available in the residence halls, call the Office of Housing and Residential Life, (703) 993-2720.

The Freshman Center

The Freshman Center is a comprehensive student success program that supports the transition from high school to college. The program is open to 600 resident and commuter students, and is designed to develop a sense of community and school spirit; improve interpersonal relationships and appreciation of diversity; and to support academic and personal growth.

Students in The Freshman Center have increased contact with faculty, staff, and specially trained upper-class students. The programs offered through the center include information on how to survive in college, be successful, and have fun during the year.

Resident students live together as a community in recently constructed residence halls. Residential activities are designed to create a positive social community as well as support an academic environment.

Commuter students meet and work in clusters, taking advantage of on-campus resources, and activities. Special events and interaction help to focus this group into a cohesive and supportive community.

A one-credit seminar, University 100, is offered during the fall semester as part of the center program. For more information, call 993-2920 or stop in Student Union I, Room 308.

The Transfer Center

The Transfer Center provides a unique opportunity for 200 transfer students new to George Mason. The program is a year-long experience designed to help students become academically, culturally, and socially integrated into the GMU community, develop a sense of community and school spirit, and enhance relationships and appreciation of diversity.

Members of The Transfer Center are offered free tutoring in most subjects, sponsorship for a leadership workshop, informal lunches and dinners with faculty and staff, free tickets to various campus and community events, and the opportunity to participate in activities to create ongoing support and assistance.

For more information call (703) 993-2920 or stop by Student Union I, Room 308.

Counseling Center Services

Counseling and Mental Health

The Counseling Center provides personal counseling and group programs to assist students in their emotional and academic development. Both group and individual counseling are available to students who are experiencing personal or academic problems. Counseling can help students resolve concerns that may be adversely affecting academic progress or relationships with others.

Issues frequently discussed with a counselor include stress, relationships, alcohol and substance abuse, academic problems, gay and lesbian lifestyles, racism, sexual harassment, sexual assault and rape, death, divorce, suicide, sexual abuse, loneliness, independence, self-confidence, managing multiple roles, self-esteem, goals, study skills, anxiety, and depression. Psychiatric consultation and crisis intervention is also provided. To schedule an appointment for individual counseling or to
sign up for a group, call 993-2380 between 8:30 a.m. and 5 p.m., weekdays, and until 8 p.m. on Tuesdays. The main office is located in SUB 1, Suite 364.

Learning Services
The Learning Services components of the Counseling Center supports the educational and intellectual development of students. Individual study skills counseling and structured workshops are provided. Workshops typically offered include exam strategies and test anxiety management, writing a research paper, speech anxiety, how to study math and deal with math anxiety, scheduling and time management, and study methods. Specific times and dates are listed in the center's Programs and Groups brochure. The office is located in SUB 1, Room 350, 993-2999.

Self-Development Center
The Self-Development Center, located in SUB 1, Room 350, 993-2999, provides audiotapes, videotapes, and computer-assisted programs that students can use on their own or with the assistance of a counselor. In the center students can learn about themselves, polish academic skills, and explore new ways to cope with the stresses of academic life. Programs are available on managing stress, avoiding procrastination, becoming more assertive, setting goals, increasing motivation, developing effective learning strategies, and other topics related to personal growth and academic development.

Consultation Services
The center provides consultation services to assist faculty and staff in their work with students. Counselors provide mental health education and consultation to faculty on how to recognize and assist distressed students. Consultation on student development, adjustment to college, and other relevant personal development and mental health topics is also available. Call 993-2380.

Outreach Services
The center provides educational and support programs to the university community in a variety of areas. Presentations on mental health, personal development, and academic skills topics are offered. Call 993-2380

Black Peer Counseling Program
The Black Peer Program, located in SUB 1, Room 235, 993-2377, provides a diversity of services to enhance the academic experience of black students at the university. In addition multicultural programs are offered through classes and campus organizations.

Career Development Center
The Career Development Center's primary purpose is to foster students' career planning and job search readiness through involvement in activities that promote career exploration, expand knowledge of the labor market, and provide greater access to employers and the world of work. The office, located in Student Union I, Room 348, is open Monday through Friday from 8:30 a.m. until 5 p.m., and on Tuesday evenings during the fall and spring semesters. For information call 993-2370. The following major program areas are available:

Career Consultation
Through individual consultation sessions and workshops, students learn to assess personal interests, skills, and values, and to research relevant career opportunities. Consultants also assist students with various aspects of their job search.

Career Workshops and Seminars
Workshops are offered on the following topics: What Careers are Best for Me?, Career Choices Revisited, Applying to Graduate/Professional School, Job Hunting Strategies, and Interviewing Skills and Practice. Check the Career Development Center brochure for the workshop schedule and program descriptions. Special seminars provide information on specific career fields.

Career Library
This specialized library contains information on career fields, graduate and professional schools, government employment, researching employers, and job hunting. SIGI Plus, a computerized career information system, is available to assist students with their career explorations. Videotapes and handouts on career planning and job hunting topics are available for students who want to work on their own.

Exterships
Students can arrange to spend a week in January or March with a GMU alumus/alamuna in a career field related to their interests. By observing alumni and participating in special projects, students gain information on the work environment, tasks and duties, knowledge, and skills needed to succeed. A list of participating alumni is provided in November by the Office of Alumni Affairs.

Cooperative Education
Cooperative Education is a program that provides qualified students with professional-level, progressively responsible, paid work experience in positions related to their majors. Two calendar plans are available: the alternating plan, in which students alternate periods of full-time work with 9 to
12 hours of study; and the parallel plan, in which students work 15 to 20 hours per week while carrying 9 to 12 credit hours. Positions are open to both undergraduate and graduate students in all disciplines. Participation is recognized by the university through notation of the co-op experience on academic transcripts. Orientation sessions are scheduled weekly to provide more complete information.

Job Center
This "one-stop" student employment resource area provides listings for part-time and full-time professional jobs, internships, summer jobs, and other part-time jobs.

On-Campus Interviews
More than 200 companies visit the campus during the fall and spring semesters to interview students for full-time career positions. Seniors who will receive their degrees within a year and admitted graduated students who have completed at least 9 hours are eligible to participate. Alumni and students enrolled in certificate programs are also eligible. Participants must attend an orientation session and complete registration materials.

Job Leads
Graduating students and alumni can register to receive weekly bulletins of full-time job vacancies. Job notices are also filed in the Job Center and posted on a job bulletin board outside the office.

Credential File
Graduating students and alumni may establish credential files containing references, resumes, and course listings to support application for employment or graduate school.

Veterans' Services
The Office of Veterans' Services assists veterans, service personnel, dependents, and survivors in obtaining authorized educational benefits. The office staff also helps veterans adjust to university life. Located in the Finley Building, Room 210, the office is open Tuesday through Friday from 9 a.m. to 3 p.m., and Monday from 9 a.m. to 1 p.m.

Minority Student Services
Minority Student Services is an administrative office that coordinates the university's planning and programming for racial minority students (African Americans, Asians, Hispanics, and Native Americans). The office staff works with minority students to help them understand their academic needs and then find appropriate ways to meet those needs. The office also participates in an ongoing evaluation and assessment of the impact of university policies and procedures on minority students. Minority program initiatives are designed to stimulate multicultural understanding and create an educational atmosphere in which minority students will be successful. The Minority Student Services Center is in Student Union I, Room 345, (703) 993-2700.

Women's Studies Research and Resource Center
The Women's Studies Research and Resource Center is located in SUB I, Room 206A, 993-2896. The center is open to the university community and the general public. It houses and distributes informational literature regarding issues of concern to women, as well as information on women's studies and other related activities in the area. In addition, lectures, workshops, and other activities relevant to campus life are organized through the center.

Campus Ministry
The Campus Ministry is an ecumenical group available on campus to assist students, faculty, and staff. The ministry includes religious counseling, Bible study, worship services, social-action opportunities, education programs, social activities, seminars, retreat weekends, and fellowship gatherings.

The Campus Ministry offices are in Student Union I, Room 207, and are open daily for discussion and assistance of any kind. For more information, call 993-3323 or contact the individual ministries: Assembly of God (993-3324); Baptist (993-3323 or 425-4522); Campus Crusade for Christ (993-3323); Episcopal (993-3320); Jewish (993-3321 or 301-468-3422); Mormon (993-3324); Muslim (993-3324); People of the World (993-3324); Real Life Ministries (993-3324); Roman Catholic (993-3322 or 425-0022); United College Ministries (993-3323 or 820-2144).

Office of International Student Services
The Office of International Student Services is responsible for all matters pertaining to U.S. immigration law affecting students at the university, for example, issuing the immigration documents necessary for the entry of international students and scholars to the United States, and helping students maintain their immigration status once here. ISS seeks to foster the intellectual, cultural, and personal development of international students during their time at GMU and in the United States.
Student Activities

Student participation helps shape the character and the quality of the students and the university. Thus, George Mason encourages people to express their talents and interests through participation in student government, student publications, and membership in academic, Greek, international, special interest, law, cultural, religious, and athletic organizations.

While involvement in such activities is a desirable adjunct to classroom learning, participation must be complemented by academic progress. For this reason, only students in good academic standing are eligible to hold or run for elective or appointive office in any organization or activity associated with the university, to participate in any athletic or other activity representing the university on either an intercollegiate or club level, or to serve as a working staff member of any student organization.

Athletic Activities

The intercollegiate athletic program of 19 men's and women's sports at George Mason University offers student athletes competition with universities in the Washington, D.C., area, the commonwealth of Virginia, and throughout the United States.

The men's and women's programs are members of the National Collegiate Athletic Association, the Colonial Athletic Association, and the Eastern Collegiate Athletic Conference.

To be eligible for athletics, all student athletes must be in good academic standing and must be making satisfactory progress toward a degree at George Mason University. Satisfactory progress is defined as (a) satisfactory completion prior to each fall term of a cumulative total of semester hours equivalent to an average of 12 or more semester hours during each of the previous terms in academic years in which the student athlete has been enrolled in a term or terms, or (b) satisfactory completion of 24 semester hours of academic credit since the beginning of the preceding regular two semesters (from the NCAA Manual).

Intercollegiate competition for men includes baseball, basketball, cross-country, golf, soccer, tennis, indoor and outdoor track and field, trap and skeet, volleyball, and wrestling.

Intercollegiate athletic competition for women includes basketball, cross-country, indoor and outdoor track and field, tennis, trap and skeet, soccer, volleyball, and softball.

Athletic scholarships and financial aid (based on need) are available to both male and female student athletes.

Athletic highlights include: GMU's first NCAA championship in women's soccer, 1985; first NCAA men's basketball tournament postseason play, 1989; six NCAA track individual champions—Rob Muzzio (twice), Terri Dendy, Nena Gage, Diane Guthrie (twice), Istvan Bagyula (four times), and Abdi Bile (twice); NCAA appearances by our baseball, men's and women's track, men's and women's soccer, men's volleyball, and wrestling teams; and trap and skeet ACU-I national champions 1985-1991.

More than 300 student athletes carry the banner of George Mason on courts and playing fields throughout the United States. Scholarship support for the university's student athletes is generated by the Patriot Club and private fund raising.

Performing Arts Activities

George Mason offers students the opportunity to participate in many arts events throughout the school year. The George Mason University Dance Company presents four annual concerts and all students are encouraged to audition at the beginning of each semester.

Theater events include four major productions, directed by faculty, guest artists, and students. The theater of the First Amendment, the university's
professional theater company, produces a four-play season incorporating students both on- and offstage. Auditions for theater events are open to all George Mason students and are held in advance of each production.

Students interested in technical theater can work on a variety of production crews, including scenery, lighting, sound, costumes, and publicity. Information concerning auditions, crew work, and performance dates may be obtained from the Department of Dance and Theater.

Students interested in music may audition to all on a variety of production crews, including student Chorale and Symphonic Chorus. All members of the university community are invited to attend concerts and recitals given by the Department of Music.

**Forensics Team**

George Mason's nationally ranked forensics team gives students the opportunity to develop their communication skills, ranging from persuasive and informative speaking to prose and drama interpretation. For the past 17 years, George Mason has been named the First Place Team on the East Coast.

Academic credit is available for participation on the Forensics Team. Interested students should contact Bruce B. Manchester, Director of Forensics, in the Department of Communication.

**Debate Team**

George Mason's nationally prominent debate team competes in more than 20 intercollegiate debate tournaments each year with universities from throughout the country. The debate team enables George Mason students, regardless of previous experience, to develop speaking, analytical thinking, writing, and research skills that prepare them for a variety of professional pursuits.

Academic credit is available for participation on the debate team and membership is open to any full-time undergraduate student. Interested students are encouraged to contact Warren Decker, Director of Debate, Department of Communication.

**Student Volunteer Center**

The Volunteer Center provides volunteer and community service opportunities for the GMU community. Students interested in volunteering just once or for the whole year can find a volunteer experience where they can make a difference and learn something at the same time. Opportunities exist for working with children, the homeless, and the elderly, and in areas such as legal services, health care services, and others. The center is located in Student Union I, Room 252, (703) 993-2909.

**Student Leadership Development Center**

George Mason provides a variety of opportunities for students to develop their leadership skills, including workshops, retreats, conferences, credit courses, a resource collection, and individual consultations. Center programs are open to all students interested in developing their leadership abilities. For more information on program dates and times, contact the Student Leadership Development Center, Student Union I, Room 307, (703) 993-2900.

**Student Organizations**

Approximately 200 on-campus student organizations complement the university's curricular programs and provide opportunities for students to exercise and develop their talents. The organizations span a wide range of interests, including politics, forensics, drama, music, journalism, academic, service, recreation, business, social life, religion, and fellowship. Membership in student organizations is open to any registered George Mason University student and can open vistas to new friendships, informal contact with faculty and staff, learning opportunities, and leadership experience.

Recognized student organizations are also part of larger umbrella organizations. These clusters of organizations facilitate coordinated development of campus activities and interaction with other student organizations, and allocate fee funds for student organizations. Other benefits of recognition include use of a university mailing address, access to file and storage space, duplicating services, and a channel of communication with the university administration regarding support services for student organizations.

George Mason now recognizes 18 fraternities and 10 sororities. They contribute to campus life by sponsoring numerous social and service activities within and around the university community throughout the year. These organizations encourage their members to achieve high academic standards and provide many opportunities for leadership and personal development. To obtain additional information on fraternities or sororities at George Mason, contact the Student Organi-
zations and Program Center, Student Union I, Room 252, (703) 993-2909.

The Student Organizations and Programs Center also maintains updated information on names and phone numbers of contact persons in each organization. The Student Organization Manual, a "how-to" resource handbook for student leaders, can be obtained there. The office staff also consults with students or student organizations that are planning programs for students; assists new clubs in attracting members and receiving recognition; and offers leadership training through workshops and retreats.

*WGMU Radio* is a student-run radio station, broadcasting to members of the university community. The station is committed to educational radio, and offers opportunities for all interested students, with or without experience in radio. For more information, contact Fred Odom, general manager, (703) 993-2941, or the main office, (703) 993-2940, Thompson Hall, Room 216.

*Broadside* is the university's student-run newspaper. The paper provides opportunities in news writing, sports reporting, feature writing, editing, layout, advertising, public relations, and many other areas. Contact the *Broadside* staff in Student Union I, Room 253, (703) 993-2942, for more information.

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**Student Alumni Association**

The Student Alumni Association consists of students who work with and assist the Alumni Association and the Alumni Affairs Office. They participate in homecoming, the annual phonathon, and other events and activities.

The Office of Alumni Affairs is located in Mason Hall, Room D201. Alumni and students are welcome to visit the office from 8:30 a.m. to 5 p.m. daily. For more information, call 993-8696.

**Awards**

George Mason University recognizes students for excellence and grants them awards that are given by various administrative offices and academic departments. The Student Organizations and Programs Center (993-2909) coordinates the Annual Student Awards Ceremony and maintains the most comprehensive awards listing.
Admission
Admission

Admission Policies
Admission to George Mason is competitive in that the number of qualified candidates for admission generally exceeds the number of new students who can be accommodated. Each candidate who presents sufficient admission qualifications is reviewed in the context of other qualified applicants. An offer of admission is valid only for the semester for which the student applied.

Acceptance into junior-level courses, in particular, is limited in business, nursing, and social work (see appropriate catalog sections). Junior-level applicant selection is competitive, with priority placed on potential for success. Grades are an important part of the selection process, but may not be the only criterion used by selection committees.

The university expects applicants for undergraduate admission to be in the upper 50 percent of their class. They must also demonstrate considerable facility in using the English language and an understanding of basic mathematical processes.

Admission Procedures

Applying for Admission
Application for undergraduate admission should be made to the Office of Admissions on forms provided upon request. A nonrefundable and non-transferable fee of $25 must accompany the application.

Application Deadlines
Undergraduate applications for fall admission should be submitted no later than February 1 for freshman applicants and March 15 for transfers. The application deadline for the spring semester is November 1. The university reserves the right to close applications prior to published deadlines if conditions so warrant. Admission decisions for freshmen are usually made after the first-semester grades of the senior year and all appropriate test results have been received by the Office of Admissions. Transfer decisions are made as files become complete. Admission is contingent upon satisfactory completion of requirements and graduation from high school.

Right to Withdraw Offer of Admission
The university reserves the right to withdraw offers of admission if applicants fail to satisfy all requirements prior to the closing of spring or fall registration, or thereafter, if it is determined that admission was obtained through the use of falsified, altered, or embellished information. In the instance of withdrawal of admission from a matriculated student, credit earned at GMU may be withheld.

Admissions Committee
An Admissions Committee reviews undergraduate admission decisions and appeals.

Other Stipulations
The Office of Admissions or the Admissions Committee may make other stipulations or recommendations regarding the admission of an individual.

Freshman Requirements
The following factors are considered when reviewing applications for admission:
- Cumulative high school grade point average for course work completed in grades 9 through 12.
- Level of difficulty of course work elected throughout the high school years, particularly in English, mathematics, laboratory science, and foreign language.
- Scores from the Scholastic Aptitude Test (SAT) and/or the American College Test (ACT), and/or Test of English as a Foreign Language (TOEFL).

The Admissions Office evaluates applications after all required materials have been received. Applicants are notified of decisions in the first week of April.
To ensure that applicants with unusual qualifications are not denied admission, the above criteria are applied flexibly. Applicants with unusual qualifications should describe them in the narrative section of the application for admission. Personal interviews and recommendations are not required unless requested.

The following table specifies the minimum units of college preparatory work required for admission, as well as the minimum units recommended. The recommended units reflect the typical high school program of students who have succeeded in competing for admission in recent years. Columns (1), (2), and (3) refer to the following categories:

1. Students applying for a bachelor of arts (excluding those in category 3), bachelor of fine arts or bachelor of music degree program, or with an undeclared major.
2. Students applying for a bachelor of science degree program, excluding those in category (3).
3. Students applying with an intended major in pre-business, chemistry, computer science, engineering, geology, mathematics, or physics.

One unit equals one academic year of study.

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<td>Mathematics*</td>
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* Selected from algebra I, algebra II, geometry, trigonometry, analytic geometry, functions, math analysis, calculus.
** Selected from biology, chemistry, physics.

### Test Requirements

Freshman candidates for admission are required to take the SAT or the ACT. Official test scores should be sent directly from the appropriate testing service. In addition, it is recommended that freshmen present three Achievement Test scores. While applicants are encouraged to submit scores with their applications, achievement tests may also be taken during freshmen orientation programs. Undeclared students and those seeking B.A. degrees may present the following achievement scores: English Essay, Mathematics level I or II, and a foreign language. All other majors should present achievement scores in English Essay, Mathematics level I or II, and a third test of applicant's choice.

### Acceptance of Offer of Admission

The university complies with the College Board candidate reply date of May 1, but encourages students to confirm their intention to enroll by returning the confirmation card before that date. Prompt confirmation of the offer of admission qualifies students for early advising and course selection, registration, housing, and other services. Candidates approved for admission must confirm their intention to enroll. Failure to comply may adversely affect the applicant's reserved space.

### Early Notification

Freshman applicants for fall semesters who apply for admission before December 1 are reviewed automatically for early consideration. Successful candidates are notified beginning in December and continuing until January 15. If an early decision cannot be given, the student's application is considered at the time all other applications are reviewed and evaluated.

### Early Admission

Rising high-school juniors who have either completed high-school graduation requirements except for senior English and government may, with the recommendation of their high-school guidance counselor, principal, or headmaster, apply for admission and thereby enter the university one year early. Applicants should present above-average grades, SAT/ACT scores, and a high school course of study demonstrating a rigorous academic preparation for university-level work. Candidates for this program must arrange an interview with the Dean of Admissions.

### Concurrent Enrollment (Enrichment)

Advanced high-school students may apply for admission as part-time students in the concurrent enrollment program. Applicants should have at least a 3.0 grade point average and have taken the ACT or SAT examination. Additionally, students must be recommended by their high-school guidance counselor, principal, or headmaster, and the appropriate department chair at GMU. Interested students may contact the Admissions Office for more information.

### Transfer Requirements

The university accepts qualified students who wish to transfer from other colleges. A transfer appli-
Student who has completed at least 30 semester hours of transferable credit must submit two copies of official transcripts from each collegiate institution attended. Transfer applicants with fewer than 30 semester hours of transferable credit must also submit a copy of their secondary school record, as well as SAT or ACT scores. Students transferring from vocational programs or nonaccredited institutions are normally expected to meet the university's requirements governing admission of freshmen.

Application for admission as a transferring student is competitive. To be academically eligible for consideration, a transfer student must present a grade point average of at least 2.0 on a 4.0 scale on all collegiate work attempted. Students on active social or academic probation, suspension, or dismissal are not eligible for transfer admission.

The number of offers of admission that the university can make in a competitive environment is determined by the number of applicants and space available.

To be considered for admission to the business, computer science, engineering, or mathematics programs, a transfer applicant should present a cumulative GPA of 2.5 on a 4.0 scale, or better.

Students should read the appropriate section of the catalog to determine if the school or college governing the programs to which they seek admission has special requirements.

Transfer Advising Sessions
Students who are considering transfer to George Mason are encouraged to attend a transfer advising session. Sessions are held each Wednesday at 4 p.m. in the Finley Building, and generally last about one hour. Time is provided for answering students' questions.

Transfer Credit
A student transferring into the university receives a formal evaluation of transfer credit following acceptance of an offer of admission. The student is responsible for seeing that the Office of Admissions receives official transcripts of all work taken elsewhere.

In general, credits are accepted from institutions accredited by the appropriate regional association, provided that the credits carry a grade of C or better and that the courses are of a quality equal to these offered at George Mason University.

1. A maximum of six semester hours may be transferred from correspondence courses sponsored by regionally accredited institutions.

2. Students intending to major in accounting, decision sciences, general business administration, finance, management, or marketing must take the hours required for the major at GMU.

3. Forty-five semester hours of upper-level course work is required for graduation. While lower-level courses taken at previously attended institutions may meet the content requirement of some upper-level courses, they do not reduce the 45 semester-hour requirement.

For students enrolled in a unit of the Virginia Community College System (VCCS), particularly Northern Virginia Community College, tables of transferable courses and a VCCS/GMU transfer guide facilitate the orderly transfer of credits. The VCCS/GMU transfer guide is available from the VCCS counseling offices or the GMU Office of Admissions.

Credit Earned at Nonaccredited Colleges
Transfer credit is not granted for study in noncollegiate institutions, except in the Bachelor of Individualized Study (B.I.S.) Degree Program. Transfer credits from nonaccredited colleges are tentatively evaluated upon admission to the B.I.S. program. Transcript information is used for purposes of advanced placement, and transfer credit is recommended after the performance of the student at George Mason has been established.

Credit to Be Earned at Other Institutions
A student who applies for admission to the university to profit from its educational programs would not normally be expected to seek simultaneous credit enrollment at another collegiate institution. In those unique situations when a student seeks to enroll in credit courses at another collegiate institution concurrently, the student must obtain advance written approval from the appropriate George Mason dean. (This rule applies to courses taken through the Consortium for Continuing Higher Education in Northern Virginia as well.) This process permits a student to enroll elsewhere in a suitable course unavailable at George Mason. Catalog numbers and descriptions of courses to be taken elsewhere must be submitted with the request for approval. Students who enrolled elsewhere without advance written permission while enrolled at George Mason may not receive transfer credit for course work taken at other institutions.
Study Abroad

The university recognizes the educational value of travel and study abroad and allows students to broaden and enrich their education through approved overseas programs. Through the Office of Overseas Studies, the university assists students who wish to participate in overseas study programs administered in cooperation with academic departments.

Students interested in studying abroad should contact the Office of Overseas Studies (OOS), where a library on opportunities for study abroad is housed. Before departing, students must have programs approved by OOS, by the department chair supervising the major field, and by the appropriate dean. They must also attend an orientation program organized by OOS.

Admission of International Students

General Requirements for International Students

Application for admission to the university by international students holding or seeking F-1 or J-1 visas should be made directly to the Admissions Office before January 1 for the subsequent academic year. The deadline is enforced to ensure adequate time to process applications.

Applications from international students are considered for the fall semester only and are reviewed with all other applications. Students in the English Language Institute (ELI) should consult the Admissions Office for application procedures. Applicants with permanent residence in the United States and nonimmigrant visa holders (A-1, G-4, etc.) must meet freshman or transfer admission requirements. Admission to the university is competitive; therefore, while minimum standards ensure that an application will be considered, they do not guarantee admission. The number of offers of admission that the university can make in a competitive environment is determined by the number of applicants, the qualifications of the applicant pool, and the amount of available space. In addition to overall admission requirements, some schools and colleges have individual requirements for acceptance into the major. (See school or college admission requirements.)

Freshman Requirements for International Students

1. If applicants have not completed a year of collegiate work at a college or university in the United States, they are required to submit a satisfactory score on the Scholastic Aptitude Test (SAT) or American College Test (ACT).

2. Individuals whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL) in addition to the SAT or ACT exam.

3. A minimum score of 570 on the TOEFL and 4.5 on the TOEFL essay are required for an applicant to be considered for admission. Official test scores must be sent directly from the Educational Testing Service. Information concerning the time and place of the TOEFL can be obtained from TOEFL, Educational Testing Service, CN 6151, Princeton, NJ 08541-6151, USA. Phone: (609) 882-6601.

Transfer Requirements for International Students

A transfer student is a student who has completed a year of work at a college or university located in the United States. In addition to the above requirements, international transfer students must meet the standards listed below:

1. International students (F-1 or J-1 visa holders) transferring from American colleges or universities must complete the equivalent of a year of college-level academic work (30 semester hours or 45 quarter hours) before admission to George Mason University. The academic work must include a year of college-level English composition.

2. Transfer applicants from American colleges or universities who have not completed one year of English composition and one year of literature with grades of C or better must also submit satisfactory SAT or ACT, and TOEFL scores.

3. Transfer applicants from non-American colleges and universities are required to submit satisfactory scores on the SAT examination. Transfer applicants whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL) in addition to the SAT.

4. All transcripts must be evaluated and translated before an admissions decision can be made. The applicant is responsible for the timely translation and evaluation of documents and for all costs and fees associated with these services. (Suggested evaluation agencies are World Education Services, Inc., P.O. Box 745, Old Chelsea Station, New York, NY 10011; Credentials Evaluation Services, Inc., P.O. Box 66940, Los Angeles, CA 90066; World Educational Credentials Evaluators and College Planning, P.O. Box 726, Herndon, VA 22070.)
Additional Requirements for International Applicants

In addition to the academic requirements mentioned above, international students must meet the following conditions:

1. An international student holding an F-1 or J-1 visa must comply with current U.S. Immigration and Naturalization Laws.
2. With the application for admission, a student must present certified documents on subjects studied, grades received, examinations taken, and degrees earned from all secondary schools, colleges, and universities attended. Records of state or national examinations and certificates are also required. Students must establish that they have completed at least the equivalent of a United States high school diploma. Non-English documents must be presented in original form, with certified translations.
3. Applicants must also provide a completed and notarized GMU financial statement that includes a bank statement verifying that funds have been earmarked for school expenses. Yearly expenses are estimated to be $17,500 (subject to change). International students may be required to have their financial resources verified by an American banking institution.
4. Students enrolled at the university on F-1 or J-1 visas must maintain full-time status each semester, excluding summer session.
5. All new students at the university must submit the Admissions Medical Form signed by a health professional. The form must verify that the student is in good health and that his or her inoculations are current.
6. Health insurance is mandatory for international students on F-1 and J-1 visas. Students are required to purchase the policy arranged by the university unless an exemption is granted by the Office of International Student Services. In order to be exempted, the student must submit evidence of an alternative insurance policy that meets the following criteria:
   a) The plan must include coverage for repatriation and medical evacuation. This means that, in the event of death or serious illness, the insurance policy will pay to return the student to his/her home country.
   b) The coverage must be for at least $100,000 per year with no more than $500 deductible or non-covered expenses incurred before 100 percent coverage is granted.
   c) The student must show proof that the coverage is valid until August 15th of the following year.
   d) Exemptions must be obtained by the final add/drop day of the student’s first semester at the university. Continuing students are required to establish eligibility for an exemption by the final add/drop day of each fall semester.
   e) Students with the following sponsored foreign government plans are automatically eligible for exemptions: Kuwait, Saudi Arabia, Hariri Foundation, Oman, Qatar, United Arab Emirates, Egypt, and Malaysia (MSD or MARA plans only). These students must show proof of coverage by the final add/drop day of the student’s first semester, and continuing students must renew their exemptions by the final add/drop day of each fall semester.
   f) International students are required to purchase insurance for the entire year. However, should a student graduate or terminate attendance prior to the end of the insurance year, the student must submit a written request with appropriate documentation for a refund.
   g) Insurance coverage derived from unauthorized employment will not be accepted.
   h) The health insurance premium is due with the tuition payment and is assessed by the Office of Student Accounts. Late fees may be assessed if it is not paid by the date established by the Bursar’s Office. Failure to pay or obtain an exemption will result in the cancellation of registration and/or financial suspension. All F-1 and J-1 students are automatically enrolled and covered by the insurance plan unless an exemption is obtained.

Readmission/Reenrollment

Undergraduate students whose study at the university is interrupted for any reason may reenter by registering for classes for the semester in which they wish to return, provided they were in good academic standing when they left the university. Students may graduate by meeting the requirements of the catalog under which they were admitted, provided they resume study within five years of their last semester in attendance; otherwise, they must meet the requirements of the catalog in force at the time of reentry. Following an absence of one or more semesters, previously admitted students may contact the Registrar’s Office for registration information.

A student returning to George Mason following an absence during which they studied at another institution without prior written permission of their academic department is considered to be a transfer student. They must complete an application for admission with the application fee by published deadlines, submit requested transcripts and
other documentation in order to be considered for admission for the semester they wish to return. Once admitted, the student is bound by the requirements of the catalog under which they re-enter the university, rather than the catalog in force at the time of their initial admission.

Special Types of Enrollment

Extended Studies

The extended studies enrollment procedure allows qualified students to enroll in courses without being formally admitted to the university. Up to 18 credits earned through extended studies enrollment may be applied to a degree program later. Extended studies enrollment is based on eligibility criteria and availability of space in course selections. Enrollment in high-demand fields may be restricted or prohibited from time to time.

Enrollment Requirements

Prospective enrollees are required to supply unofficial evidence of their academic background along with the enrollment request packet to the Extended Studies Enrollment office. Transcripts or grade reports of previous college coursework are required prior to enrollment. Recently graduated high school students are not eligible to enroll through the Extended Studies Enrollment Program. It is generally expected that prospective extended studies enrollees will have a minimum of 30 semester hours at other institutions.

Extended studies enrollees are expected to achieve a semester average of at least C (2.00) in all undergraduate courses and at least B (3.00) in all graduate courses. Students who do not meet these criteria during two consecutive periods of enrollment are not permitted to register again as extended studies enrollees.

If an extended studies enrollee later applies for admission to a GMU degree program, grades earned while enrolled through extended studies remain a part of the student’s permanent record and are counted in determining the student’s future academic standing.

Enrollment Procedures

Students interested in enrolling through extended studies may request enrollment information prior to the beginning of each semester. All academic policies and procedures apply to extended studies enrollees. Completed courses, earned credits, and grades are recorded on regular university transcripts. The Dean for Undergraduate Studies serves as the academic dean for students enrolled through extended studies.

Credits Applicable to a Degree Program

If an extended studies enrollee wishes to apply for admission to a degree program, the regular graduate or undergraduate admissions procedures take effect. Extended studies enrollees may apply for formal admission at any time. The Office of Admissions applies the same criteria for admission of these students as for students transferring from other institutions.

Students may enroll in a maximum of 18 hours of undergraduate course work through extended studies. If the student is later admitted as a degree-seeking student, grades earned in courses taken through extended studies are included in computation of GPA. For policies regarding graduate course work through extended studies enrollment, see the Graduate Catalog. Prospective degree-seeking students are urged to apply for regular admission as soon as possible or as soon as they are eligible to do so. Candidates for degrees must fulfill the degree requirements outlined in the catalog that is in effect at the time they are admitted.

Guest Matriculant Enrollment

Persons enrolled in undergraduate or graduate degree programs at other accredited institutions who wish to take undergraduate courses at the university for transfer back to their home institution enroll through the Extended Studies Enrollment office during the fall and spring semesters. Such students should submit transcripts and permission to enroll from the appropriate dean of the home institution to a counselor in the Extended Studies Enrollment Office. Only students in good academic standing at their home institutions are permitted to enroll as guest matriculants at George Mason.

Guest matriculants should contact the Summer Term office to arrange for course work during the summer sessions.

Senior Citizens Enrollment

The Extended Studies Enrollment office coordinates enrollment under the Senior Citizens Higher Education Act of 1974, as amended and as applicable to the university. Under the terms of this act, eligible Virginia residents over 60 years of age with a taxable income of less than $10,000 are entitled to enroll in courses offered for academic credit on a space-available basis without payment of tuition and fees. Senior citizens who meet the income eligibility requirement and who have com-
pleted a minimum of 75 percent of degree requirements may enroll during normal registration periods without payment of tuition and fees.

In addition, the act provides for audit of courses offered for academic credit and also for enrollment in noncredit courses without payment of tuition and fees on a space-available basis, regardless of the taxable income level. Tuition, however, may be charged for courses designed exclusively for senior citizen groups. No senior citizen may change registration status in any given semester once he or she has initially registered for classes.

Graduate Course Enrollment by Undergraduates

Undergraduates may enroll in graduate courses only if they have exhausted all upper-level undergraduate courses relevant to their educational objective and can demonstrate the level of maturity required for graduate-level courses. Undergraduates must have completed all requirements for the graduate course in which they wish to enroll. Undergraduates in these circumstances may, with the written permission of the course instructor and the chair of the department offering the course, register for graduate courses numbered 500-599 and apply the credit earned toward an undergraduate degree.

Students may seek to take graduate courses for reserve graduate credit; this earned credit is held in reserve to apply later toward a graduate degree. Approval to register is normally given only to George Mason seniors who are within 15 hours of completion of undergraduate study. Approval for reserve graduate credit does not imply approval for admission into a graduate program at the university or that credit so earned will be accepted at another graduate school. (See the Graduate Catalog for details.)

Summer Term Enrollment

Summer enrollment is open to eligible undergraduate students on a first-come, first-served basis. Enrollment in the summer term does not constitute undergraduate admission to a fall or spring term.

EXCEL Program

EXCEL (Experience College Education and Living) is a month-long summer residential program designed to give high-ability college-bound students an opportunity to sample college life and learning. The program provides a first-hand experience in preparing for the academic and social challenges of college. EXCEL students are immersed in the university community by living on campus, taking one or two freshman-level courses, and participating in organized social, recreational, and learning activities.

Academic Testing

Testing Center

As a means of assessing the academic preparation of its students, the university regularly requires the submission of certain test information.

Students may obtain applications for the Test of English as a Foreign Language (TOEFL), the Graduate Record Examination (GRE), Law School Admission Test (LSAT), Graduate Management Admission Test (GMAT), Medical College Admission Test (MCAT), Dental Admission Test (DAT), and the Miller Analogies Test (MAT). These applications may be found in the information office at the Finley Building.

Credit-by-Examination

Advanced Placement Program with Credit

First-semester freshmen who have completed advanced-level courses in secondary schools and have passed College Board Placement Examinations with scores of 4 or 5 may be granted a maximum of 36 semester hours credit (without grades) upon recommendation of the department concerned and with the approval of the appropriate dean. Credit for a score of 3 is at the discretion of the department. Advanced credit earned in this manner by entering freshmen will be counted toward or will fulfill any pertinent university or departmental graduation requirements.

Proficiency and Credit-by-Examination

Proficiency examinations are offered in a number of courses normally taken during the first two years.

Examinations in English, government, geography, mathematics, and music are usually announced by the appropriate departments. A satisfactory score on an examination affords a student credit for the course in question.

On the basis of examinations presenting evidence of qualification, regularly enrolled students may be granted up to 30 semester hours of undergraduate credit for courses in the university curriculum. The only exceptions to this regulation are registered nurses enrolled in the nursing B.S.N. program (see School of Nursing for details). Credit is recorded for grades of C or above, but does not af-
fect the student's grade point average computation.

Students may not earn credit by examination in courses in which they are enrolled beyond the time allotted for adding courses in that semester or in courses already audited or failed at the university. Transfer students may not earn by examination any part of the 30 hours that must be completed at George Mason University to earn a degree.

Foreign Language Testing, and Credit-by-Examination

A score of 3 or higher on the College Board Advanced Placement Test in either language or literature, taken on completion of an advanced placement course in high school, not only fulfills the foreign language requirement, but also makes the student eligible for at least 12 credits. A score of 560 or higher on the College Board Achievement Test, or on the GMU placement test, makes the student eligible for 3 credits, while a score of 620 or higher on either test fulfills the foreign language requirement and makes the student eligible for 6 credits. No other credit by examination is available for elementary or intermediate foreign language courses, nor for conversation and composition courses. Credit-by-examination is available for other foreign language courses above the intermediate level.

International Baccalaureate (IB) Diploma

George Mason University recognizes the IB curriculum as a strong pre-university academic program and encourages applicants to complete the requirements for the IB diploma. Advanced standing is awarded for Higher Level examinations with scores of 5, 6, and 7. Students may receive a maximum of 20 semester hours. Official transcripts must be issued by the International Baccalaureate North America, 200 Madison Avenue, Suite 2403, New York, NY 10016-3903.

College Level Examination Program (CLEP)

The university does not recognize credits earned by CLEP General Examinations. As part of the Credit by Examination process, certain departments may use CLEP Subject Examination scores for total or partial credit in certain courses. Consult the Testing Center in Room 100 of the Finley Building for further details.

Placement Examinations

Foreign Language Placement

The CEEB Achievement Test in a foreign language is used for placement in French, German, classical Greek, Italian, Latin, Russian, and Spanish. Freshman applicants take this exam prior to entering GMU as part of the admissions process; others may take it on campus. This test is mandatory for anyone who has studied one of these languages for at least two years, has no previous college credit in the language, and wishes to continue study of the same language at the university. Transfer students receiving credit for college-level foreign language study completed at other colleges do not usually need a placement test, but must consult the Department of Foreign Languages and Literatures to determine their correct placement.

It is the student's responsibility to take a placement test and obtain its results before initial enrollment in a foreign language course. The dates for testing on campus are listed in the Schedule of Classes. Specific information on interpreting test scores can be obtained from the Department of Foreign Languages and Literatures.

Students may not enroll for credit in a course at a level lower than the one in which they are placed. Students and instructors should attempt to identify and resolve cases of inappropriate placement during the first days of each course. For students whose degree program contains a foreign language requirement, the placement determines the maximum number of credit hours, if any, that will be needed to fulfill the requirement.

A placement test is not required of international students who present evidence of having studied for four or more years in an educational institution where the primary language of instruction was other than English. These students will be considered to have fulfilled the foreign language requirement.

If through transfer credit, a placement test score, or GMU course work, a student meets the prerequisite for a lower-division foreign language course that is not offered during a particular semester, the dean will normally grant permission to continue the foreign language sequence by taking courses at another college or university.

Math Placement Exam

Successful completion of the Math Placement Exam is required for students seeking to register for MATH 105: Pre-Calculus Math, MATH 108: Calculus with Business Application, or MATH 113: Analytic Geometry and Calculus. The testing schedule for the placement exam appears in the
Schedule of Classes and is posted in Room 119 of the Finley Building.

The Math Placement Exam is a timed test. Candidates should arrive no later than the scheduled time for the test. Late-comers will not be accommodated.

Students seeking a degree in business or a B.A. in Economics need to take MATH 108. Students seeking engineering, computer science, or a B.S. in Economics need to take MATH 113. MATH 105 is a preparatory course for MATH 108 and 113.

National Teacher Examinations

Persons seeking initial certification as teachers in Virginia are required to submit scores on the National Teacher Examination (NTE). The Testing Office in Room 100, Finley Building, can provide information and applications for taking this examination.

George Mason University does not administer the NTE. Students must choose a location other than the university to take the test.
Tuition, Expenses, and Financial Aid
Tuition, Expenses, and Financial Aid

Tuition and Fees
By registering for classes, students accept responsibility for charges for the entire semester. The basic rules are:

Returning Students:
1. Registration shall not be completed unless all outstanding balances due the university are paid in full.
2. Payments are due at the Cashier's Office on or before due dates (regardless of postmark if mailed).
3. Failure to receive a reminder bill confirming your charges does not waive the requirement for payment when due.
4. The student is responsible for maintaining a current billing address at the Office of Student Records.
5. Determination of domicile requires completion of the Virginia Domicile Classification Form available in the Office of Admissions.
6. The entire student registration is canceled if payment or payment arrangements are not made in full by the payment due date.
7. The Registrar's Office must receive written notification of withdrawal from students who cannot attend classes during the semester for which they are registered.

Non-returning Students:
Non-returning students must accept the responsibility of submitting a written withdrawal to the offices of the Registrar, Housing, and Financial Aid. Penalties may apply.

Payment and Cancellation Schedule
Pre-registered Students

<table>
<thead>
<tr>
<th>Fall 1992</th>
<th>Spring 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reminder bill mailed</td>
<td>July 13</td>
</tr>
<tr>
<td>Due date</td>
<td>August 5</td>
</tr>
<tr>
<td>Cancellation date</td>
<td>August 14</td>
</tr>
</tbody>
</table>

Payment must be received on or before the due date. Classes will be canceled for nonpayment.

Continuing/Late Registration
Students registering on July 13 (November 23) or after will receive a class confirmation schedule showing tuition due at time of registration. The full amount shown must be paid directly to the Cashier’s Office on the day of registration. Registration will be canceled if payment or payment arrangements are not made for the full amount.

Tuition and Related Fees

Tuition Charges Per Semester (subject to change)

<table>
<thead>
<tr>
<th>In-State</th>
<th>Out-of-State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time (12-17 credit hours) per semester</td>
<td>$1,686.00</td>
</tr>
<tr>
<td>Per-credit-hour (less than 12 or more than 17)</td>
<td>140.50</td>
</tr>
</tbody>
</table>

Related Fees

| Application fee | $25.00 | $25.00 |
| Late fee | 25.00 | 25.00 |
| Return check fee | 25.00 | 25.00 |
| Reinstatement fee | 25.00 | 25.00 |
| Withdrawal fee | 25.00 | 25.00 |
| Nonpayment cancellation fee | 25.00 | 25.00 |
| Special registration fee | 45.00 | 45.00 |
| Orientation fee | 75.00 | 75.00 |

Special Registration Fee

Students not enrolled in a credit-bearing course but pursuing an activity related to their GMU matriculation who wish to retain active status may register for Special Registration (SREG 200, Section 001) for a $45 fee. This special registration allows students to retain their library privileges and Student I.D., and to purchase a student parking decal. Students must have active status in order to apply for or receive a degree, take an examination, or participate in cooperative education.

Withdrawal Fee

A $25 withdrawal fee will be charged all students who withdraw after the cancellation date through the first week of classes.
Nonpayment Cancellation Fee
Students who are cancelled from classes for non-payment are assessed a $25 fee. Once imposed, this fee is not removed even if the student reregisters.

On-Campus Housing Costs 1991-92

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Rental Charges</th>
<th>Meal Plan Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartments 2-person</td>
<td>$1,975.00</td>
<td>$800.00</td>
</tr>
<tr>
<td>4-person</td>
<td>$1,820.00</td>
<td>800.00</td>
</tr>
<tr>
<td>6-person</td>
<td>$1,615.00</td>
<td>700.00</td>
</tr>
<tr>
<td>Commonwealth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double rooms</td>
<td>$1,575.00</td>
<td></td>
</tr>
<tr>
<td>University Commons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single rooms</td>
<td>$1,850.00</td>
<td></td>
</tr>
<tr>
<td>Double rooms</td>
<td>$1,575.00</td>
<td></td>
</tr>
<tr>
<td>University Park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Townhouses</td>
<td>$1,925.00</td>
<td></td>
</tr>
<tr>
<td>Patricia Village</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single rooms</td>
<td>$1,850.00</td>
<td></td>
</tr>
<tr>
<td>Double rooms</td>
<td>$1,575.00</td>
<td></td>
</tr>
<tr>
<td>Presidents Park I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single rooms</td>
<td>$1,850.00</td>
<td></td>
</tr>
<tr>
<td>Double rooms</td>
<td>$1,575.00</td>
<td></td>
</tr>
</tbody>
</table>

All rates are per person. Four persons are assigned to a two-bedroom townhouse.

Meals Plan Charges Per Semester
- $800.00 per week
- 800.00 per week
- 700.00 per week

All residents, with the exception of those residing in the townhouses and apartments, are required to have a meal plan.

Off-Campus Courses
Students enrolling in GMU off-campus courses are assessed tuition and fees at the same rates as those for on-campus courses.

Credits Earned Elsewhere
A few George Mason University degree programs include academic credits that students must earn at other institutions. Students enrolling for academic credits at other institutions assume all financial responsibility for these arrangements.

Payment Methods
WHERE:
- Window: Cashier's Office, 106 Krug Hall, 9:00 a.m. to 4:30 p.m.
- Drop Box: outside Cashier's Office, 107 Krug Hall
- U.S. Mail, George Mason University, Cashier's Office, Fairfax, VA 22030-4444

HOW:
- Cash: At window only
- Check: Payable to GMU, student ID# written on front. Third-party checks not accepted. Checks must be payable in U.S. dollars.
- Credit card (subject to credit approval): MasterCard or Visa. Written authorizations only. Daytime phone number must be provided.

For payment information or information on payment plan options, please call the Bursar's Office at (703) 993-2490.

Payment Plan Options
Installment Payments—Academic Year
Full-time students may budget all or part of the annual tuition, room, and board in 10 equal monthly installments. An annual fee of $45 includes a Life Benefit Insurance plan. For information, call Academic Management Services, (800) 556-6684 toll free.

Deferred Payments—Semester
A semester payment plan is available to students who need to budget, at a minimum, the cost of 6 credit hours. A contract must be completed at the Bursar's Office and submitted to the Cashier's Office with a down payment (1/2 of contract amount plus fee). The contract fee is $25 and is nonrefundable; minimum contract amount is the cost of 6 credit hours.

The deferred balance due must be received on or before the due date stated on the contract. A $25 late fee is assessed by GMU on all payments received late.

Financial Penalties
Late Fee
Failure to make any payment on or before the due date results in a late fee of $25.

Returned Check Charge
Any check returned to the university by a bank results in a $25 penalty fee. Students who fail to clear their accounts within ten calendar days following notification by the Cashier's Office are placed on financial suspension without further notice.

Financial Suspension
All academic service is withheld for students who are not in good financial standing with the university. This means that no transcripts of record are issued, no diplomas are released, and no registrations are permitted until outstanding obligations, including the reinstatement fee, have been paid in full. Outstanding obligations include, without limitation, fines owed for traffic and parking violations and to libraries of institutions and participating public libraries of the Consortium for Continuing Higher Education in Northern Virginia.
Reinstatement Fee
Students placed on financial suspension because of outstanding obligations in excess of $100 are assessed a $25 reinstatement fee.

Collection of Accounts
Failure to meet financial obligations to the university may result in the delinquent account being placed with a collection agency, withholding of money from tax returns, and other collection procedures. Students are responsible for costs incurred by the university in collecting their delinquent accounts. Fines owed for traffic and parking violations and to libraries of institutions and participating public libraries of the Consortium for Continuing Higher Education in Northern Virginia similarly affect students' status.

Refund Policies

Tuition
Students withdrawing from the university before the beginning of the semester or during the first week of classes may have their tuition refunded, less a withdrawal fee of $20. Assessed penalties are nonrefundable. Partial refunds for a semester are processed after the schedule adjustment period.

Tuition is refunded on a graduated scale for voluntary drops and withdrawals during the second and third weeks of classes. The calculation of the amount of refund is based on the date of the drop or withdrawal as certified by the Student Records office. Hours dropped after the third week of classes must be paid for in full. To initiate the refund process, the student submits a request to the Bursar's Office.

Students who fail to submit a written withdrawal request to the Registrar's Office are liable for full tuition charges.

Tuition Refund Scale:
- Week 1: 100% less $20
- Week 2: 66.7% of total
- Week 3: 33.3% of total

Housing and Dining Services

Release from the Housing and Dining Services Agreement
Refunds are given only after an approved release per the outlined guidelines, available in the Office of Housing and Residential Life, has been obtained.

Housing Refund Policy
Refunds of housing reservation deposits and room charges are made according to the following schedule:

1. The $200 reservation fee: Each year students are required to pay a reservation fee before being allowed to select a room assignment. This fee is due at an advertised time each year for the following academic year and is applied to the first semester housing charge. Students applying for spring semester may forward their deposits beginning October 1. This is a nonrefundable fee.
2. The $100 damage deposit: The damage deposit is paid when a student applies for housing. This is a one-time deposit that is refundable upon graduation or termination from housing, less any unpaid current damage charges.
3. Housing charges are refundable with an approved housing release as follows:
   a. Released during the first week of classes — full refund less the reservation and damage deposit;
   b. Released during the second week of classes — a refund equal to 66.7 percent of the housing charges and the damage deposit is forfeited;
   c. Released during the third week of classes — a refund equal to 33.3 percent of the housing charges and the damage deposit is forfeited;
   d. Beginning the first day of the fourth week of classes, no refunds are given and the damage deposit is forfeited.
4. Refunds are rounded to the nearest whole dollar.

Dining Plan Change and Refund Policy
Residents may change dining plans and receive refunds during designated change periods according to the following schedule:

1. Changes: New residents may change food plans during the designated change period at the beginning of the semester. Current residents may change plans for spring semester during the designated change period shortly before Thanksgiving.
2. When a plan is canceled, a per-week charge plus a $50 cancellation fee is assessed. The balance is refunded to the student.
3. All refunds are rounded to the nearest whole dollar.

Eligibility for In-State Tuition
To be eligible for in-state tuition charges, a person must have been domiciled in Virginia for at least one year prior to the semester for which in-state tuition is sought. A person becomes domiciled in Virginia when legally capable of establishing a domicile and when present in Virginia with the intention of remaining in the state permanently.
Domicile, however, is primarily a question of intent and the burden of proof of domicile is upon the student seeking the benefit of in-state tuition. See the receptionist in Finley Building for a copy of the complete domicile legislation.

Change of Domicile Classification
Students requesting a change of classification from out-of-state to in-state must file the required form before the first day of the semester for which in-state status is sought. Forms are available in the Finley Building reception area.

Penalties
A student who provides false information or refuses or conceals information for the purpose of achieving in-state status, or who fails to notify the university of a change of facts which might affect reclassification from in-state to out-of-state status, shall be required to pay retroactively any tuition and fees that would normally have been charged and shall be subject to appropriate disciplinary action.

Other Expenses
International Student Health Insurance
Health insurance is required for all F-1 and J-1 Visa holders. Health insurance fees are deducted from all payments received by the university before funds are applied to tuition or other charges, which could result in cancellation of classes for nonpayment of tuition.

Motor Vehicle Registration Fees
Students who park their vehicles on university property must register them with Parking Services and pay a fee for a parking decal. Decals are available for a year, semester, summer, or week. Parking Services is in Student Union I. For decal sales and fine payments come to Room 201A, Main Lobby, Monday through Thursday, 9 a.m. to 7 p.m., and Friday, 9 a.m. to 12 noon. For special requests or problems come to Room 354, Monday through Friday, 9:00 a.m. to 4:30 p.m. For information call 993-0000.

Financial Aid
Office of Student Financial Aid
The Office of Student Financial Aid provides a variety of services to help students finance their education. These services include financial counseling, referral and information resources, and financial assistance. Student financial assistance consists of grants, loan and employment. Awards are based on financial need. Located in the Finley Building, Room 201, the office is open Monday, Wednesday, Thursday, and Friday from 9 a.m. until 4:30 p.m., and Tuesday from 1 p.m. until 7:30 p.m.

To apply for financial aid, each year new and currently enrolled students must complete a Financial Aid Form and forward it to the College Scholarship Service in Princeton, New Jersey as soon as possible after January 1. Summer aid applicants should submit an FAF prior to April 1 for summer aid consideration.

The university administers federal, state and other aid programs as outlined below.

All students receiving financial aid must:
1. be enrolled in a degree or certificate program for at least 6 credit hours in any given semester;
2. be maintaining satisfactory academic progress as defined by the student aid office; and
3. be a U.S. citizen or eligible non-citizen as defined by the U.S. Department of Education.

All aid recipients are responsible for becoming familiar and complying with any federal/state laws, university regulations, the GMU student aid information brochure, and the student aid satisfaction policy, academic progress policy, available in the Office of Student Financial Planning and Resources.

Federal Programs
Perkins Student Loan Program
Long-term, 5 percent interest loans from the federally sponsored Perkins Student Loan Program are available to qualified students. Repayment begins six months after graduation but may be deferred for students entering graduate school, the Peace Corps, VISTA, or military service. Those temporarily disabled may defer payment for three years. Students must be enrolled at least half-time to qualify. Half-time is defined as six credit hours for both undergraduate and graduate students.

Supplemental Educational Opportunity Grant
A limited number of direct grants are available to undergraduate students who are enrolled at least half-time, who show financial need, and who require such assistance to attend college.

College Work-Study Program
Funds to provide part-time work opportunities to help meet college expenses are available to students enrolled at least half-time.

Pell Grant
This need-based program makes funds available to students attending eligible post-high-school in-
stitutions at least half-time. Students who have received a first bachelor's degree are not eligible to apply for Pell Grants. Students may apply with the Financial Aid Form or to Pell directly.

Stafford Student Loan Program
Students must demonstrate need and be enrolled in a degree program half-time to qualify. While most loans are made by commercial lenders, some states are also lenders.

Undergraduates may eligible for up to $2,625 as freshmen and sophomores and $4,000 for upper-level undergraduate study, with cumulative limits of $17,250. The government pays the 8 percent interest until the repayment period begins, six months after the student leaves school. Interest remains 8 percent through the fourth year of repayment and increases to 10 percent beginning the fifth year of repayment. Applications may be obtained from the Student Financial Planning and Resources Office or most commercial banks in Virginia or the student's home state.

PLUS Loan Program
PLUS is an additional form of financial aid to be used in conjunction with the Stafford Student Loan (SSL) program. PLUS loans may also be available to students who, for certain reasons, are ineligible for the SSL. This program can assist middle-income families and others who are not able to meet the costs of education through grants, scholarships, loans, and other financial aid programs. All parents of dependent undergraduates and graduate students are eligible to apply. The program has no income ceiling, so anyone may participate. Detailed information may be obtained by contacting the Student Financial Planning and Resources Office.

Virginia Programs for State Residents

Virginia Loans
The state provides funds to be used for long-term, low-interest loans for eligible full-time Virginia residents.

Virginia Scholarships
These scholarships are for full-time Virginia residents who demonstrate financial eligibility and who have established a record of academic and personal achievement.

Virginia College Scholarship Assistance Program (CSAP)
This program uses both federal and state funds to provide aid to needy students who are at least half-time undergraduates and legal residents of Virginia.

State Nursing Scholarships
The Bureau of Public Health Nursing provides limited scholarships to full-time students who are Virginia residents. These scholarships are based on need and are available to graduates and undergraduates. Applications are made directly to the Bureau of Public Health Nursing. The application deadline for students previously enrolled in a nursing program is March 1; for new students entering a nursing program, the deadline is June 1. Applications are available in the Student Financial Planning and Resources office.

Emergency Loan Program
Mary E. Ferguson Emergency Loan Program
Currently enrolled students may borrow funds for legitimate emergencies excluding tuition, fees, books, and supplies. Emergency loans must be repaid within 30 days; overdue payment results in a late charge of $5 for each 30 days past due. Failure to repay the loan within 30 days, without requesting an extension for a reasonable excuse, will result in financial suspension. Students financially suspended for nonpayment of an emergency loan are ineligible for any future emergency loans.

Doug Beaman Emergency Loan Program
The George Mason Alumni Association has established an emergency loan fund through which students may borrow up to $100; repayment is due within 30 days. The program is available to all students, with priority to children of alumni. Application is made through the Office of Student Financial Planning and Resources.

Reserve Officers Training Corps (ROTC)

Army ROTC
The U.S. Army Reserve Officers Training Corps (ROTC) provides college-trained officers for the Active Army, the Army National Guard, and the U.S. Army Reserve. The ROTC program is designed to develop managerial ability, leadership skills, and self-confidence. Students receive commissions as second lieutenants after their completion of ROTC and the normal college requirements.

The ROTC program consists of two components: a core curriculum and professional military education. The core curriculum involves classroom instruction and practical exercises in leadership and general military subjects and skills. Professional military education is provided by any curriculum leading to a baccalaureate degree that includes academic courses in human behavior, written com-
munication skills, military history, national security policy, and management.

George Mason University students may participate in the Army ROTC program offered on campus by enrolling in Military Science (MLSC) courses. Scholarships available through the Department of the Army cover tuition, fees, texts, in-class materials, and travel pay. Advanced Phase cadets and all scholarship cadets receive a nontaxable subsistence allowance of $100 per month for up to 10 months of each school year. Uniforms, textbooks, and all required equipment for the MLSC courses are provided by the U.S. Army.

For more information, contact the Army ROTC instructor at George Mason University in the Field House Module, Room F28, or call (703) 323-3768.

Air Force ROTC

Air Force ROTC (AFROTC) is available to George Mason students through an agreement with the University of Maryland at College Park. AFROTC courses are scheduled so that students from the university may complete all AFROTC requirements during one morning per week at the College Park campus. In addition, students are eligible to compete for all AFROTC scholarships and for pilot and navigator training programs. The seven-, six-, five-, and four-semester scholarships pay for tuition at the University of Maryland and George Mason University, cover the cost of required books, and provide a $100 per month subsidy.

After graduation from the university and completion of the AFROTC curriculum at the University of Maryland, students are commissioned second lieutenants in the Air Force. Students interested in AFROTC may contact AFROTC, Cole Field House, Second Floor, University of Maryland, College Park, MD 20742, (301) 454-3242.

ROTC Courses

Although ROTC courses are offered at the university, military science credit is not transferable to the university.

Veterans' Services

Veterans' Educational Benefits

Students eligible for Veterans' Educational Benefits while attending the university must contact the Office of Veterans' Services. The following actions are required:

1. Veterans, active duty, and reserve personnel who have never received benefits must apply on form 22-1990. The application should be turned in to the Veterans' Services office on campus with a certified copy of the student's DD-214 (where applicable).
2. Students who have received benefits from another school or who are changing either their type of program or course objectives must fill out form 22-1995 — Request for Change of Program or Place of Training.
3. Veterans' dependents who receive educational benefits under Chapter 35 of Title 38 USC must establish eligibility with the Veterans' Services office. They should fill out form 5490 or 5495. The office then sends the paperwork to the Veterans' Administration with the school certification.
4. Students must request that the veterans' counselor send an enrollment certificate to the Veterans' Administration Regional Office each school year (each semester if the students are under half-time, on active duty, or in continuing education). Students must apply separately for a summer session. Students in continuing education will be certified for no more than two semesters while the GMU application is pending.
5. Students are responsible for notifying the Veterans' Services office on campus of any change in status. Such changes include:
   a. adding or dropping courses
   b. change in marital status
   c. addition of a dependent
   d. change of address (notify VARO immediately)
   e. withdrawal from school (notify immediately)

Forms for making these changes are available at the Office of Veterans' Services in Room 210 of Finley Building.

6. VA benefits are paid on the following basis:

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>Graduate</th>
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</thead>
<tbody>
<tr>
<td>Full time</td>
<td>12 hours</td>
</tr>
<tr>
<td>3/4 time</td>
<td>9-11 hours</td>
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<tr>
<td>1/2 time</td>
<td>6-8 hours</td>
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<td>less than 1/2 time</td>
<td>4-5 hours</td>
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<tr>
<td>more than 1/4 time</td>
<td>less than 4 hours</td>
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</table>

Students on active duty and those taking fewer than six undergraduate hours are paid either tuition and fees or the rate set for the training time, whichever is less. Books and supplies are not included. Benefits are not payable for ENGL 101 or 102 when a no-credit grade is received. The Veterans' Administration will not pay for an audit course.

Public Law 98-525 established a new GI Bill (Chapter 30) and also a new educational assistance program for members of the Selected Reserve (Chapter 106). Details may be obtained from the Veterans' Services Office on campus.
Tutorial Service for Veterans
The VA will pay $100 per month, not to exceed $1,200 per year, for needed tutorial services. For further information, see the Veterans' Office on campus.

Virginia War Orphans Education Program
The Virginia War Orphans Program provides educational assistance to children of qualified veterans. To be eligible an applicant must meet the following requirements:
1. The applicant must be between the ages of 16 and 25.
2. The applicant's parent must have served in the armed forces of the United States and must (a) be totally disabled due to an injury or disease incurred in a time of armed conflict; or (b) have died as a result of injury or disease incurred in a time of armed conflict; or (c) be listed as a prisoner of war or missing in action.
3. The applicant's parent must have been a resident of the Commonwealth of Virginia at the time of entry into active military duty, or must have been a resident of the state for at least 10 consecutive years immediately prior to the date of application.
4. The applicant must provide written verification of acceptance as a student in a state-supported post-secondary school.

Eligible individuals are entitled to a maximum of 48 months of tuition-free education at a state-supported educational institution. For more information, contact the Office of Veterans' Services.

Departmental Scholarships
Applied Music Scholarships
A limited number of applied music scholarships are available to incoming freshmen and transfer students at George Mason University. Application should be made to the Department of Music.

Student Education Association Endowment Scholarships Fund
This fund provides grants to a limited number of eligible George Mason University students of demonstrated scholastic achievement, during their student teaching semester.
Registration Procedure
The Schedule of Classes, distributed by the Registrar's Office before preregistration each semester, contains written instructions for registration. Courses listed in the Schedule of Classes are withdrawn when enrollment is insufficient. The university reserves the right to change the class schedule and adjust the individual section enrollment as necessary.

Students are responsible for registering properly. They should confirm the correctness of their enrollments and report any apparent error immediately to the Registrar's Office. Students must be present at the first meeting of every laboratory course (lecture and laboratory) to validate their registration. If students cannot attend the first meeting, they must notify the department beforehand if they intend to continue in that section. Otherwise, their names will be stricken from that class roll in both lecture and lab.

Registration is not canceled for failure to attend lecture courses. Students are responsible for full tuition payment and grades received for all courses in which they are registered unless (1) they are canceled for nonpayment for courses in which they registered early; (2) they are canceled administratively by the university staff due to suspension or dismissal; (3) the section in which they are registered is canceled; or (4) they do not attend the first meeting (lecture or lab) of a laboratory course.

Academic Load
Although many students must work to meet living expenses, employment must not take priority over academic responsibilities. Students employed more than 20 hours a week are strongly urged not to attempt a full-time academic load. Students employed more than 40 hours a week should attempt no more than six credit hours per semester. Students failing to observe these guidelines may expect no special consideration for academic problems arising from the pressures of employment. Although 12 semester hours per semester represents a minimum full-time load, students wishing to graduate in four years need to carry an average of at least 15 credit hours per semester. A load in excess of 17 hours must be approved by the student's academic dean.

For planning purposes, applicants for admission are asked to indicate their preference for full- or part-time status and for day or evening classes. However, they may freely choose between evening and day sections of courses and may change their full- or part-time status.

Adviser's Permission to Register
Freshmen, entering transfer students, students on academic probation, and students returning from academic suspension are required to obtain an adviser's signature for registration. Students in the School of Nursing and in the departments of Biology, Dance and Theater, Electrical and Computer Engineering, Foreign Languages and Literatures, Health and Physical Education, Music, Physics, and Social Work must obtain an adviser's signature before every registration. A Course Request Form, included in the Schedule of Classes for each registration period, is used for this purpose. All students are encouraged to consult with their advisers concerning course registration.

Preregistration
Preregistration for the next semester begins after mid-semester and is by priority groups. Registration for the summer session begins after the spring break and is conducted on a first-come, first-served basis.

Student Information
Before or during each registration period, students are asked to provide directory and other types of information used in preparing a student education record and numerous statistical reports. Such information is collected and disseminated in compliance with the Family Educational Rights and Privacy Act of 1974, as amended, which provides that the university maintain the confidentiality of student education records and
establish the right of students to inspect and challenge the data maintained in those records. Personally identifiable data from a student’s education record may be released only to persons described in the Act, including “school officials with a legitimate educational interest.”

The university may release directory information to any outside party at its discretion except when a student requests in writing that some or all directory information be withheld.

Category I of directory information includes the student’s date of attendance, major(s), full- or part-time status, and awards received.

Category II of directory information includes student’s address, telephone number(s), date and place of birth, participation in recognized activities and sports, weight and height (normally given only for athletics), most recent previous institution attended, and other similar information.

A student who wishes to withhold directory information from the public should submit a written request to the Registrar’s Office or fill out the Directory Information Hold Form found in the Schedule of Classes at the time of registration for a semester or Summer Term. Since such withholding may prohibit the Registrar’s Office from providing confirmation of enrollment to prospective employers or even residence address to the student’s own family, the student who is considering such a request should consult that office.

Students may inspect their education records and obtain more information about the Privacy Act at the Registrar’s Office. They may also obtain copies of most parts of their records for a nominal fee. Those desiring to do so should schedule an appointment with the Registrar.

**Student Identity Card**

After registering, each student may obtain a university photo identification card. It must be presented to receive a library card and is required for admission to university events and when using university facilities after normal operating hours. It is not transferable and is validated each semester after payment is made for classes; validation stickers are sent by mail. Questions may be directed to the Photo ID office at 993-1004.

**Change of Status and Address**

Each student is required to notify the Registrar’s Office of any change in local home address and telephone number, permanent address, or legal name. When a student’s legal name is changed, the Registrar’s Office reserves the right to require a certified copy of documents authorizing the change. Such documents are kept in the student’s permanent file.

**Canceling Registration/Withdrawal**

Students who cannot attend classes during the semester for which they have preregistered should cancel registration by written notice to the Registrar’s Office prior to the early registration deadline for payment. Students who register and then cancel/withdraw after the deadline, but prior to the beginning of classes or during the first week of classes, are charged a $20 administrative fee.

Students who withdraw on or after the first day of class must complete a withdrawal form at the Registrar’s Office. Refunds of tuition on and after the first day of classes are made according to a schedule posted at the Cashier’s Office and published in the Tuition and Fees section of this catalog. Withdrawal after the last day for dropping a course (specified in the Academic Calendar) requires approval by the student’s academic dean and is permitted only for nonacademic reasons that prevent course completion.

**Changing Registration (Schedule Adjustment)**

Once registered, students may change their registration only by using an Add/Drop Form, available in departmental offices and at the registration site. Registration changes should be completed within the schedule adjustment period defined below and indicated in the Schedule of Classes. Permission to enter a closed or controlled section must be obtained in writing from the academic department offering the course on a Course Permit Slip and submitted with the Add/Drop Form.

When completed, the Add/Drop Form must be delivered in person to the registration site. Schedule changes are made only during Schedule Adjustment Days listed in the Schedule of Classes.

The last day for adding a 14-week course is two calendar weeks after and including the first day of classes. The last day for dropping a 14-week course is five calendar weeks after and including the first day of classes.

After the date listed in the Schedule of Classes for adding and dropping courses, add actions require approval by the chair of the academic department offering the course. Late drop approval is granted only for nonacademic reasons by the student’s academic dean. Normally this approval is given for all courses at once, constituting withdrawal from a semester (see procedure below).
Withdrawal from a Semester
Upon approval by the student’s academic dean, a student may withdraw from a semester after the end of the schedule adjustment period without academic penalty, but only for nonacademic reasons preventing completion of the courses. A student who withdraws from a semester after the schedule adjustment period without the dean’s approval receives F’s in all courses. Withdrawal forms are available at the Registrar’s Office.

Upon withdrawal after the end of the schedule adjustment period, the following notation is made on the student’s permanent record: “Withdrawn voluntarily for nonacademic reasons.”

Auditing a Course
Auditing a course requires the permission of the chair of the department in which the course is offered. Audit forms are available at the Registrar’s Office. A previously audited course may be taken for credit at a later date. A student may also audit a course previously taken and passed. A student may not change from credit to audit status after the end of the drop period. The usual tuition and fees apply to audit status.

Special Registration for Non-Enrolled Students
Students not enrolled in a credit-bearing course but pursuing an activity related to their GMU matriculation who wish to retain active status may register for Special Registration (SREG 200, Section 001) for a $45 fee. This special registration allows students to retain their library privileges and student ID, and to purchase a student parking decal. Students must have active status in order to apply for or receive a degree, take an examination, or participate in cooperative education.

Repeating a Course
Courses passed with a grade of C or better by undergraduates may not be repeated (except for audit). When a course is repeated, the following conditions apply: (1) all hours attempted count toward probation, suspension, or dismissal; (2) the transcript shows both the original and repeat grades; (3) only one grade per course may be presented on the degree application.

Degree Requirements
See Baccalaureate Degree Requirements under Academic Policies following this section for guidance in choosing courses.
Academic Policies
Academic Policies

Academic Advising
Each undergraduate student is encouraged to meet periodically with an academic adviser to discuss academic programs, educational goals, and career plans. With the adviser's help, each degree student should plan an academic program to meet the general degree requirements and the specific requirements within the student's major field. During their freshman and sophomore years, students in the Plan for Alternative General Education (PAGE) should plan their schedules through PAGE advisers. Every department coordinates advising of its PAGE students through this office (222 Thompson Hall). Responsibility for reading the catalog and knowing and fulfilling the requirements of a specific baccalaureate degree rests with the student. Since individual departments establish their own advising processes, students should check with their departments for the appropriate procedures. Students who have not yet decided on a major or who are considering a change of major are advised in the Academic Advising Center. See Adviser's Permission to Register in the Registration section for categories of students who may not register without an adviser's signature.

Advising Upon Entrance into the Upper Division
Every student must meet with an adviser upon entrance into the upper division to adopt a program of study. This meeting should include (1) a review of the requirements for the degree and major the student has chosen, (2) a review of the student's record including any deficiencies which must be made up, (3) a discussion of the career and/or graduate study options open to the student enrolled in such a program, and (4) an opportunity for departmental faculty to evaluate the student's suitability to major in the chosen discipline. Students become responsible for fulfilling this requirement during any semester at the end of which they complete 60 or more acceptable hours.

Once the adviser and student have worked out a program of studies that has been approved (as evidenced by a copy of the program of study signed by both the adviser and the student and placed in the student's file), the student is no longer required to seek the advice of an adviser. Each department should specifically assign each student a full-time faculty member as an adviser. The procedures described above are also used for change of major by upper-division students to ensure better advice for those students. Those in a lower-division status may change majors as in the current system. However, once a student has completed 60 hours, a change of major requires an extended session with an adviser in the new major before the change is complete. The above are the minimal advising procedures to be followed by all undergraduate segments of the university. They are not intended, however, to prevent any department from requiring additional advising sessions.

Academic Advising Center
Students who have not yet decided on a major or who are considering a change of major are advised in the Academic Advising Center, located in Finley Building, Room 215. Advising is required for freshmen who have not declared a major. Staff members in the center are available for individual advising appointments Monday through Friday, 8:30 a.m. until 5 p.m., and some evenings.

Students are encouraged to walk in or call the center for information about general education requirements, programs, policies, and procedures. They may request help in the selection of a major or the best use of electives. The center also provides information for students who are interested in law, medical, dental, veterinary, and divinity schools.

Medical Sciences Advisory Committee
Students interested in medicine, dentistry, veterinary medicine, or a related medical field may receive guidance from a special advisory committee. The Medical Sciences Advisory Committee con-
Grading Policies

University course work is measured in terms of quantity and quality. A semester hour normally represents one hour per week of lecture recitation or not less than two hours per week of laboratory work throughout a semester. Using the semester hour as the unit of credit, the number of semester hours is a measure of quantity. The grade is a measure of quality.

Additional work of any type submitted to improve a grade after the final grade has been assigned and sent to the Office of Student Records is never accepted.

A-B-C-D-F. The normal grading system for undergraduate credit is A, B, C (satisfactory), D (unsatisfactory, passing), and F (unsatisfactory, failing).

A-B-C-No Credit. A student successfully completing English Composition and Introduction to Literature (ENGL 101) or Composition for Foreign Students (ENGL 100) is graded either A, B, or C; a student not attaining a level of at least C in these courses receives no credit (NC). Until a minimum grade of C is attained, these courses are not entered on a student's permanent record, nor do they fulfill degree requirements.

S-NC. Undergraduates may take up to six credit hours to be graded S-NC. This option applies only to electives outside the major field. Students must obtain the instructor's permission on a Credit Without Grade Form for this provision, and submit the form to the registrar by the end of the add period. An S grade reflects satisfactory (C or better) work. The S grade, but not the NC grade, appears on the transcript.

IN (Incomplete). A student who is passing a course may be unable to complete scheduled course work for a cause beyond reasonable control. In such a case, the instructor assigns a temporary grade of Incomplete (IN). The student must complete all the requirements by the end of the ninth week of the next semester, and the instructor must turn in the regular grade by the end of the tenth week. (Spring incompletes would be changed during the following fall semester.) If the student fails to do so, the mark of IN is changed by the registrar to an F. The student is responsible for submitting work to the instructor with sufficient time for evaluation.

While the mark of IN remains on the transcript, it is treated as an unsatisfactory grade in determining probation, suspension, or dismissal. Removal of IN's from the transcript may result in retroactive elimination of probation, suspension, or dismissal.
IP (In Progress). When the work of BIS 490 or of a course which is graded A-B-C-NC or S-NC is not completed within one semester, a mark of In Progress (IP) is entered on the record. IP is not treated as an unsatisfactory grade. With the exception of BIS 490, an IP not changed to a satisfactory grade by the last day of classes of the next semester results in deletion of the course from the record. An IP in BIS 490 not changed to a permanent grade within the same time limit is changed by the registrar to F.

AB and SP. A student who has received an excuse from the appropriate dean to be absent from a final examination may receive a grade of AB. The AB automatically becomes F within 10 days after the date of the regular examination if testing has not been completed. While the AB remains on the transcript, it is treated as an unsatisfactory grade in determining probation, suspension, or dismissal. The grade of SP is given by the appropriate dean to a student faced with delinquency because of very special circumstances, such as major illness.

Grade Point Average
Grade points for each semester hour are assigned on a scale of 4 for A, 3 for B, 2 for C, 1 for D, and 0 for F. A grade point score is computed by multiplying the value of a letter grade by the number of credits for the course. For example, a student receiving an A in a 3-semester-hour course earns 12 grade points.

Three kinds of grade point average (GPA) are used at George Mason. Current GPA is the measure of academic performance in one semester, affecting both the dean's list and academic warning. Cumulative GPA is one of several criteria affecting academic dismissal. Degree GPA affects graduation with distinction.

Dividing the total grade points earned in a semester by the number of normally graded semester hours attempted in that semester gives the current GPA. Similarly, dividing the number of grade points earned in all George Mason University courses by the number of normally graded semester hours attempted at the university gives the cumulative GPA. A degree GPA is computed at graduation on the basis of the normally graded courses the student completes at the university and includes in the degree application. This average is noted on the transcript and the course grades are listed.

Classification of Students
Admitted undergraduates are classified as follows: freshman, 0-29 semester hours completed; sophomore, 30-59 semester hours completed; junior, 60-89 semester hours completed; senior, 90 or more semester hours completed.

Grade Reports
Grade reports are sent to the student and to the adviser each semester and summer in which the student is registered, including semesters in which the student withdraws after the end of the drop period. The report includes all courses for that semester and the grades received, the cumulative hours of satisfactory grades, the cumulative hours of unsatisfactory grades, and the cumulative hours of credits completed successfully in courses graded under the S-NC option.

Appeal of Grade
Although it is generally acknowledged that the individual faculty member is the best judge of a student's performance, there may be instances in which a student feels a grade has been assigned unfairly. In such cases, the student should ask the instructor to reconsider the grade. If the student remains dissatisfied, the matter may be appealed to the department chair. Upon receiving an appeal, the chair should ask the student to return to the instructor for further consultation. If the instructor and the student are unable to reach a mutually satisfactory agreement, and if the chair believes the student may have a legitimate complaint, the chair forms a committee of three faculty members who are peers of the instructor who assigned the grade. The instructor or the student may challenge and have replaced one of the three members of the committee without giving a reason for the challenge. The committee meets separately with the instructor and with the student to explore the particulars of the case. Every effort is made to avoid an adversarial relationship.

After the committee has reviewed the case thoroughly, it issues to the chair (with a copy to the faculty member) a written recommendation that includes the reasons for its findings. At this time, the faculty member has an opportunity to take the recommended action, if any. If the matter is not resolved at this point, the chair considers the committee recommendation and forwards a recommendation to the dean of the school or college in which the course was taken. If the dean decides that a change of grade is appropriate and the faculty member refuses to make the change, the dean may order the registrar to do so. Chairs do not accept grade appeals after the last day of classes of
the following semester. Appeals of grades in spring courses must be made by the last day of classes in the next fall semester.

Pending Grade Appeal
In select cases, a student may request a delay from the dean in imposing academic suspension because of a pending grade appeal which could change the student’s status. An approved delay would allow the student to register.

If the grade appeal is successful, the official transcript is corrected and the student continues in classes as a student in good academic standing. If the grade appeal is not successful, the student is required to stop attending all classes immediately. No record of registration for the academic period appears on a transcript and the student receives the appropriate refund as of the date of decision.

Academic Standing
Dean’s List
Students who take at least 12 credit hours in a semester and earn a grade point average of 3.500 or higher for courses attempted that semester merit placement on the Dean’s List.

Good Academic Standing
A student is in good academic standing unless dismissed, suspended, or on probation.

Satisfactory Performance
Students perform satisfactorily during any academic period (semester or summer session) in which they earn a grade point average for that period of 2.000 or higher (1.800 for those in the first or second academic period of the freshman year). In computing the grade point average, a grade of IN is counted as an F, and the grade NC is not counted.

Academic Warning
Students receive an academic warning at the end of any academic period in which they fail to attain a grade point average for that period of 2.000 or better (1.800 for those in the first or second academic period of the freshman year).

Academic Period
For determining the duration of probation and suspension, an academic period is defined as follows:

Each academic period (semester or summer session) begins on the 15th day following the last scheduled day of final examinations for the previous period. Each academic period ends on the 14th day after the last scheduled day of final examinations.

Example: Assume that the last scheduled day of final exams for a semester is Monday, December 23. That period then ends on Monday, January 6. The next period begins on Tuesday, January 7.

Academic Probation
Students who receive two warnings during any four consecutive academic periods of enrollment are on probation during the academic period of enrollment following the second warning. (Consecutive academic periods of enrollment are successive periods during which the student enrolled, regardless of whether there were intervening periods during which the student did not enroll.)

Suspension
A student receiving academic warnings in two immediately consecutive periods of enrollment is suspended. The two consecutive periods are extended to three if the student attempts less than 12 credit hours during either of those periods.

Suspension is included in a student’s permanent record. Course credits earned at other colleges during the period of suspension from the university (for academic or nonacademic reasons) are not accepted for the degree program.

A student’s first suspension is for two academic periods, unless it is imposed at the end of the summer, in which case it is for one semester. A second suspension is for one calendar year, for example, two regular semesters and a summer. A third suspension results in dismissal.

Effect of Suspension on the Reenrolled Student
A student reenrolling after suspension is on probation for one academic period of enrollment. A warning received at the end of that period results in continuation of probation but not suspension.

Dismissal
A third suspension results in dismissal. An undergraduate is also dismissed at the end of any academic period when all of the following occur:

1. The student has received at least one earlier probation or suspension.
2. The work done during the just-completed academic period is unsatisfactory, for example, the grade point average for that work is below 2.000.
3. The student’s cumulative grade point average for all work attempted at the university is below a minimum acceptable value that depends on the number of semester hours attempted at the university plus hours transferred from other institutions or obtained by testing as follows:
Every student must meet with an adviser upon entrance into the upper division (completion of 60 or more acceptable hours) to adopt a program of study. (See Advising upon Entrance into the Upper Division for complete details.)

Selection of a Major
To plan a sound academic program, the undergraduate should select a major as soon as it is practical, but no later than four weeks before the end of the sophomore year. For declaration of a major, a student should confer with the appropriate department chair and/or faculty adviser and file the necessary form.

Change of Major
A student who wishes to change majors should see a faculty adviser or the Academic Advising Center. Departmental sections of this catalog contain requirements for acceptance into the major programs. A student not meeting the requirements may appeal to the department chair for an exception.

Once a student has completed 60 hours, a change of major requires an extended session with an adviser in the new major before the change is complete. (See Advising Upon Entrance into the Upper Division for details.)

Forms for changing a major are available in the Office of Student Records.

Credit for More than One Undergraduate Major
A student who desires to graduate with a B.A. degree or a B.S. degree in two or more subjects having established degree programs must meet departmental requirements for the major in each field.

The applicant should present to the involved department chairs a detailed program showing the curriculum to be pursued. This program must be approved by the appropriate department chairs and deans. Department chairs and deans also must approve all changes.

A student may begin the program at any time that permits its completion prior to the contemplated graduation date.

Robinson Scholars
Students who wish to pursue interdisciplinary programs may apply to the dean for Undergraduate Studies before the beginning of the sophomore or junior year to become Robinson Scholars. Appointment then requires the written permission of three Robinson Professors who are willing to serve as an academic committee for the student. The student's curriculum is designed with the advice and consent of the committee, but must fulfill
all university degree requirements. Robinson Scholars are required to submit a senior thesis or project demonstrating scholarly competence in their areas of study. Students completing this program are eligible for a bachelor of individualized study degree.

**Baccalaureate Degree Requirements**

**Literacy**

Literacy, the ability to read, write, and understand complex ideas in prose, is the cornerstone of a liberal education. Everyone involved in educating university students should consider literacy of paramount importance. Because literacy is an essential part of a university education, a substantial amount of writing, in some appropriate form, is required in all university programs.

**The English Composition Requirement**

Because the ability to write well is so important to success in university studies and professional careers, the university requires students to complete two semesters of English composition. Students must enroll in ENGL 101 (or 100) upon admission, unless they have received credit through transfer or proficiency examination. The remaining university composition requirement is satisfied by English 302, or an equivalent transfer course. Students must attain a minimum grade of C in composition courses to fulfill university degree requirements.

Students enrolled in the Plan for Alternative General Education (PAGE) complete the English composition requirement by completing their PAGE program.

**Core Requirements**

Each undergraduate degree program requires a substantial core from the arts and sciences (24 semester hours). Six semester hours must be in English composition (see *English Composition Requirement*). Of the remaining 18 hours, 6 must be in each of the following three areas:

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<th>Area B</th>
<th>Area C</th>
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<td>Anthropology</td>
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</table>

**Catalog Requirements**

Bachelor's degree candidates may elect to graduate under the provisions of the catalog in effect at the time of admission or under the provisions of a catalog subsequent to admission if the student has been enrolled in a continuous progression from date of admission to the receipt of a degree (summer sessions and one-semester absences are excluded). A student who fails to register for two or more consecutive semesters must meet either the requirements of the catalog in effect at the time of initial admission, if readmitted within five years of the last attendance, or the catalog in force at the time of readmission.

When the university or one of its academic units makes changes in course requirements, grading procedures, and/or the level of qualitative performance expected of its students for acceptance into particular programs, academic standing, or graduation, the changes apply to all students enrolled in the university at the time of the implementation of the change and thereafter. The Special Collections section of the Fenwick Library has a copy of all previous catalogs for use by staff and students. Copies may not be checked out but may be photocopied.

**Residence Requirements**

At least one-fourth of the total semester hours presented on the degree application must be completed at the university and must include at least 12 semester hours of advanced-level courses (numbered 300 or above) in the major program.

Students are expected to complete the final one-fourth of their college study at the university. However, a student of junior standing who has completed 24 semester hours of advanced-level courses, including 12 upper-level semester hours in the major, may apply to the appropriate dean for permission to complete the remaining degree requirements elsewhere. Such applications must follow the procedures outlined in the section *Credit to be Earned at Other Colleges*. Permission is granted only in special circumstances, such as moving from the area or enrolling in an accredited professional school.

A student who gains early admission to an accredited professional school may be granted a George Mason bachelor's degree while enrolled in a professional school if certain conditions are met. In this context, a professional school is defined as a school of dentistry, law, medicine, optometry, ophthalmology, or veterinary medicine. Before leaving the university, a student must obtain certification signed by the department chair and the appropriate dean that the residence, general education, and major requirements for the degree have been
met. The student also must secure from the dean prior approval of those professional school courses which are to be applied only as elective credits to the total semester hour requirement for the bachelor's degree.

Academic Requirements
To qualify for a degree, a student must have been admitted, must have fulfilled all stated requirements for the specific degree, and must have earned a GPA of at least 2.00 on the courses presented for graduation. An undergraduate may present all courses in which satisfactory grades have been received and up to 12 hours of courses in which D grades have been received. However, a student may not use a grade of D in BIS 490 and may not use more than six hours of D grades in the major or in the B.I.S. core of study. Some programs may have a more restrictive policy regarding the number of D grades allowable in the major. Please refer to the appropriate section of the catalog for further information.

Students seeking a bachelor's degree must apply at least 45 hours of upper-division course work (numbered 300 or above) toward graduation requirements.

A Graduation Appeals Committee in each college or school considers written appeals from students failing to meet degree or certain area requirements.

Application for Degree
Students who expect to complete graduation degree requirements must complete an Application for Degree Form and return it to the Registrar's Office by the date designated on the Academic Calendar. A graduation fee is payable at the time of submission; payment is required each time a new application is submitted.

A person undertaking academic study with the university, including supervised research, must be registered as a student and pay the prescribed charges.

Second Bachelor's Degree
A second bachelor's degree may be earned, either concurrently or sequentially, by completing all requirements for that degree and by presenting on the degree application an additional 30 semester hours of credit earned at the university but not presented toward the first degree.

Graduation with Distinction
A student graduates with distinction from the university when at least 60 semester hours earned at the university are applied toward graduation and the student's grade point average in all work applied toward graduation is at least equal to one of three values:

- 3.500 (with distinction)
- 3.700 (with high distinction)
- 3.900 (with highest distinction)

Students admitted before spring 1989 may choose to satisfy the conditions for graduation with distinction in the 1988-89 Undergraduate Catalog instead of the above conditions.

Graduation with Distinction and Recognition
A student graduates with distinction and with recognition of a distinguished senior project if, in addition to meeting the criteria for graduation with distinction, the student completes a research project or other substantial piece of creative work directed by a faculty member and judged by the student's department to be of distinguished quality. The departmental faculty establishes criteria by which a student graduating with distinction may attempt to receive this recognition.

A B.I.S. student attempting this recognition is evaluated by the B.I.S. Advisory Committee.

Comprehensive Examinations
Undergraduates who have passed with distinction a voluntary departmental comprehensive examination may have the following notation placed in the remarks section of the transcript: "Voluntary comprehensive examination in (area) passed with distinction (date)."

Commencement
Commencement exercises provide an opportunity for students and their families to share in the conferral of academic degrees. Students wishing to participate in commencement exercises must complete a Participation/Ticket Reservation form to reserve a place for themselves in the academic procession and to reserve tickets for their guests. The form must be returned to the Office of University Activities by the date designed on the Academic Calendar.

Graduate Academic Policies and Procedures
Academic policies and procedures applicable to graduate students appear in the Graduate Catalog.

Knowledge of University Policies
Each student is responsible for knowing the rules, regulations, requirements, and academic policies of the university. A student in doubt concerning an academic matter should consult a faculty adviser or dean.
Honor System and Code

George Mason University shares in the tradition of an honor system that has existed in Virginia since 1842. The Honor Code is an integral part of university life. On the application for admission, students sign a statement agreeing to conform to and uphold the Honor Code. Therefore, students are responsible for understanding the provisions of the code. In the spirit of the code, a student's word is a declaration of good faith acceptable as truth in all academic matters. Therefore, attempted cheating, plagiarism, lying, and stealing of academic work and related materials constitute Honor Code violations. To maintain an academic community according to these standards, students and faculty must report all alleged violations of the Honor Code to the Honor Committee. Any student who has knowledge of, but does not report, an Honor Code violation may be accused of lying under the Honor Code.

The Honor Committee is independent of the Student Government and the university administration. It is made up of students selected by the student body and has the primary duty of espousing the values of the Honor Code. Its secondary function is to sit as a hearing committee on all alleged violations of the code.

At the beginning of each semester faculty members have the responsibility of explaining to their classes their policy regarding the Honor Code. They must also explain the extent to which aid, if any, is permitted on academic work. The complete Honor Code is printed below:

Honor Code

To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of George Mason University, and with the desire for greater academic and personal achievement, we, the members of George Mason University, have set forth the following code of honor.

I. The Honor Committee

The Honor Committee is a group of students elected from the student body whose primary and indispensable duty is to instill the concept and spirit of the Honor Code within the student body. The secondary function of this group is to sit as a hearing committee on all alleged violations of the code.

II. Extent of the Honor Code

Duties of the Honor Committee:

The Honor Code of George Mason University deals specifically with:

A. Cheating and attempted cheating,
B. Plagiarism,
C. Lying, and
D. Stealing.

A. Cheating encompasses the following:
1. The willful giving or receiving of an unauthorized, unfair, dishonest, or unscrupulous advantage in academic work over other students.
2. The above may be accomplished by any means whatsoever, including but not limited to the following: fraud; duress; deception; theft; trick; talking; signs; gestures; copying from another student; and the unauthorized use of study aids, memoranda, books, data, or other information.
3. Attempted cheating.

B. Plagiarism encompasses the following:
1. Presenting as one's own the words, the work, or the opinions of someone else without proper acknowledgment.
2. Borrowing the sequence of ideas, the arrangement of material, or the pattern of thought of someone else without proper acknowledgment.

C. Lying encompasses the following:
The willful and knowledgeable telling of an untruth, as well as any form of deceit, attempted deceit, or fraud in an oral or written statement relating to academic work. This includes but is not limited to:
1. Lying to administration and faculty members.
2. Falsifying any university document by mutilation, addition, or deletion.
3. Lying to Honor Committee members and counselors during investigation and hearing. This may constitute a second charge, with the committee members who acted as judges during that specific hearing acting as accusers.

D. Stealing encompasses the following:
Taking or appropriating without the permission to do so, and with the intent to keep or to make use of wrongfully, property belonging to any member of the George Mason University community or any property located on the university campus. This includes misuse of university computer resources (see Ethics of Computer Resource Use under General Policies). This section is relevant only to academic work and related materials.

III. Responsibility of the Faculty

Professors are responsible, to the best of their ability, for maintaining the integrity of the learning and testing process, both in the classroom and
outside of it, and for fostering conditions of academic integrity. Faculty members may actively proctor examinations in situations which they believe warrant it.

To alleviate misunderstandings, all professors are required to delineate at the beginning of each semester what constitutes a violation of the Honor Code in their classes. This should include an explanation of:

A. The extent to which collaboration or group participation is permissible in preparing term papers, laboratory exhibits or notebooks, reports of any kind, tests, quizzes, examinations, homework, or any other work.
B. The extent to which the use of study aids, memoranda, books, data, or other information is permissible to fulfill course requirements.
C. Guidelines on what constitutes plagiarism, including requirements for citing sources.

All professors are encouraged to send the Honor Committee a written copy of their Honor Code policies, which are kept on file. These requirements should also be stated before each test, examination, or other graded work to clarify what is permissible.

Faculty members who witness an Honor Code violation should proceed as outlined under Procedure for Reporting a Violation.

IV. Responsibility of the Students
Students should request a delineation of policy from each professor if none is given at the beginning of each semester. Students should also request an explanation of any part of the policy they do not understand. Students are responsible for understanding their professors' policies with regard to the Honor Code. Students are also responsible for understanding the provisions of the Honor Code.

As participating members of this community, all students have the duty to report to a member of the Honor Committee, within the prescribed time outlined under Procedures for Reporting a Violation, any violations of the Honor Code. This duty is important not only because it enforces the Honor Code, but also because it gives all students the opportunity to express their respect for personal integrity and an honest academic community.

V. Procedure for Reporting a Violation
All students or faculty members witnessing or discovering a violation of the Honor Code should enlist, wherever and whenever possible, one or more corroborating witnesses to the overt act. The accuser(s) (student, faculty, or staff), within 15 working days from date of realization, notifies the Honor Committee.

The Honor Committee will, within five working days, mail a letter of accusation to the suspected party. This letter is addressed to the accused student's current mailing address listed with the Registrar's Office. The letter informs the suspected parties that they have five Honor Committee working days to contact the Honor Committee office and make an appointment to see the committee chair, who advises them of their rights and options. The Honor Committee begins an investigation, which does not involve a presumption of guilt on the part of the accused. Any member of the George Mason University academic community who knows of but does not report an Honor Code violation may be accused of lying under the Honor Code.

VI. Counsel for the Accused and Accuser
Counsel for the accused and accuser may be provided by any member of the George Mason University student community, including members of the Honor Committee, but not including students of the School of Law.

VII. Appearance of Witnesses
The Honor Committee may require any member of the university community to appear as a witness before the Committee at the time of the hearing. All requests for such appearances are issued by the chair of the Honor Committee, or by the counsel appointed to that case. The appearance of the accuser is required.

VIII. Verdict
To find a student guilty of an honor violation, there must be a four-fifths majority vote (four to one) for a verdict of guilty. Clear and convincing evidence must be presented to find the student guilty.

A student may not be tried more than once for the same offense except when an appeal is granted.

IX. Penalty
If the accused is found guilty of an honor violation, the Honor Committee determines the nature of the penalty by majority vote.

The Honor Committee is not restricted to one kind of penalty but determines one commensurate with the seriousness of the offense. Typical of the range of penalties which may be given are:
A. Oral reprimand: An oral statement to the student given by the chair of the hearing. No entry is made on the student's scholastic record.
B. Written reprimand: A written censure placed in the confidential files of the Honor Committee and in the student's scholastic file but not made part of the student's scholastic transcript records.
C. Nonacademic probation: Exclusion from holding or running for an elected or appointed office in any organization or activity associated with the university. Ineligibility to participate in any activity representing the university either an intercollegiate or club level and ineligibility to serve as a working staff member of any student organization. This action is noted in the judicial administrator's file but is not made a part of the student's scholastic record.

D. Service hours: Library or other supervised university service hours to be completed by a specific time. Upon completion the hold on the student's records is removed.

E. Failing grade: Recommendation in writing to the instructor for a grade of F for the work involved, or for the entire course. The student's permanent record reflects the academic evaluation made by the instructor.

F. Recommendation of suspension from the university for one or more semesters: A student's scholastic record would read: "Nonacademic suspension from (date) to (date)." The recommendation is made to the Associate Provost and Dean for Undergraduate Studies or the Dean of the Graduate School.

G. Recommendation of expulsion from the university: A student's scholastic record would read: "Nonacademic expulsion as of (date)." This penalty is recommended to the Associate Provost and Dean for Undergraduate Studies or the Dean of the Graduate School only in extraordinary circumstances, such as for repeated offenses.

X. Appeal
A written request for an appeal, detailing new evidence, procedural irregularities, or other sufficient grounds that may have sufficient bearing on the outcome of the trial, must be presented to the chair of the Honor Committee within seven working days after the date on which the verdict was rendered.

The written request is reviewed by at least three voting members who were not involved with the original case. If a new hearing is granted, no voting member from the original hearing may vote in a second or subsequent hearings of the same case.

XI. Keeping of Records
The records of the hearing are kept in the Honor Committee's files. These records include a tape or a full transcript of the hearing and all evidence presented at the hearing. If the evidence belongs to any person other than the accused, the original is returned to the owner and a copy kept with the records of the Honor Committee.

XII. Composition of the Committee
The Honor Committee is proportionally composed of students from each school and faculty adviser(s), although the latter are nonvoting members. Undecided majors, B.I.S. students, and continuing education students are considered together as a school. The total number of members is as close to one-half of one percent of the student body as possible. Freshmen are appointed in the fall to serve until the following spring election. One or more clerks appointed by the committee from the student body serve as aides to the chair.

The chair of the committee is elected by majority vote of the committee members. For each hearing, five members of the Honor Committee are designated as voting members.

A faculty hearing adviser, acting as a nonvoting member of the committee, sits with and advises the committee at all hearings. The faculty adviser and faculty hearing adviser are chosen by the Honor Committee.

Previous Honor Committee members may serve during the summer term.

XIII. Eligibility or Members
Any student who maintains a 2.0 grade-point average and is in good standing with the university is eligible for the Honor Committee. A committee member must maintain a 2.0 average to continue in office.

XIV. Election of the Honor Committee
The Honor Committee is elected in the spring semester. The term of office begins upon election and runs until the following spring election.

In the fall semester the chair appoints new members to fill any vacancies that have occurred and to fill the freshman seats on the committee.

XV. The Challenging and Voluntary Withdrawal of a Member of the Committee from Participation in a Particular Hearing
An accused person who challenges the right of any member of the Honor Committee to sit in judgment on him or her must present cause to the chair of the hearing.

The hearing committee then decides the validity of the challenge with the challenged member abstaining from voting. A simple majority decides the validity of any challenge. A successfully challenged committee member must not be present during the hearing.

A member of the Honor Committee who feels prejudiced as to the facts of the case, is a close friend or relative of the accused, or would not be
able to render an impartial judgment must withdraw from a specific hearing.

XVI. Provision for Amendments
Upon petition of 20 percent of the student body, amendments to or revisions of the Honor Code may be proposed for ratification. Said amendments and/or revisions are voted on by the student body as a whole. A two-thirds majority of the votes cast is necessary for acceptance of any amendment or revision.

The Honor Committee may also propose amendments to be voted on by the student body as described in paragraph one of this section.

Approved amendments take effect immediately for all new cases. New provisions are not applied to cases initiated prior to the amendments.
Office of Academic Affairs
Individualized Study Program

Administration
Randolph H. Lytton, Assistant Dean for Undergraduate Studies

Bachelor of Individualized Study (B.I.S.)

The B.I.S. degree program offers adult students an alternative to traditional baccalaureate degree programs. With the guidance of a faculty adviser, students develop an interdisciplinary, individualized program of study that meets their academic needs and interests. The program provides for the liberal transfer of credits earned at accredited institutions. It also recognizes that adults may have acquired college-level learning through varied professional, service, and personal experiences, and provides mechanisms by which to translate this learning into academic credit.

The program is administered by the assistant dean for undergraduate studies. The dean for undergraduate studies is the academic dean for all students in the program.

Eligibility
Applicants to the B.I.S. program must have completed high school at least eight years prior to admission and have accumulated at least 30 semester hours of college credit with a minimum GPA of 2.0. At least 15 of the 30 hours required for admission must have been earned through conventional classroom instruction.

Application and Acceptance
Students who meet eligibility requirements may complete an application to the B.I.S. program after an information/counseling session with a B.I.S. counselor. Appointments for these sessions may be made by calling (703) 993-2084. While a student may apply to the B.I.S. program before applying to George Mason University, the B.I.S. application is considered only after admission to the university. Acceptance into the program is conditional until the student obtains a faculty adviser and has an approved educational contract on file. Although staff members in the Office of Individualized Study Programs can assist students in the process, students are responsible for finding a faculty adviser.

Acceptance decisions are based on assessment of the individualized, nontraditional nature of the course of study proposed by the applicant, the availability of courses relevant to the proposed course of study, the availability of academic advisers in the field, the GPA of the student, and the likelihood of the student’s benefiting from the proposed course of study. In general, a nontraditional, individualized course of study is defined as one not offered through a traditional department or academic unit within the university.

Reapplication to the B.I.S. program is required of students who have been inactive for two years or more or who wish to change the concentration of their individualized course of study.

Program Requirements
The student must complete a minimum of 120 semester hours of course work. At least 45 semester hours must be in upper-level courses (numbered in the 300, 400, and 500 sequences), and at least 30 semester hours must be completed at George Mason University or at other designated Northern Virginia institutions (see Residency Requirement).

The following minimum general education requirements must be completed: (1) 6 hours in English Composition (ENGL 100 or 101, and 302, or equivalent), (2) 6 hours of science or mathematics, (3) 6 hours of humanities, and (4) 6 hours of social or behavioral sciences.
In conjunction with an adviser from the full-time faculty of the university, a student designs and completes an individualized program of course work relevant to his or her nontraditional educational interest. The study core constitutes the student’s “individualized major.” The core is entered on an educational contract that must be approved by the assistant dean for undergraduate studies. The student is encouraged to obtain a faculty adviser and submit an educational contract as early as possible in the program. A minimum of 24 hours of course work must be completed after an approved contract is on file.

The individualized study core must include a minimum of 30 semester hours of credit, at least 12 of which must be upper-level course work. No more than 6 hours of D grades may be included in the core. Courses in the core may not be counted toward general education requirements. No reduction in hours to be completed is approved and no approval to take course work at other academic institutions is granted if a student with less than 45 hours remaining in the program does not have an approved contract.

In addition to the study core, the student must complete a final project (BIS 490), normally completed during the last semester of study. The type of final project varies according to the student’s program. It may be a research paper, an internship, or a creative project, but it must be appropriate to the student’s interests and needs. Three credits are given for successful completion of the project (C or better). A student who fails to earn at least a grade of C must re-enroll in BIS 490 and complete another project. A grade of IP (In Progress) may be awarded to allow students additional time to complete the project. The IP grade is automatically changed to F if the project is not completed by the end of the following semester. The completed final project should be turned in to the adviser no later than the end of the twelfth week so that the IP grade can be changed by the last week of the semester. The student’s academic adviser and two other faculty members (or other qualified professionals) constitute the evaluation committee for the project. One member of the committee is selected by the faculty adviser and one member is selected by the student, subject to approval of the adviser.

The following are examples of the types of individualized, nontraditional concentrations designed by B.I.S. students in conjunction with faculty advisers:

- American Folk Culture
- Art Therapy
- Aviation Administration
- Community Resources Program Development
- Computer Applications to Health Care

- Consumerism
- Corporate/Community Relations
- Economics of Politics
- Eighteenth Century Medicine
- Environmental Design
- Procurement and Grants
- Graphic Arts and Photography
- Health Care Program Administration
- Interpretive Naturalist
- Liturgical Music
- Medical Illustration
- Music Management
- Philosophy and Psychology of Sports
- Senior Citizen Communities
- Therapeutic Recreation in Gerontology
- Women’s Studies
- Writing for Government

Transfer Credit and Credit for Nontraditional Modes of Learning

The B.I.S. program applies fewer restrictions to the transfer of credits earned through traditional course work at accredited institutions. Written permission must be obtained from the assistant dean for undergraduate studies for B.I.S. students to take courses at other institutions.

In addition, the university’s B.I.S. degree allows a student to receive college credit for learning acquired through a variety of nontraditional methods. A maximum of 12 credits for experiential learning demonstrated by a portfolio may be granted. Additional credit earned through CLEP, USAFI, DANTES, or course equivalency examinations offered by academic departments may also be earned. Credit for experiential learning granted by other institutions, however, may not be transferred unless prior approval for portfolio evaluation is granted by the assistant dean for undergraduate studies. Credit earned through correspondence courses, television courses, and other nontraditional modes certified by regionally accredited institutions of higher learning may be applied toward the degree. Completion of certain recognized certificate programs may also be granted credit. Course work taken through the military, government agencies, and some private corporations may be transferred if such course work is indexed and evaluated as college-level work by the American Council on Education.

B.I.S. Residency Requirement in Northern Virginia

The B.I.S. program draws upon the educational resources of Northern Virginia, including George Mason University (which awards the B.I.S. degree), Marymount University, Northern Virginia
Community College, Strayer College (Northern Virginia campuses), and the Northern Virginia Centers of the University of Virginia and Virginia Polytechnic Institute and State University. Courses completed at any of the above institutions count toward the 30-semester-hour residency requirement of the B.I.S. degree.

Department of Human Services

Faculty
Professors: Goodale, Ruhling (Chair), Wiggins
Associate Professors: Bever, Metcalf, Miller, Raskin, Schack, Schwamm, Wright
Assistant Professors: Davis, Linn, Slaght, Weiler

The Department of Human Services administers programs in the fields of Physical Education; Health Education; Parks, Recreation, and Leisure Studies; and Social Work. The department reports directly to the Office of the Provost, and the Vice Provost for Academic Initiatives and External Affairs serves as academic dean for all students in the undergraduate programs.

Course Work
The department offers all course work designated HEAL, PHED, PRLS, and SOCW in the Course Descriptions section of this catalog.

PAGE Students
General education requirements are satisfied by successful completion of the Program for Alternative General Education (PAGE). Additional courses are required each semester the student is enrolled in the PAGE program. Students planning to major in health education; physical education; parks, recreation, and leisure studies; or social work should contact the Department of Human Services.

Physical Education (B.S.Ed.)
This degree prepares students for physical education careers in either public or private sector fitness and sport programs (Option I) or teaching (Option II) and for advanced study in exercise and sport sciences.

Degree Requirements
Regardless of the option selected, course work consists of a 56-hour general education core, with the following special requirements depending on the option selected.

Option I requires 123 total credit hours with a 24-hour specialization in a supporting discipline. The 24 hours must be selected with approval of the advisor from a discipline outside physical education, and 15 of these hours must be 300/400-level courses. The 24 hours must be exclusive of the general education requirements. The final semester is devoted to an internship. Students must have a 2.50 or higher GPA in the major and in the specialization course work.

Option II requires 138 total credit hours with the final semester devoted to student teaching. Students must have a 2.50 or higher GPA in the major. They must also complete a proficiency examination in writing before applying for graduation (contact the Office of Teacher Education to register for the examination).

Core Requirements

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>Language Arts and Culture</th>
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<tbody>
<tr>
<td>21</td>
<td>English: ENGL 101 and 302</td>
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<tr>
<td></td>
<td>Oral Communication:</td>
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<td></td>
<td>COMM 100 or 120</td>
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<td></td>
<td>Non-Western Culture:</td>
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<td>ANTH 114, 201, 204, 206, 207, 208, 211, 313, 332</td>
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<td>ARTH 180, 280, 319, 320</td>
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<td>ENGL 432, 433, 434</td>
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<td>FREN 451</td>
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<td>GOVT 332, 333</td>
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<td>HIST 251, 252, 261, 262, 271, 281, 282, 328, 329, 353, 354, 356, 463, 464</td>
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<td>KORE 450, 451</td>
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<td>MUSI 103</td>
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<td>RELI 211, 212, 213, 314, 315, 337, 490</td>
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<td></td>
<td>RUSS 353, 354</td>
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<td>THR 327, 356, 357</td>
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<td>VIET 301, 302</td>
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<td>An equivalent number of hours in a foreign language may be used to meet this requirement.</td>
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<tr>
<td></td>
<td>Literature (200 level)</td>
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<td></td>
<td>Humanities: art, music, theatre, or 3 philosophy (except logic)</td>
</tr>
<tr>
<td>Behavioral and Social Sciences</td>
<td>12</td>
</tr>
<tr>
<td>HIST 121 or 122</td>
<td>Select 9 hours from the following: anthropology, economics, geography, government, history, sociology,</td>
</tr>
</tbody>
</table>
psychology (must be from 3 different fields)

**Required Courses** .................................. 23  
BIOL 124, 125 (8)  
MATH (3) or CS (3)  
HEAL 110 (3), 111 (3), 205 (3)  
PRLS 316 (3)

**Core Total** ......................................... 56

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**OPTION I**  
**Physical Education with Selected Specialization**

**Core** .................................................. 56

**Professional Sequence** .............................. 43  
PHED 105 (physical education majors do not have to take PHED 100 as a prerequisite or corequisite), 165, 300, 303, 304, 308, 330, 380 (fall only), 386 (spring only), 450, 490  
EDUC 302  
Any 300/400-level 3-hour course from Department of Human Services

**Specialization** ....................................... 24

**Total Hours** .......................................... 123

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**Specialization Requirements**

**Options**—Students may select a specialization from a variety of areas such as management, marketing, sports psychology, exercise science, pre-sports medicine, or pre-physical therapy.

**Program Contract**—Contracts specifying specialization courses should be completed and approved by an adviser and undergraduate coordinator no later than the end of the first year in the program.

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**Internship**

**Admission**—Students should have completed all course work leading to the degree prior to beginning the internship.

**Site Options**—Selection of the site must be completed the semester prior to beginning the internship. Site options, both paid and unpaid, may be obtained from the Site Option Notebooks in the departmental office. After making several potential selections, students should meet with their adviser for final confirmation.

**Site Interview and Guidelines**—Students should obtain the Internship Request Form and Internship in Physical Education Guidelines from the departmental office, then request an interview with the selected site to determine appropriateness. If selection is acceptable to both the student and the site, complete the request form.

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**OPTION II**  
**Teacher Certification in Physical Education with Endorsement in Health Education**

**Core** .................................................. 56

**Professional Sequence** .............................. 61  
PHED 105 (physical education majors do not have to take PHED 100 as a prerequisite or corequisite), 300, 302, 303, 304, 306, 308, 330, 365, 371; six of the following: 380, 381, 382, 383, 384, 385, 386, 387, 388, 389; and 403, 450, 460  
HEAL 220, 305, 310, 315, 325, 330

**Methods** ............................................... 21  
EDUC 302 and either 300 or 522  
PHED 415

**Total Hours** .......................................... 138

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**Pre-Certification in Athletic Training**

To receive certification at George Mason University for athletic training by the National Athletic Training Association (NATA), students must be in the teacher certification program and must meet the following education requirements:

1. Have a college degree with teaching certification (GMU requirement)
2. Complete the following NATA requirements:

<table>
<thead>
<tr>
<th>NATA Requirement</th>
<th>Equivalent GMU Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Anatomy and physiology</td>
<td>BIOL 124, 125</td>
</tr>
<tr>
<td>b. Physiology of exercise</td>
<td>PHED 450</td>
</tr>
<tr>
<td>c. Applied anatomy and kinesiology</td>
<td>PHED 300</td>
</tr>
<tr>
<td>d. Psychology (two courses)</td>
<td>PSYC (6 hrs.)</td>
</tr>
<tr>
<td>e. First aid and CPR</td>
<td>HEAL 111</td>
</tr>
<tr>
<td>f. Nutrition</td>
<td>HEAL 330</td>
</tr>
<tr>
<td>g. Remedial exercise</td>
<td>PHED 308</td>
</tr>
<tr>
<td>h. Personal, community, and school health</td>
<td>HEAL 110, 120</td>
</tr>
<tr>
<td>i. Techniques of athletic training</td>
<td>PHED 330</td>
</tr>
<tr>
<td>j. Advanced techniques of athletic training</td>
<td>PHED 331</td>
</tr>
<tr>
<td>k. Clinical Experience—by arrangement with a certified athletic trainer over a period of at least 2 years</td>
<td></td>
</tr>
</tbody>
</table>

---

**Recommendations**

1. Acting team physician
2. NATA supervising athletic trainer.
Examination

Students must pass written and practical tests administered by NATA and apply for certification.

Note: Requirements are subject to change and students must meet current NATA certification standards.

Teacher Education Program (TEP)

The program in teacher education is accredited and approved by the National Council for Accreditation of Teacher Education and the Virginia State Department of Education. Admission is granted by the Teacher Certification Committee. Students should obtain an application form from the Office of Teacher Education and apply to the teacher education program during or upon completion of the fall semester of their junior year. To be considered for admission, students must:

1. Have completed or be in the process of completing 60 semester hours, 6 of which must have been taken at the university, before applying.
2. Have a GPA of 2.50 for the most recently completed 60 hours of collegiate work and for the professional GPA.
3. For the professional GPA the student must have completed or be in the process of completing:
   - For Physical Education (Option II)
     a. EDUC 302 and either 300 or 522; BIOL 124 and 125; PHED 300 and 303
     b. Four of the following: PHED 380, 381, 382, 383, 384, 385, 386, 387, 388, 389
   - For Health Education (Option II)
     a. BIOL 103-104, HEAL 110, 120, 205, 315
     b. One of the following: HEAL 220, 310, 325, 330.
4. Have submitted the departmental checklist of requirements from the catalog year in which the student expects to graduate. This may be obtained from the Office of Teacher Education or the Department of Human Services.
5. Have demonstrated proficiency in written and oral communication and computer literacy. (See the Office of Teacher Education to register for the examinations.)
6. Physical education and health education students must take the Core battery (General Knowledge, Communication Skills, and Professional Knowledge) and the respective specialty area examinations of the NTE. General Knowledge and Communication Skills scores and Competency Test scores should be reported when applying to TEP or these tests must be scheduled to be taken in the same semester the student is applying for the TEP. The Competency Tests are administered in the Office of Teacher Education.
7. Students may enroll in one 400-level course before they have been admitted to the Teacher Education Program.

Student Teaching Admission

1. Students must maintain a GPA of 2.50 or above following admission to the teacher education program.
2. Students must complete the application process for student teaching through the Office of Teacher Education.

Health Education (B.S.Ed.)

This program prepares students for careers in health education and promotion in public- and private-sector agencies.

Degree Requirements

Course work consists of a general education requirement of 61 semester hours, a professional sequence of 45 semester hours, and a support discipline of 15 semester hours. Support disciplines include sociology, psychology, communication, marketing, science, and physical education. Courses in the support discipline must be exclusive of general education requirements with at least 9 semester hours at the 300-400 level.

The final semester of the program is devoted to the internship experience, 15 weeks of full-time service in a community health agency, professional organization, or corporation. The internship provides students with the opportunity to synthesize and apply the knowledge and skills they have developed in health education and health promotion.

Change of Major and Transfer Requirements

Students attempting to enter the Health Education Program either from another major at the university or from another institution must present a 2.5 or higher GPA in all courses completed prior to applying to the program.

Core Requirements

<table>
<thead>
<tr>
<th>Language Arts and Culture</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101 and 302; COMM 100</td>
<td>9 or 130</td>
</tr>
<tr>
<td>Literature: ENGL 203, 204, 205,</td>
<td>3</td>
</tr>
<tr>
<td>or 206</td>
<td></td>
</tr>
<tr>
<td>Humanities: art, music, philosophy,</td>
<td>3</td>
</tr>
<tr>
<td>foreign language, or economics</td>
<td></td>
</tr>
</tbody>
</table>
### Parks, Recreation, and Leisure Studies (B.S.)

This degree prepares students for supervisory and management careers in private and public recreation agencies or park systems and for advanced study in these and related fields. In addition to the core program, students pursue one of two program concentrations: park resources management or recreation administration. Courses designated PRLS are offered by program faculty.

#### Degree Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Education</strong></td>
<td>41-42</td>
</tr>
<tr>
<td>Language arts and culture:</td>
<td>12</td>
</tr>
<tr>
<td>ENGL 101 and 302 (6)</td>
<td></td>
</tr>
<tr>
<td>COMM 100 or 101 (3)</td>
<td></td>
</tr>
<tr>
<td>ENGL (200-level literature) (3)</td>
<td></td>
</tr>
<tr>
<td>Science:</td>
<td>11</td>
</tr>
<tr>
<td>BIOL 103 and 104 (8)</td>
<td></td>
</tr>
<tr>
<td>CS 103 (3)</td>
<td></td>
</tr>
<tr>
<td>Social and behavioral science:</td>
<td>15</td>
</tr>
<tr>
<td>PSYC 100 (3), SOCI 101 (3), GOVT 103 (3), ECON 103 (3), HEAL 110 or 205 (3)</td>
<td></td>
</tr>
<tr>
<td>Statistics:</td>
<td>3-4</td>
</tr>
<tr>
<td>SOCI 221 (4) or STAT 250 (3)</td>
<td></td>
</tr>
<tr>
<td><strong>Professional Program</strong></td>
<td>49</td>
</tr>
<tr>
<td>PRLS 100, 210, 310, 317, 320, 402, 405, 410, 415, 426, 450, 460, 490</td>
<td></td>
</tr>
<tr>
<td><strong>Concentration</strong></td>
<td>21</td>
</tr>
<tr>
<td>Recreation Administration</td>
<td></td>
</tr>
<tr>
<td>GERM 241</td>
<td>6</td>
</tr>
<tr>
<td>Social science electives</td>
<td>6</td>
</tr>
<tr>
<td>Management and public administration electives</td>
<td>6</td>
</tr>
<tr>
<td>Park Resources Management</td>
<td></td>
</tr>
<tr>
<td>BIOL 377 (3), GEOG 303 (3)</td>
<td>6</td>
</tr>
<tr>
<td>GOVT 241</td>
<td>3</td>
</tr>
<tr>
<td>Natural science electives</td>
<td>6</td>
</tr>
<tr>
<td>Management and public administrative electives</td>
<td>6</td>
</tr>
<tr>
<td>Instead of selecting one of these concentrations, students may complete one of two certificate programs: Certificate in Environmental Management (27 hours) or Certificate in Gerontology (24 hours). See the catalog section on Certificates, Interdisciplinary Minors, and University Courses for requirements for both certificates.</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120-121</td>
</tr>
</tbody>
</table>

### Social Work (B.S.)

The social work program prepares students for beginning generalist professional practice in social work and has been granted full accreditation by the Council on Social Work Education.

To receive a bachelor of science with a major in social work, the student must successfully complete
requirements for the bachelor of science degree, including:

1. 41 to 45 semester hours in social work, including SOCW 301, 323, 324, 351, 352, 357, 358, 453, 454 or 455, 471, and two 400- or 500-level social work electives. (A grade of C or better must be obtained in all of these courses with the exception of the social work electives.)

2. SOCI 101 and either SOCI 221 or PSYC 300, PSYC 100, and either SOCI 308 or PSYC 231

3. 6 semester hours in each of the following: English composition; English literature; philosophy/religion; and the social sciences (history/economics/government), to include:
   - 1. 4 to 8 semester hours
   - 2. At least a C in
   - 3. Submitted application for social work major to the director of Social Work Admissions.
   - 4. BIOL 103, 104
   - 5. 3 semester hours in mathematics
   - 6. 3 semester hours in economics
   - 7. Additional semester hours to total 120 hours

To be admitted to the social work program, a student must have:

1. Completed at least 45 credits with a GPA of 2.5;
2. At least a C in SOCW 301, including a satisfactory evaluation of field experience, and SOCW 351 with a grade of C or better.
3. Submitted application for social work major to the director of Social Work Admissions.

Sophomores should file this application between January 1 and March 15, juniors between September 1 and November 1. The student's application for admission to the social work major will be reviewed by social work faculty members for action. A personal interview may be required.

The Social Work faculty evaluates the student's performance periodically and may require a student to withdraw from the program when, in its judgment, performance is not satisfactory. The decision is based on the quality of academic and field performance as well as on personal fitness for the profession of social work. The student has the right to appeal.

### Sample Schedule

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>Elective</td>
</tr>
<tr>
<td>PSYC 100</td>
<td>MATH (106 recommended)</td>
</tr>
<tr>
<td>History or government</td>
<td>GOVT 204</td>
</tr>
<tr>
<td>Philosophy or religion</td>
<td>Philosophy or religion</td>
</tr>
<tr>
<td>SOCI 101</td>
<td>Elective</td>
</tr>
<tr>
<td></td>
<td>SOCW 100 (optional)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>English or American Literature</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 103</td>
<td>Elective</td>
</tr>
<tr>
<td>SOCW 300 (optional)</td>
<td>3</td>
</tr>
<tr>
<td>Economics</td>
<td>Elective</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCW 301</td>
<td>Elective</td>
</tr>
<tr>
<td>SOCW 323*</td>
<td>Elective</td>
</tr>
<tr>
<td>SOCW 351*</td>
<td>Elective</td>
</tr>
<tr>
<td>SOCW 357*</td>
<td>Elective</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCW 453**</td>
<td>Social work elective</td>
</tr>
<tr>
<td>SOCI 221 or PSYC 300***</td>
<td>SOCW 471</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>14</td>
</tr>
</tbody>
</table>

*aThe social work program can be completed in the final four semesters. Students who do so are advised to take the courses with asterisks in their fifth (fall) semester. Otherwise, their graduation will be delayed.

**Students who wish to register for Block Placement (SOCW 453, 10 credits) must meet specific requirements and be advised by the director of field instruction.

***Students must have completed 6 credits of psychology before registering for this course.

### Insurance Coverage for Students Enrolled In SOCW 453, 454, and 455

Students who participate in internships are covered for liability under Virginia's Self-Insured General Liability Insurance Plan and for medical malpractice under the Medical Malpractice Insurance Plan established by the Department of General Services, Division of Risk Management. These plans cover activities that the instructor has determined to be part of the student's course work. Activities that are not part of the course practicum are not covered. (Exclusions in the plan are listed in Section VII.)

A copy of the Self-Insured Liability Plan for the Commonwealth of Virginia is available in the Office of the Director of Field Instruction.

### Certificate Programs in Gerontology

The Department of Human Services administers graduate and undergraduate certificate programs in gerontology. See the Certificate, Interdisciplinary Minors, and University Courses section of this catalog for details about the undergraduate certificate program and the Graduate Catalog for details about the graduate certificate program.
College of Arts and Sciences
College of Arts and Sciences

Departments and Programs

- American Studies
- Area Studies
- Art and Art History
- Biology
- Chemistry
- Classical Studies
- Communication
- Economics
- English
- Foreign Languages and Literatures
- Geography and Earth Science Systems
- History
- Mathematical Sciences
- Music
- PAGE
- Philosophy and Religious Studies
- Physics
- Psychology
- Public Affairs
- Sociology and Anthropology

The College of Arts and Sciences is the largest and most diverse academic unit within the university. Its programs reflect the traditions of the liberal arts and sciences and the contemporary innovation of flexible interdisciplinary offerings. Undergraduates are taught by a faculty that has achieved a record of academic excellence. Faculty members strive to prepare the undergraduate for the complexities and changes of modern society.

The disciplines within the college’s 16 departments represent the core curricula of a modern university. Through its programs, the college exposes students to principles of sound reasoning and judgment, while providing the skills for understanding and using information. The college strives to give students some of the knowledge needed in today’s world and to develop within them the lifelong process of self-education.

The college offers ample opportunities for double majors that can be tailored to student needs, combining intellectual pursuits with preparation for employment. Faculty advisory committees assist undergraduates who are interested in careers such as medicine, law, and the ministry.

Administration

David Potter, Dean
Nancy E. Kane, Associate Dean for Student Academic Affairs
Evans J. Mandes, Associate Dean for Academic Affairs
Zita Tyer, Associate Dean for Administration
Joseph M. Kanyan, Assistant Dean for Student Academic Affairs

Degree Requirements

Students should consult the Baccalaureate Degree Requirements section of Academic Policies for information concerning the literacy requirement, English composition requirement, catalog requirements, residence requirements, and academic requirements.

General Education Requirements

The general education portions of the bachelor degree programs offer insights into a broad range of human thought and activity. General education prepares students to fulfill various roles in society.
by providing a foundation for continued learning and personal development.

Through general education, students gain knowledge of the basic disciplines, skill in relating materials within the disciplines, and some understanding of human civilization as a whole. All courses fulfilling general education requirements are intended to combine these elements. Thus, in a single course, students should gain basic knowledge of a particular discipline, skill in the methods that produced that knowledge, and an understanding of the discipline’s common attitudes and its place within human thought and activity.

Students at George Mason meet their general education requirements either by completing the number of hours in the courses listed below or by completing the interdisciplinary courses of the PAGE program.

The courses are grouped below to allow the student to exercise certain options among disciplines using similar modes of thought.

### Bachelor of Arts

#### Degree Requirements

**Semester Hours**

**A. General Education**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communication</td>
<td>21</td>
</tr>
<tr>
<td>a. Written</td>
<td>6</td>
</tr>
<tr>
<td>ENGL 101, 302. Nonnative speakers of English with limited proficiency in the language may substitute ENGL 100 for ENGL 101. Students must attain a minimum grade of C to have ENGL 100, 101, 302 fulfill degree requirements.</td>
<td></td>
</tr>
<tr>
<td>b. Oral</td>
<td>3</td>
</tr>
<tr>
<td>COMM 100, 101, 110, 120, or 130.</td>
<td></td>
</tr>
<tr>
<td>c. Foreign Language</td>
<td>0-12</td>
</tr>
<tr>
<td>A student must demonstrate intermediate-level proficiency in one foreign language. The requirement is fulfilled by completion of one foreign language course at the 202 level or higher or by a satisfactory score on an approved proficiency test. International students should consult with an assistant dean about a possible waiver of this requirement.</td>
<td></td>
</tr>
</tbody>
</table>

2. **Analytical Reasoning**

Logic (PHIL 173 or 376) or mathematics, STAT 250, or DESC 200.

3. **Humanities**

a. Literature

Any course in literature at the 200 level in English, the 300 level or above in foreign languages and literatures, or PHIL 253.

b. Fine Arts

Art, dance, film (ENGL 332), music, or theater (lecture, studio, ensemble, or private lessons).

c. Philosophy or religious studies

A logic course does not satisfy this requirement.

4. **Social Science**

a. Economics, geography, government, history

b. Anthropology, psychology, sociology, AMST 205 and 302

5. **Natural Science**

A two-semester laboratory science sequence in astronomy, biology, chemistry, geology, or physics. BIOL 124, 125 does not satisfy this requirement.

6. **Non-Western Culture**

Six credits must be earned in courses devoted to non-Western culture. This requirement is waived for a student who has attended for more than four years a native school in a non-Western country. Requests for a waiver should be made through the dean of the College of Arts and Sciences. The following courses, which are designated as meeting this requirement, may also be presented in partial fulfillment of requirements stated in sections 1, 3, and 4:

- ANTH 114, 300, 301, 302, 304, 305, 306, 307, 308, 311, 313, 332
- ARTH 180, 280, 319, 320
- ENGL 432, 433, 434
- FREN 451
- GEOG 101, 316, 325, 330
- GOVT 332, 333
- MUSI 103
RELI 211, 212, 213, 314, 315, 337, 490
RUSS 353, 354

B. Major .................................. 30-42
See appropriate departmental sections of the catalog for required credits.

C. Electives .............................. 18-30

Total minimum semester hours ...... 120
(45 of these must be upper-division hours)

Physical Education Courses
Activity courses offered by the Department of Health, Sport, and Leisure Studies cannot be counted toward the hours required for a degree in the College of Arts and Sciences.

Bachelor of Science Degree Requirements

A. General Education .................. 24-63

1. English and Literature ............ 12
   a. English Composition ............ 6
      ENGL 101, 302. Students admitted prior to fall 1983 may substitute ENGL 102 for 302. Nonnative speakers of English with limited proficiency in the language may substitute ENGL 100 for 101. Students must attain a minimum grade of C to have ENGL 100, 101, 302 fulfill degree requirements.

   b. Literature ........................ 6
      Any courses in literature at the 200 level in English, the 300 level or above in foreign languages and literatures, or PHIL 253.

2. Course Work Outside the Area of Specialization ...................... 12
   a. 12 hours outside the fields of economics, geography, government, or history if the degree is in one of these fields; six of these hours must be chosen from these fields: astronomy, biology, chemistry, computer science, geology, mathematics, and physics.

   b. 12 hours outside the natural sciences or mathematics fields if the degree is in those fields; six of these hours must be chosen from these fields: anthropology, economics, geography, government, history, linguistics, psychology, and sociology.

   c. 12 hours outside the fields of psychology or public administration if the degree is in one of these fields; six of these hours must be chosen from these fields: astronomy, biology, chemistry, computer science, geology, mathematics, and physics.

3. Additional Required Courses .... 16-39
See departmental sections of the catalog for specifics.

B. Major .................................. 38-74
Fulfillment of requirements for the major as listed under the respective departments: Biology, Chemistry, Economics, Geology, Mathematical Sciences, Physics, Psychology, and Public Affairs.

C. Electives .............................. 15-41

Total minimum semester hours ...... 120
(45 of these must be upper-division hours)

Physical Education Courses
Activity courses offered by the Department of Health, Sport, and Leisure Studies cannot be counted toward the hours required for a degree in the College of Arts and Sciences.

Bachelor of Music Degree Requirements

A. General Education .................. 32

1. English Composition ............... 6
   ENGL 101, 302. Nonnative speakers of English with limited proficiency in the language may substitute ENGL 100 for 101. Students must attain a minimum grade of C to have ENGL 100, 101, 302 fulfill degree requirements.

2. Literature ........................ 6
   Any courses in literature at the 200 level in English, the 300 level or above in foreign languages and literatures, or PHIL 253
3. Natural Sciences/Mathematics/Computer Science .......... 6
Chosen from astronomy, biology, chemistry, computer science, geology, mathematics, or physics.

4. Social Sciences .......... 6
Chosen from anthropology, economics, geography, government, history, linguistics, psychology, or sociology.

5. Additional Nonmusic Courses .......... 8

B. Major ............ 76
1. Basic Musicianship ........... 58
2. Music Concentration ........... 18

C. Electives ............ 22

Total minimum semester hours .......... 130
(45 of these must be upper-division hours)

Physical Education Courses
Activity courses offered by the Department of Health, Sport, and Leisure Studies cannot be counted toward the hours required for a degree in the College of Arts and Sciences.

PAGE Requirements
Students enrolled at George Mason University may fulfill their general education requirements through the Plan for Alternative General Education (PAGE).

General Education Requirements/PAGE Equivalents
PAGE courses correspond to general education requirements as detailed. Note that most PAGE courses contribute to meeting more than one requirement.

Equivalent Semester Hours

1. Communication ............. 21
   a. Semesters I, II, and III ............. 3
      (equivalent to English 101 or 100)
   b. Semester IV ............. 3
      (equivalent to English 302)
   c. Semesters I, II, III, and IV ............. 3
      (equivalent to COMM 100, 110, 120, or 130)
   d. Foreign Language ............. 12
      (PAGE does not satisfy this requirement.)

2. Analytical Reasoning .......... 3
   PAGE 120 and 125, or ............. 3
   mathematics substitution as approved (equivalent to logic or mathematics)

3. Humanities .......... 12
   a. PAGE 122, 130, 150, 151 ............. 3
      (equivalent to Literature I)
   b. PAGE 123, 131, 152, 153 ............. 3
      (equivalent to Literature II)
   c. PAGE 122, 123, 150, 151, 152, ............. 3
      153 (equivalent to fine arts)
   d. PAGE 130, 131, 150, 151, 152, ............. 3
      153 (equivalent to philosophy or religion, except logic)

4. Social Science .......... 12
   a. PAGE Semesters II and IV ............. 6
      (equivalent to economics, geography, government, or history)
   b. PAGE Semesters I and III ............. 6
      (equivalent to anthropology, psychology, or sociology)

5. Natural Science .......... 8
   PAGE 125, 225, 227, 228, or ............. 8
   mathematics/science sequence as approved (equivalent to two-semester science sequence)

6. Non-Western Culture .......... 6
   a. PAGE 122, 123, 130, 131, ............. 3
      150, 151 (equivalent to Culture I)
   b. PAGE 230, 250, 251 ............. 3
      (equivalent to Culture II)

PAGE Courses Total .......... 45
PAGE Courses total 45 credit hours and fulfill all general education requirements except foreign language.

PAGE Curriculum Sequence

Year 1:
<table>
<thead>
<tr>
<th>1st Semester</th>
<th>2nd Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAGE 120</td>
<td>4 PAGE 123</td>
</tr>
<tr>
<td>PAGE 122</td>
<td>3 PAGE 125</td>
</tr>
<tr>
<td>PAGE 130</td>
<td>3 PAGE 131</td>
</tr>
<tr>
<td>PAGE 150</td>
<td>1 PAGE 152</td>
</tr>
<tr>
<td>PAGE 151</td>
<td>1 PAGE 153</td>
</tr>
<tr>
<td>Elective 3-4</td>
<td>Elective(s)</td>
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<td>15-16</td>
<td>14-17</td>
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</table>
Year 2:

<table>
<thead>
<tr>
<th>1st Semester</th>
<th>2nd Semester</th>
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</thead>
<tbody>
<tr>
<td>PAGE 225</td>
<td>3 PAGE 228</td>
</tr>
<tr>
<td>PAGE 227</td>
<td>4 PAGE 252</td>
</tr>
<tr>
<td>PAGE 230</td>
<td>3 PAGE 253</td>
</tr>
<tr>
<td>PAGE 250</td>
<td>1 Electives</td>
</tr>
<tr>
<td>PAGE 251</td>
<td>3 Electives</td>
</tr>
</tbody>
</table>

**Physical Education Courses**

Activity courses offered by the Department of Health, Sport, and Leisure Studies cannot be counted toward the hours required for a degree in the College of Arts and Sciences.

**Teacher Certification**

Students who wish to become elementary, middle, or secondary school teachers should consult the sections on certification found in the catalog under the *Graduate School of Education*.

**Minors**

Beginning in the academic year 1990-91, students may elect minor programs in addition to their major field of study. Minors require no fewer than 15 hours and no more than 21 hours of study. At least 6 hours of the minor must be completed at GMU. No more than 3 hours of D grade in the minor is accepted. Not all departments in the College of Arts and Sciences offer minor programs. The following minors are now available:

- African American Studies
- Anthropology
- Astronomy
- Biology
- Chemistry
- Classical Studies
- Contemporary Europe
- Film and Media Studies
- Foreign Languages and Literatures
- Geography
- History
- Linguistics
- Music
- Philosophy
- Physics
- Religious Studies
- Sociology
- Studio Art
- Urban and Suburban Studies
- Women's Studies

**American Studies**

**Faculty**


**Course Work**

The American Studies faculty offers all course work designated AMST in the *Course Descriptions* section of this catalog, and AMST 690 listed in the Graduate School catalog.

**Requirements for B.A. Degree in American Studies**

The interdisciplinary program in American Studies culminates in the conferral of the B.A. degree in American Studies and requires a minimum of 120 hours of course work. All students must satisfy requirements for the B.A. degree at the university and requirements for a major in American Studies. The major requires 36 hours in American Studies divided as follows:

1. American History
   - Six hours in HIST 121-122.
2. Introductory Seminar
   - Three hours in AMST 302. Students are advised to take AMST 302 in the second semester of their sophomore year or in the first semester of their junior year.
3. English 340
4. 15 hours of AMST courses (or approved alternatives) in an area of concentration chosen by the student in consultation with an American Studies adviser and approved by the program director. At least 12 of the hours must be earned at the 300 level or above.

Possible concentrations include but are not limited to:

- a. American history and literature;
- b. American history and art;
- c. American politics;
- d. American mass media;
- e. American folklore and folklore;
- f. gender and sexuality in American societies;
- g. race and race relations in American societies;
h. class, politics, and culture in American societies;
i. Latin American studies;
j. Caribbean studies;
k. Canadian studies;
l. Comparative studies of the Americas.

5. Senior Project
3 hours in AMST 410. A seminar in methodology and completion of a project in the field of the interdisciplinary concentration.
6. 6 hours of AMST electives or courses approved by an AMST adviser.

American Studies as Part of a Double Major
Many students elect to double major in American Studies and another discipline. Students majoring in anthropology, economics, English, geography, government, history, philosophy, psychology, public administration, or sociology can usually also fulfill the requirements for a second major in American Studies with the minimum 120 hours required for all College of Arts and Sciences degrees. Students wishing to design a double major should discuss their plans with the chair of American Studies. A sample schedule follows.

Sample Schedule for a Double Major in American Studies and History

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>ENGL 306</td>
</tr>
<tr>
<td>HIST 121</td>
<td>HIST 122</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>PHIL 100</td>
<td>SOCI 101</td>
</tr>
<tr>
<td>COMM 100</td>
<td>GOVT 204</td>
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<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 253</td>
<td>SOCI 152</td>
</tr>
<tr>
<td>PHIL 173</td>
<td>HIST 301</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Natural science</td>
<td>Natural science</td>
</tr>
<tr>
<td>AMST 201</td>
<td>AMST 302</td>
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<table>
<thead>
<tr>
<th>Fifth Semester</th>
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<tbody>
<tr>
<td>AMST 320</td>
<td>AMST 310</td>
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<tr>
<td>ENGL 340</td>
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<td>HIST 300</td>
<td>HIST 333</td>
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<table>
<thead>
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<td>MUSI 105</td>
<td>AMST 340</td>
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PAGE Students
The general education requirements (with the exception of foreign language) for the B.A. degree are satisfied by successful completion of the Program for Alternative General Education (PAGE). See the PAGE category in this catalog, and see the PAGE office for sample schedule for majors in American Studies.

Area Studies
Students can pursue a bachelor's degree in area studies by focusing on Asian, European, Latin American, Middle East, or Russian Studies. Asian Studies is supervised by a faculty chaired by Nobuko Tsukui of the Department of English; European Studies by a faculty chaired by Amelia Rutledge of the Department of English; Latin American Studies by a faculty chaired by Martha Francescato of the Department of Foreign Languages and Literatures; and Russian Studies by a faculty chaired by James Levine of the Department of Foreign Languages and Literatures.

Asian Studies

Faculty
Chu (Education); Chung (Economics); Golomb (Sociology and Anthropology); Grewal (English); Liu (Nursing); Nguyen (Public Affairs); Ro (Philosophy and Religious Studies); Saeed (History); Tsukui (English), Acting Chair; Williams (Sociology and Anthropology); Williams (Foreign Languages and Literatures)

Course Work
The Asian Studies faculty offers all course work designated ASST in the Course Descriptions section of this catalog.

B.A. Degree Requirements with a Major in Area Studies
Asian Studies. The student must present a minimum of 120 semester hours of course work for graduation, including satisfaction of general requirements for the B.A. degree and completion of 42 semester hours of course work in Asian studies as follows:

1. 9 hours in Asian Studies seminars: ASST 450, 460 (A or B), 470. These seminars may be taken in any order. See Asian Studies courses

<table>
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<tr>
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<th>Course</th>
<th>Semester</th>
<th>Course</th>
<th>Semester</th>
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<td>ENGL 306</td>
<td>Winter</td>
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<td>HIST 121</td>
<td>Winter</td>
<td>HIST 122</td>
<td>Fall</td>
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<td>First</td>
<td>Foreign language</td>
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<td>Winter</td>
</tr>
<tr>
<td>First</td>
<td>PHIL 100</td>
<td>Fall</td>
<td>SOCI 101</td>
<td>Winter</td>
</tr>
<tr>
<td>First</td>
<td>COMM 100</td>
<td>Winter</td>
<td>GOVT 204</td>
<td>Fall</td>
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<td>Third</td>
<td>ENGL 253</td>
<td>Fall</td>
<td>SOCI 152</td>
<td>Winter</td>
</tr>
<tr>
<td>Third</td>
<td>PHIL 173</td>
<td>Winter</td>
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<td>Third</td>
<td>Foreign language</td>
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<td>Foreign language</td>
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<td>Third</td>
<td>Natural science</td>
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<td>Third</td>
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<td>Fifth</td>
<td>AMST 320</td>
<td>Winter</td>
<td>AMST 310</td>
<td>Spring</td>
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<td>Fifth</td>
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<td>Spring</td>
<td>AMST 320</td>
<td>Winter</td>
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<tr>
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<td>ENGL 302</td>
<td>Winter</td>
<td>HIST 352</td>
<td>Spring</td>
</tr>
<tr>
<td>Seventh</td>
<td>AMST 330</td>
<td>Winter</td>
<td>AMST 410</td>
<td>Spring</td>
</tr>
<tr>
<td>Seventh</td>
<td>ENGL 348</td>
<td>Spring</td>
<td>HIST 354</td>
<td>Winter</td>
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<td>Seventh</td>
<td>HIST 272</td>
<td>Winter</td>
<td>HIST 412</td>
<td>Spring</td>
</tr>
<tr>
<td>Seventh</td>
<td>HIST 435</td>
<td>Spring</td>
<td>HIST 499</td>
<td>Winter</td>
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<tr>
<td>Seventh</td>
<td>MUSI 105</td>
<td>Winter</td>
<td>AMST 340</td>
<td>Spring</td>
</tr>
</tbody>
</table>
(ASST) in the Course Descriptions section of this catalog.

2. 33 hours in the following 4 areas of concentration, at least 3 hours (or one semester course) to be taken in each of the 4 areas. At least 18 hours must be earned at the 300 level or above.
   a. Humanities
   b. Social Sciences
   c. Language/Literature
   d. Cross-cultural Studies

Approved Courses

Department of Art and Art History: ARTH 280
Department of English: ENGL 432, 433, 434
Department of Foreign Languages and Literatures: JAPA 101, 102, 109, 201, 202, 209
Department of History: HIST 251, 252, 353, 354, 356, 390, 451, 463, 499
Department of Music: MUSI 103, 231
Department of Philosophy and Religious Studies: RELI 212, 213, 314, 315, 337, 338, 490
Department of Public Affairs: GOVT 333, 490
Department of Sociology and Anthropology: ANTH 114, 306, 311, 332

Graduate School of Education: (with permission of Asian Studies chair), EDFT 517, 518

Sample Schedule for a B.A. in Area Studies, Asian Studies

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<tr>
<th>First Semester</th>
<th>Second Semester</th>
<th>Total Hours</th>
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<tbody>
<tr>
<td>English composition</td>
<td>Natural science</td>
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<td>Natural science</td>
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</tr>
<tr>
<td>Asian language 101</td>
<td>Asian language* 102</td>
<td>3</td>
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<tr>
<td>RELI 212</td>
<td>MUSI 103</td>
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<td>PHIL 173</td>
<td>HIST 251</td>
<td></td>
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<th>Fourth Semester</th>
<th>Total Hours</th>
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</thead>
<tbody>
<tr>
<td>ANTH 114</td>
<td>Literature</td>
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</tr>
<tr>
<td>HIST 252</td>
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<td></td>
</tr>
<tr>
<td>Asian language 201</td>
<td>Asian language 202*</td>
<td>3</td>
</tr>
<tr>
<td>Literature</td>
<td>RELI 213</td>
<td></td>
</tr>
<tr>
<td>GOVT 333</td>
<td>ARTH 280</td>
<td></td>
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<thead>
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<th>Sixth Semester</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 433</td>
<td>ENGL 434</td>
<td>3</td>
</tr>
<tr>
<td>GOVT 333</td>
<td>HIST 354</td>
<td></td>
</tr>
<tr>
<td>ANTH 311</td>
<td>ASST 450</td>
<td></td>
</tr>
<tr>
<td>ENGL 302</td>
<td>ANTH 332</td>
<td></td>
</tr>
<tr>
<td>RELI 315</td>
<td>ASST 338</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 356</td>
<td>HIST 463</td>
<td>3</td>
</tr>
<tr>
<td>ASST 460 (A or B)</td>
<td>ASST 470</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
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<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

*Japanese

European Studies

Faculty
Bergoffen, Brown, Brunette, Censer, Clark, Comito, De Nys, Deshmukh, Ebiasah, Elstun, Ffolliott, Foster, Gras, Jensen, Kolker, Lytton, Mattusch, Pierce, Rutledge (Chair), Tsukui, Wagner, Zaphiriou

Course Work
The European Studies faculty offers all course work designated EUST in the Course Descriptions section of this catalog.

B.A. Degree Requirements with a Major in Area Studies

European Studies. The student must present a minimum of 120 semester hours of course work for graduation, including satisfaction of general requirements for the B.A. degree and completion of 45 semester hours of course work in European studies as follows:

1. 12 hours in interdisciplinary seminars: EUST 300, 350, 400, 450
2. 3 hours of European geography: GEOG 320
3. 30 hours in an area of concentration consisting of two related disciplines, selected from the following list. At least 9 of the hours in each discipline must be earned at the 300 level or above.
   a. Language (English, French, German, or Spanish) and the fine arts
   b. Language and history
   c. Language and government
   d. Language and philosophy
   e. History and the fine arts
   f. History and philosophy
   g. History and government
   h. Government and philosophy

Approved Courses

Department of Economics: ECON 380, 390, 481
CL 300, 514
Department of Art and Art History: ARTH 210, 315, 321, 322, 323, 333, 334, 340, 341, 342, 344, 345, 360, 362, 399 (with permission of program chair), 420, 430, 440, 460
Department of Dance and Theater and Music: DANC 101
TH 101, 351, 352, 457
The general education requirements (with the exception of foreign language) for the B.A. degree are satisfied by successful completion of the Program for Alternative General Education (PAGE). See PAGE category in this catalog, and see PAGE office for sample schedule for majors in area studies.
Latin American Studies

Faculty
Clark, Fonseca, Forche, Francescato, Guzman, Jacobs, Kelso, Knowles, Lancaster, Lankford, Meyer, Rader, Ruth, Soder

B.A. Degree Requirements with a Major in Area Studies

Latin American Studies. A student must present a minimum of 120 semester hours of course work for graduation, including satisfaction of general requirements for the B.A. degree.

In addition, the student must present 36 semester hours of course work divided to include:
1. 18 semester hours in a core discipline—any discipline in which a major is possible, and
2. 18 semester hours of Latin American-oriented courses other than in the core discipline, including the interdisciplinary seminar on contemporary Latin America (LAS 491).

Proficiency in Spanish or Portuguese must be demonstrated either by examination or by completion of the requisite 202 or 209 foreign language course.

Approved Courses
The following courses may be presented to meet the second requirement listed above. Students are advised to consult the Course Descriptions section in this catalog for course prerequisites.

Department of Economics: ECON 360, 361
Department of Music: MUSI 106
Department of Foreign Languages and Literatures:
SPAN 202 or 209 (3 credit hours only), 301, 311, 322, 325, 329, 351, 352, 353, 359, 420, 451, 452, 461, 466, 472, 480, 481 (when topic is applicable)
Department of History: HIST 271, 272, 345, 363, 420, 443, 470, 475, 478
Department of Philosophy and Religious Studies: PHIL 301, 302, 303, 334
Department of Public Affairs: GEOG 102, 316 (201)
GOVT 132, 331
Department of Sociology and Anthropology: ANTH 302, 303 (when topic is applicable)
SOCI 308, 332, 420

<table>
<thead>
<tr>
<th>Sample Schedule for a B.A. in Area Studies, Latin American Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
</tr>
<tr>
<td>ENGL 101</td>
</tr>
<tr>
<td>SPAN 101</td>
</tr>
<tr>
<td>Natural science</td>
</tr>
<tr>
<td>Oral communication</td>
</tr>
<tr>
<td><strong>Third Semester</strong></td>
</tr>
<tr>
<td>Literature</td>
</tr>
<tr>
<td>SPAN 106*</td>
</tr>
<tr>
<td>Core discipline prereq.</td>
</tr>
<tr>
<td>HIST 271*</td>
</tr>
<tr>
<td><strong>Fifth Semester</strong></td>
</tr>
<tr>
<td>Core discipline</td>
</tr>
<tr>
<td>Core discipline</td>
</tr>
<tr>
<td>PHIL, PSYC, or RELI</td>
</tr>
<tr>
<td>Non-Western culture (300+)</td>
</tr>
<tr>
<td>Electives (300+)</td>
</tr>
<tr>
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</tbody>
</table>

*Suggested courses. Students electing these courses will fulfill the requirement for 18 hours of Latin American-oriented courses, the general B.A. requirements for fine arts and social science, and partially fulfill the non-Western culture requirement.

Russian Studies

Faculty
Aksyonov (Robinson Professor, Foreign Languages and Literatures), Alexeev (Economics), Andrews (Public Affairs), Christensen (Foreign Languages and Literatures), Hecht (Foreign Languages and Literatures), Jensen (History), Katz (Public Affairs), Lavoie (Economics), Levine (Foreign Languages and Literatures, Program Chair), Wade (History)

B.A. Degree Requirements with a Major in Area Studies

Russian Studies. Two principal directions are possible within this degree program: Area (Russian) Studies as one element of a double major, or Area (Russian) Studies as a single degree program. In the first option, students must fulfill all requirements of the Area (Russian) Studies program as noted below. Students must also fulfill requirements of the second major. Obvious combinations with Area (Russian) Studies may be geography, history, international studies, and economics. This program may be accomplished within a four-year
period and is recommended for most students who intend to seek employment in government, industry, or journalism.

The second option is recommended primarily for students who intend to study Russian in graduate school, who are interested in careers as translators, or who are studying for self-enrichment.

All degree students must present a minimum of 120 semester hours of course work for graduation, to include satisfaction of the general requirements for the B.A. degree, and the following:

1. Russian language through the intermediate level through course work or testing
2. RUSS 380 and 381
3. RUSS 480 or 481 (preferably both)
4. Russian literature (two courses). (May be used to satisfy the literature requirement for the B.A. degree)
5. Three additional upper-division courses bearing the RUSS designator, two of which must be selected from the following: 302, 303, 310, 311, 401, 410, and 480 or 481 (whichever is not applied to the basic requirement)
6. RUSS 353 or HIST 328 (may be used to satisfy the non-Western culture requirement for the B.A. degree)
7. RUSS 354 or HIST 329 (may be used to satisfy the non-Western culture requirement for the B.A. degree) or GOVT 338
8. GEOG 330 or GOVT 445.

Qualified students are strongly encouraged to participate in study-abroad programs in Russia. Through a cooperative agreement with the American Council of Teachers of Russian, students may apply to summer or semester Russian language programs at one of several leading universities in Moscow and St. Petersburg. Interested students should consult with their major adviser.

Approved Courses
Department of Foreign Languages and Literatures: RUSS 101, 102, 109, 201, 202, 209 (subject to language proficiency examination), 300, 302, 303, 310, 311, 325, 326, 327, 353, 354, 380, 381, 401, 402, 407, 410, 415, 480, 481, 490, 491

Department of History: HIST 328, 329
Department of Public Affairs: GEOG 330

Cognate Courses: ANTH 114

ARTH 360, 362
ECON 380
EDUC 435
ENGL 300, 377, 378, 391
EUST 300, 350, 400, 450
GEOG 103
GOVT 132

MKTG 307
THR 351, 352

Sample Schedule for a B.A. in Area Studies, Russian Studies (Single Major with a Concentration in Language and Literature)

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tr>
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<td>PSYC 100</td>
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<td>MATH 106</td>
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<thead>
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</thead>
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<tr>
<td>RUSS 201</td>
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<td>GEOG 330</td>
<td>RUSS 353</td>
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<td>GOVT 132</td>
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<td>RUSS 326</td>
<td>THR 160</td>
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<table>
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<td>THR 270</td>
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<td>RUSS 303</td>
<td>RUSS 415</td>
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<tr>
<td>RUSS 480</td>
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<td>RUSS 407</td>
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<td>RUSS 401</td>
<td>RUSS 481</td>
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</tr>
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</table>

Art and Art History

Faculty
Professor: Mattusch (Chair)
Associate Professors: Clapsaddle, ffolliott, Hammond, Kravitz, Todd
Assistant Professors: Butler, Mones-Hattal, Sokolove
Lecturers: Antholt, Figura, Jones, Kendall-Hull, Levine, Sherman

Course Work
The Art and Art History Department offers all course work designated ARTH and ARTS in the Course Descriptions section of this catalog.
B.A. Degree with a Major in Art

The major program in art prepares students for graduate study in studio art or art history, as well as for research and professional work in art. Students may choose to concentrate in art history or studio art.

Concentration in Art History

In addition to the general degree requirements for a B.A. degree, students concentrating in art history must complete 40 credit hours as follows:

1. Studio Art (ARTS) elective (4) with permission of the department
2. Art History (ARTH) electives at the 100 or 200 level (6)
3. ARTH electives at the 300 level (24)
4. ARTH electives at the 400 level or above (6)

Up to 6 credits at the 300 level or above in related fields or in Area Studies and up to 6 credits in art apprenticeships may be applied toward requirements for the major with prior written approval of a departmental adviser. Students contemplating graduate study in art history should acquire a reading knowledge of French and/or German.

45 hours at the 300 level or above are required for graduation. These may be taken in art history, in any other department, or in programs specifically relating to art history.

Courses in Support of Graduate Programs

Although a graduate degree program in art history is not now available, these courses are offered in support of other graduate programs: ARTH 592, 593, 596, 599. See the Course Descriptions section of this catalog.

Concentration in Studio Art

In addition to general requirements for a B.A. degree, students concentrating in studio art must complete 42 credit hours as follows:

1. ARTS 202: Studio Fundamentals I and ARTS 203: Studio Fundamentals II (8)
2. Survey of Western Art I and II or two art history (ARTH) courses at the 300 level (6)
3. Studio art (ARTS) electives at the 300 and 400 levels (28)

Certain courses outside the department may be presented for credit toward the studio art major with departmental approval. Check with a departmental adviser.

Forty-five hours at the 300 level or above are required for graduation. These may be taken in studio art, in any other department, or in programs specifically related to studio art.

Sample Schedule for Concentration in Studio Art

<table>
<thead>
<tr>
<th>Sample Schedule for Concentration in Studio Art</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>First Semester</td>
<td>Second Semester</td>
</tr>
<tr>
<td>ARTH 200</td>
<td>ARTH 201</td>
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<td>ARTS elective</td>
<td>300-level ARTH elective</td>
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<tr>
<td>HIST 101</td>
<td>Mathematics or logic</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>Non-Western culture</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
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<td></td>
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</tr>
<tr>
<td>Third Semester</td>
<td>Fourth Semester</td>
</tr>
<tr>
<td>300-level ARTH elective</td>
<td>300-level ARTH elective</td>
</tr>
<tr>
<td>Literature</td>
<td>Area Studies elective</td>
</tr>
<tr>
<td>Natural science</td>
<td>Natural science</td>
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<tr>
<td>ANTH or PSYC</td>
<td>HIST 102</td>
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<tr>
<td>Foreign language</td>
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<tr>
<td>Fifth Semester</td>
<td>Sixth Semester</td>
</tr>
<tr>
<td>300-level ARTH electives</td>
<td>300-level ARTH electives</td>
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<tr>
<td>Area studies elective</td>
<td>ARTH 303</td>
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<td>Literature</td>
<td>ANTH or PSYC</td>
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<tr>
<td>Seventh Semester</td>
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<tr>
<td>300-level ARTH elective</td>
<td>400- or 500-level ARTH elective</td>
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<td>ARTH 393</td>
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<tr>
<td>Oral communication</td>
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<td>ARTS 202</td>
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<td>Psychology or anthropology</td>
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<td>ENGL 302</td>
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<td>Mathematics or logic Electives</td>
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<tr>
<td>Electives</td>
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Minor In Art History
The minor in art history requires 18 credit hours and covers a broad spectrum of periods, cultures, and themes, with an emphasis on context.
1. 100- or 200-level ARTH courses (6)
2. 300-level ancient through Medieval ARTH courses (3-6)
3. 300-level Renaissance through the 20th century ARTH courses (3-6)
4. 400-level ARTH course (3)

Minor In Studio Art
The minor in studio art requires 20 credit hours and offers a core of foundational studies with the opportunity to explore one or more areas in depth.
1. ARTS 202: Studio Fundamentals I and ARTS 203: Studio Fundamentals II (8)
2. 300-level or above ARTS courses (12)

Graduate Programs
The Department of Art and Art History offers both M.A. and M.F.A. degrees in computer imaging within the Visual Information Technologies (V.I.T.) program. The department also offers courses that support other graduate programs. Information about graduate programs may be obtained from the Graduate School catalog and from the department.

PAGE Students
The general education requirements (with the exception of foreign language) for the B.A. are satisfied by successful completion of the Program for Alternative General Education (PAGE). See PAGE category in this catalog; sample schedules for art history and studio art majors are available in the PAGE office.

Biology

Faculty
Professors: Emsley, Ernst, Hart, Morowitz (Robinson Professor), Shaffer, Skog, Soyfer (Robinson Professor), Stanley, Taub, Willett (Chair)
Associate Professors: Adamkewicz, Andrykovich, Birchard, Bradley, Brown, Heliotis, Jonas, Jones, Kelso, Lawrey, Oates, Rockwood, Royt, Sherald, Torzilli, Wilson
Assistant Professors: Christensen, Gretz, Toth-Allen, Walbridge
Lecturer: Egghart, Yanosky

Course Work
This department offers all course work designated BIOL and MTCH in the Course Descriptions section of this catalog.

Opportunities in Biology
The B.A. and B.S. degrees in biology provide a sound liberal education with substantial experience in quantitative and analytical thought along with preparation for a related profession. In addition to providing the strong background necessary for graduate study in the many fields of biological science, the broad range of courses available at George Mason allows students to concentrate in the following career-related areas: environmental management, microbiology, molecular biology, biotechnology, genetics, secondary education, natural history, and medical technology. Alternatively, students may prepare for graduate-level studies in medicine, dentistry, veterinary medicine, wildlife management, fisheries biology, or marine science. For additional information contact the undergraduate coordinator by mail or phone the department office, David J. King Hall, Room 3005, (703) 993-1050.

Laboratory Requirement
Most biology courses include a required laboratory in which students are expected to actively participate. Laboratories include field trips, experiments with live plants and animals, and dissections of preserved specimens.

B.A. Degree with a Major in Biology
In addition to the general requirements for the B.A. degree, candidates must present the following:
1. 32 hours in biology, including BIOL 213, 303, 304, 307, 311, and 383
2. CHEM 211, 212
3. One of these combinations: MATH 113-114, 113-110, 110-113, or 110-111

Students expecting to enter graduate or professional school are strongly urged to complete MATH 113 and 114. Organic chemistry and PHYS 106, 107, or 343, 344, 345, 346 are recommended.
**B.S. Degree with a Major in Biology**

In addition to the general requirements for the B.S. degree, candidates must present the following:

1. 44 hours of biology, including BIOL 213, 303, 304, 307, 311, and 383
2. CHEM 211, 212, 313, 314, 315, and 318 or 319
3. PHYS 106, 107 or PHYS 343, 344, 345, 346
4. At least nine hours from among the following, including at least two math courses:
   - MATH 110, 111 (6)
   - MATH 113, 114 (8)
   - CS 103 (3)
   - STAT 250 (3)
   - BIOL 312 (4)

### Sample Schedule for B.A. with Major in Biology

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<tr>
<th>First Semester</th>
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<td>ENGL 101</td>
<td>Social science or non-Western elective</td>
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<tr>
<td>MATH 110 or 113</td>
<td>MATH 111 or 114</td>
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<tr>
<td>CHEM 211</td>
<td>CHEM 212</td>
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<td>BIOL 213</td>
<td>BIOL 303 or 304</td>
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<td>Third Semester</td>
<td>Fourth Semester</td>
</tr>
<tr>
<td>Literature</td>
<td>Literature</td>
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<tr>
<td>BIOL 304 or 303</td>
<td>Oral communication</td>
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<tr>
<td>Electives</td>
<td>BIOL 307 or 311</td>
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<td>Foreign language</td>
<td>Foreign language</td>
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<td>Fine arts elective</td>
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<tr>
<td>Fifth Semester</td>
<td>Sixth Semester</td>
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<td>BIOL 307 or 311</td>
<td>Biology elective</td>
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<td>Foreign language</td>
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<td>ENGL 302</td>
<td>Social science or 400-level</td>
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<tr>
<td>Elective</td>
<td>non-Western elective</td>
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<tr>
<td>Biology elective</td>
<td>Biology elective</td>
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<td>14-17</td>
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<tr>
<td>Seventh Semester</td>
<td>Eighth Semester</td>
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<tr>
<td>Social science or non-Western elective</td>
<td>Social science or non-Western elective</td>
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<tr>
<td>Social science or non-Western elective</td>
<td>Social science or non-Western elective</td>
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<tr>
<td>Philosophy or religion</td>
<td>Elective</td>
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<td>BIOL 383</td>
<td>Elective</td>
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<td>Elective</td>
<td>3-7</td>
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### Sample Schedule for B.S. with Major in Biology

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>BIOL 213</td>
<td>BIOL 303 or 304</td>
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<td>ENGL 101</td>
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<td>MATH 110 or 113</td>
<td>MATH 111 or 114</td>
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<td></td>
<td>14-15</td>
</tr>
<tr>
<td>Third Semester</td>
<td>Fourth Semester</td>
</tr>
<tr>
<td>BIOL 303 or 304</td>
<td>Biology elective</td>
</tr>
<tr>
<td>CHEM 313 and 315</td>
<td>CHEM 314 and 318 or 320</td>
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<td>Literature</td>
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<tr>
<td>Social science</td>
<td>Social science</td>
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<td>15</td>
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</tbody>
</table>

### Fifth Semester

- Biology elective: 4
- BIOL 307 or 311: 4
- ENGL 302: 3
- PHYS 106 or 343, 344: 3-4

### Sixth Semester

- Biology elective: 4
- BIOL 307 or 311: 4
- ENGL 302: 3
- PHYS 107 or 345, 346: 3-4

### Seventh Semester

- Biology elective: 4
- BIOL 383: 3-4
- Computer science or statistics:
  - Elective: 3-4
  - Elective: 0-3

### Eighth Semester

- Biology elective: 3-4
- Elective: 0-4

### Courses Approved for Undergraduate Biology Major

- GEOL 202, 307, 309
- CHEM 563, 564, 565

### Advising

All biology and medical technology majors are assigned advisers and must have an adviser's signature to register.

### Transfer Students Residence Requirement

Students majoring in biology are required to complete 16 semester hours of credit for the major at the 300 and 400 level at the university.

### PAGE Students

The general education and mathematics requirements for the B.A. and B.S. degrees are satisfied by successful completion of the Program for Alternative General Education (PAGE). See the PAGE office (222 Thompson) for sample schedules for majors in biology.

### Premedical, Predental, and Preveterinary Students

Students planning to enter medical, dental, or veterinary schools may choose to major in biology. Such students should meet with one of the Department of Biology Health Sciences Advisers in their second semester for assistance and information about the University's Health Sciences Advisory Committee.

Because schools in the health sciences vary both in their philosophies and in their specific requirements, it is wise for the student to become aware of such information well in advance of applying for admission. Although specific requirements vary, most programs do require applicants to complete at least one year of biology, organic chemistry (CHEM 313, 314, 315, and 318 or 320), and a year of college physics (PHYS 343 through 346).
A course in calculus is required by some and highly recommended by others. Admission requirements can generally be met by either a B.A. or a B.S. degree. Students who decide not to major in biology should take a two-semester general biology course (BIOL 103, 104).

Students transferring to an accredited medical, dental, or veterinary school should refer to the Residence Requirements section of this catalog.

Secondary Teacher Certification
Students who wish to become secondary school teachers of biology are required to earn a bachelor's degree with a major in biology as awarded at George Mason University. The courses taken should include the biology core courses. A year of mathematics and general chemistry is also required. The professional preparation component of the state-approved teacher education programs for secondary school teachers is offered in the Graduate School of Education. See the Graduate School of Education section of the catalog for information.

Students seeking certification in biology or general science are required to consult with the Biology Department Secondary Education Adviser and the appropriate discipline adviser in the Graduate School of Education. Grades of C or better in science courses are required for students teaching in biology.

Environmental Management Certificate
The Department of Biology offers an undergraduate certificate program in environmental management for students interested in environmental issues. The program consists of 27 hours of course work, most of which, with appropriate planning, could be counted toward the fulfillment of B.S. or B.A. requirements in biology. The curriculum provides a substantive appreciation of the biological, physical, and social aspects of environmental problems and methods for their analysis and resolution. It should particularly interest students wishing to pursue graduate work or seeking employment in the environmental field. All biology majors are eligible to enroll. For further information see the Certificates, Interdisciplinary Minors, and University Courses section of this catalog.

Biology for Nonmajors
Students who are not majoring in science or mathematics and who wish to fulfill their natural science requirement with a two-semester laboratory sequence in biology, should enroll in BIOL 103, 104. Exceptions include candidates for the B.S. in psychology with a physiological cognate, who must take BIOL 213, 303. Chemistry, physics, and mathematics majors should consult their faculty adviser to determine which biology courses to take.

Minor in Biology
Candidates for the Minor in Biology must complete the following courses: BIOL 213, 303, 304, and either 307 or 311 plus one other course at the 300 or 400 level.

B.S. Degree with a Major In Medical Technology
This program requires the equivalent of three years of full-time preprofessional study at the college level preceding a senior year of professional education in an affiliated school of medical technology. All affiliated schools are accredited by the Committee on Allied Health and Education Accreditation (CAHEA) of the American Medical Association.

Responsibility for applying to schools of medical technology and gaining admission rests with the students. However, guidance is provided by the Medical Technology Program director in the Department of Biology. Admission to schools of medical technology is selective. Candidates should strive for strong academic standing. Students who fail to gain admission to a CAHEA-approved school are unable to complete the degree program. Such students may transfer to a biology major without loss of credits.

Application to medical technology schools should be initiated about a year before the desired entrance date. This fact, coupled with the large number of required courses in the preprofessional curriculum, makes it imperative that students in the program consult regularly with their faculty advisers. All medical technology majors and prospective majors are urged to enroll in MTCH 200 as early as possible. This course provides information on the profession and on the educational demands placed on candidates.

Students should be aware that the senior year spent off campus requires the following special interpretation of university policies: Transfer students must present at least 16 hours of 300- or 400-level biology or chemistry taken at George Mason University. Students may present no more than 6 hours of D grades in the biology and chemistry courses required in the 3 years of preprofessional study. No unsatisfactory grades may be presented for courses in the senior year of professional study. Transfer students entering with more than 45 hours of transfer credit are often un-
able to complete the preprofessional phase of their program in the usual 3 years of full-time study.

Senior students are registered at the university through special procedures. For details consult the program director.

In addition to the college requirements for bachelor of science degrees and MTCH 200, candidates for the B.S. with a major in medical technology must present the following courses in their preprofessional programs:

1. Biology, a minimum of 20 hours, including BIOL 213, 302, 303, 383, and 452.
2. Chemistry, a minimum of 22 hours, including CHEM 211, 212, 313, 314, 315, and either 318 or 320.
3. Mathematics, a minimum of 6 hours (STAT 250 recommended; MATH 106 not applicable).

Students are encouraged to elect additional basic science courses during their preprofessional years. Recommended are BIOL 301, 380, 465, 552; CS 103; CHEM 321; PHYS 106, 107.

The professional study during the senior year requires 30 semester hours of course work, including MTCH 401, 402, 403, 404, 405, and 406. The distribution of credit hours in these courses varies with the school of medical technology. No more than 30 hours of professional credit may be applied toward the degree.

### Sample Schedule for a B.S. with a Major in Medical Technology

#### Preprofessional Phase:

**First Semester**

- CHEM 211 4
- BIOL 213 4
- MATH 110 or 113 3-4
- ENGL 101 3
- 14-15

**Second Semester**

- CHEM 212 4
- BIOL 303 4
- STAT 250 3
- MTCH 200 3
- Nonscience elective 3
- 15

**Third Semester**

- CHEM 313 and 315 5
- CS 103 3
- Nonscience elective 3
- Literature 3
- Social science* 3
- 17

**Fourth Semester**

- CHEM 314 and 318 5
- BIOL 302 4
- Literature 3
- Social science* 3
- 15

**Fifth Semester**

- CHEM 321 5
- ENGL 302 3
- BIOL 383 3
- Elective 15

**Sixth Semester**

- BIOL 452 4
- BIOL 380 4
- Electives 8
- 16

*Anthropology, economics, geography, government, history, linguistics, psychology, or sociology

### Professional Phase: Twelve months' clinical education at an affiliated school of medical technology.

#### Medical Laboratory Technician (MLT) Articulation Track

A special track is available for MLTs who are graduates of associate degree programs. This track provides substantial credit for the scientific and clinical aspects of the associate degree, but requires that the student meet the clinical requirement for national certifying examinations through approved work experience. For details contact the program director.

#### The Major in Medical Technology as a Second Bachelor's Degree

While the standard program for medical technologists is three years on campus followed by a fourth year at a clinical affiliate (3 + 1), many students elect to complete a bachelor's degree before entering the clinical program (4 + 1). Students who have completed a B.S. with a major in biology or chemistry at GMU and who then undertake a fifth year at a clinical affiliate may be eligible for a second bachelor's degree with a major in medical technology. Students wishing to receive the second degree must make application before entering their fifth year. For further information contact a medical technology adviser.

#### Biology Clubs and Societies

**Beta-Beta-Beta Biological Honor Society:** Active members must have completed at least 54 credit hours and have a 3.0 biology GPA with an overall 3.0. The goal of this organization is to promote scholarship, research, and dissemination of biological knowledge.

**Biology Club:** The club functions as both a social and informational network for all interested students. In addition it serves the Biology Department by sponsoring a seminar program and working at university functions.

**Alpha-Epsilon-Delta-Zeta Premedical Honor Society:** A national student support group providing professional school tours, educational programs, and lectures on health topics and on the professional school admissions process to students interested in health-related fields such as medicine, dentistry, optometry and veterinary medicine. Active membership is awarded to students who have completed at least three semesters with a minimum scholastic GPA of 3.0. Associate membership is also available.
Chemistry

Faculty
Professors: Cozzens, Mose, Mushrush (Chair), Stalick
Associate Professors: Chen, Davies, Davis (Associate Chair), Hussam, Roth, Schreifels, Slayden
Assistant Professors: Foster, Honeychuck
Lecturers: Kianpour

Course Work
This department offers all course work designated CHEM in the Course Descriptions section of this catalog.

B.A. Degree with a Major in Chemistry
This program, when coordinated with the necessary courses in education, meets requirements for state certification in chemistry for secondary teachers. It also meets requirements for entrance to medical and other professional schools (see below). In addition to general requirements for a B.A. degree, candidates must complete the following:
1. 37 hours of chemistry courses, including CHEM 211, 212, 313, 314, 315, 318, 320, 321, 331, 332, 336, and 337
2. MATH 113, 114, and 213
3. PHYS 343-346

Sample Schedule for B.A. in Chemistry

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<td>ENGL 101</td>
<td>Literature</td>
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<td>Elective (e.g., BIOL 114)</td>
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<td>CHEM 318</td>
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<td>MATH 213</td>
<td>CHEM 320</td>
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<td>ENGL 302</td>
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<td>PHYS 343</td>
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B.S. Degree with a Major in Chemistry
This program is approved by the American Chemical Society; students completing the program are certified to the society. Students planning professional careers in chemistry should choose the B.S. program.

Minimum course requirements are as follows:
Chemistry ................................................. 49
Mathematics ........................................... 14
Physics .................................................. 8
Other .................................................... 49
Total ................................................... 120

Required courses in chemistry include those indicated for the B.A. degree plus CHEM 422, 441, and 445. Mathematics must include MATH 113, 114, 213, and 304. Physics must include either PHYS 343-346 or PHYS 250, 350, 351, 352, and 353. The latter sequence is recommended for students planning to attend graduate school. In addition, CS 103, 112, or 161 is required. CHEM 500 and 501 are not applicable toward the B.S. degree.

Sample Schedule for B.S. in Chemistry

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
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<td>CHEM 321</td>
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<td>16-17</td>
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</table>
B.S. Degree with a Major
In Environmental Geochemistry

Required courses in environmental Geochemistry are:

CHEM 211, 212, 313, 314, 315, 318, 321, 335;
BIOL 213, 304, 309, 377; MATH 113, 114; PHYS
343, 344, 345, 346; GEOL 101, 102; ENSI or
GEOL 203, ENSI or GEOL 205; GEOG 309;
CAS B.S. requirements (24 credits); General elec-
tives (20 credits). For a complete description of
the degree see Department of Geography and
Earth Systems Science.

Premedical, Predental,
and Preveterinary Students

Students planning medical, dental, or
veterinary careers may meet the requirements of these
professional schools by majoring in chemistry. Such
students should choose the B.A. program and
should consult with the premedical adviser for
chemistry.

Requirements for Nursing Program

The laboratory science requirement for the B.A.
and the chemistry requirement for nursing are satis-
fied by CHEM 103 and 104.

Transfer Students

For students majoring in chemistry, transfer
credit ordinarily is not allowed for courses in or-
ganic chemistry numbered below 300. Credit for
such courses may be obtained by passing an exami-
nation administered by the Department of Chem-
istry.

Chemistry Club

The Chemistry Club provides a social and infor-
mational network for students. It serves the Chem-
istry Department by sponsoring informational
programs and allowing students to work at univer-
sity events.

Minor in Chemistry

The Chemistry Department offers an approved
minor in chemistry. The program requires 16
hours of chemistry at the 300 level or higher.

Graduate Programs

In conjunction with the Departments of Biology,
Electrical and Computer Engineering, and Geol-
ogy, the Department of Chemistry offers interdis-
ciplinary graduate programs leading to the degree
of Master of Arts in Interdisciplinary Studies. The
department also offers a program leading to the
Master of Science in Chemistry. Information
about graduate programs may be obtained from
the Graduate School catalog and from the Depart-
ment of Chemistry.

Classical Studies

Faculty

Burns (Philosophy and Religious Studies), Cham-
berlain (Foreign Languages and Literatures),
Davis (Foreign Languages and Literatures),
Lytton (History), Mattusch (Art and Art History),
Riley (Philosophy and Religious Studies), Rut-
ledge (English), Wehrle (Philosophy and Reli-
gious Studies), Winkler (Foreign Languages and
Literatures) (Chair)

B.A. Degree with a Major
In Classical Studies

Course work towards a degree in Classical Studies
may be pursued in either one of two areas of con-
centration: a B.A. in Classical Studies with empha-
sis on Latin, or a B.A. in Classical Studies with
emphasis on Classical Civilization. The latter
track is particularly suitable for students wishing
to pursue a double major with history, art history,
or philosophy and religious studies. Candidates
must present a minimum of 120 semester hours of
course work for graduation. In addition to the gen-
eral requirements for the B.A. degree, candidates
must complete 36 semester hours of course work
in the major, with at least 24 hours at the upper di-
vision level (numbered 300 or above). Courses re-
quired include the following:

1. Track I. Latin Emphasis

21 hours in Latin beyond LATN 102, including
CLAS 499;
6 hours in classical history from HIST 301, 302,
390 (with approval), and 480;
9 hours in classical art, literature, philosophy,
European studies, or religious studies from the fol-
lowing: ARTH 102, 111, 321, 322, 323, 333,
399 (with approval), 420; CLAS 150, 250, 301,
302, 310, 390; EUST 300; PHIL 301; RELI 252,
371.

2. Track II. Classical Civilization Emphasis

6 hours in Latin beyond LATN 102;
6 hours in Classics (CLAS 250, 300, 301, 302,
310, 390);
3 hours in classical history (HIST 301, 302, 303,
390 (with approval), 480) or EUST 300;
3 hours in classical art history (ARTH 321, 322,
323, 333, 399 (with approval), 420);
3 hours in classical philosophy or religious studies (PHIL 301, RELI 252, 371);
3 hours of CLAS 499;
12 hours of approved electives from classical art history, classics, European studies, classical history, classical languages, classical philosophy, and religious studies (from courses listed above).

Some classical studies requirements can be used to satisfy B.A. degree requirements; see Bachelor of Arts Degree Requirements section of the catalog. See Baccalaureate Degree Requirements section for academic requirements, especially the 45 hours of upper-division (300 or 400 level) course work graduation requirement.

Minor in Classical Studies

The minor is intended for students who wish to become familiar with the classical cultures and to broaden their existing knowledge of the foundations of Western civilization, and for students who are majoring in other areas or the humanities, especially English, comparative literature, history, art history, philosophy, or religion.

The minor provides enough flexibility for students to choose relevant courses according to their primary interests.

The minor in Classical Studies consists of the following 18 credit hours:

- 6 hours in classics, including CLAS 250;
- 3 hours in classical history (HIST 301, 302, 303, 390 (with approval), 480;
- 3 hours in classical art history or philosophy or religious studies or EUST 300;
- 6 hours of approved electives from classical art history, classics, European studies, classical history, classical philosophy and religious studies.

Sample Schedule for B.A.
In Classical Studies

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>ENGL 101</td>
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<tr>
<td>Social science B</td>
<td>Social science B</td>
</tr>
<tr>
<td>LATIN 101</td>
<td>LATN 102</td>
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<tr>
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<td>Oral communication</td>
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<td>Non-Western culture</td>
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<tr>
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<td>ENGL 302</td>
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<tr>
<td>Natural science</td>
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<td>LATIN 201</td>
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<td>Classical philosophy*</td>
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<thead>
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<th>Fifth Semester</th>
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<tbody>
<tr>
<td>Latin*</td>
<td>Latin*</td>
</tr>
<tr>
<td>European studies*</td>
<td>Classical art history*</td>
</tr>
<tr>
<td>Classical history*</td>
<td>Classical studies elective*</td>
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<td>Latin*</td>
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<tr>
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</table>

*These should be at the 300 or 400 level to meet the 45 semester hours of upper-division course work required for graduation.

Communication

Faculty

Professors: Boileau (Chair), Manchester, Taylor
Associate Professors: Broome, Decker, Friedley, Lont
Assistant Professors: Akwule, S. Muir, Schulman
Instructor: J. Muir
Adjunct Professors: Chesebro, Garver, Gaudino, Harris, Joffe, Lieb, Keever, Kirks, Ndolo, Schreiner, Starosta, Walsh
Lecturers: Carpenter, Kane, Mangus, Odum, Schaefer, Tomasovic, Vincent

Course Work

This department offers all course work designated COMM in the Course Descriptions section of this catalog.

B.A. Degree with a Major
In Speech Communication

Study in communication prepares students for graduate study or entry-level positions in one of three areas of concentration:
1. Public communication
2. Interpersonal communication
3. Mass communication, including journalism

In addition to the general requirements for the B.A. degree, speech communication majors must complete 36 semester hours in communication, including the following:
1. Five required communication courses, which must be completed with grades of C or better:
   COMM 300 (3)
   COMM 301 (3)
COMM 302 (3)
COMM 400 (to be taken in junior year) (3)
COMM 420 (to be taken in last semester of senior year) (3)

2. The remaining 21 hours of communication electives, 12 of which must be at the 300 or 400 level, should be selected in consultation with an adviser. These 21 hours of COMM electives may include no more than 10 hours total from among the following courses: COMM 140, 141, 142, 143, 145, 146, 148, 157, 340, 341, 342, 343, 345, 346, 348, 349, 357, 450, 451.

No more than 3 hours of internship credit (COMM 450) may be applied toward COMM electives; no more than 9 hours credit in COMM 450 may be applied toward the 120 hours required for graduation.

Students should go to their advisers for guidance in choosing courses. The department has handouts with recommendations for students pursuing careers in law, journalism, teaching, mass communication, public communication, interpersonal communication, public relations, and political communication. Different career goals lead to different options for completing general education courses.

All students are encouraged to participate in one of the communication activities: WGMU radio, Broadside newspaper, Debate, Forensics, Video Yearbook. Many students include an internship during their senior year as a way of gaining practical experience with national and international businesses, associations, or government agencies.

To fulfill CAS general education communication requirements, COMM majors must take COMM 100 or 101.

The general education requirements for COMM majors, except foreign language and COMM 100 or 101 may be satisfied by successful completion of the Plan for Alternative General Education (PAGE). See PAGE category in this catalog; sample schedules are available in the PAGE office.

COMM majors are urged to consult with an adviser in planning an appropriate schedule that will contribute to developing courses from support areas.

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**Economics**

**Faculty**

University Professor: Buchanan

Professors: Bennett, Bloch, Crain, Heiner, Phillips, Rowley, Snively (Emeritus), Tollison, Vanberg, Vaughn, Wagner (Chair), Williams

Associate Professors: Alexeev, Chung, Congleton, Cowen, Grier, High, Lavoie, Levy, Reid, Roback, Wiest

Assistant Professors: Ellig, Meyer, Thorbecke

**Course Work**

This department offers all course work designated ECON in the Course Descriptions section of this catalog.

**B.A. Degree with a Major in Economics**

In satisfying the general requirements for a B.A. degree, candidates must complete the following:

1. 33 hours in economics, including ECON 103, 104, 306, and 311
2. DESC 200 and 202
3. MATH 108
4. 12 hours in one of the following areas: anthropology, geography, government, history, mathematics (above the 108 level), philosophy, psychology, or sociology

All economics courses, DESC 200 and 202, and MATH 108 may be applied to the B.A. degree in economics only if passed with a grade of C or better.

Since changes in the program may be made after the catalog is published, students should obtain a complete list of requirements from the Economics Department office.

**B.S. Degree with a Major in Economics**

In addition to the general requirements for a B.S. degree, candidates must complete the following:

1. 39 hours in economics, including ECON 103, 104, 306, 311, and 345
2. STAT 362 or CS 262
3. DESC 200 and 202
4. MATH 113 and 114
5. CS 103 or IRM 201
6. A two-semester sequence in a laboratory science
7. 12 hours in one of the following areas: anthropology, geography, government, history, mathe-
matics (at the 113 level or above), philosophy, psychology, or sociology.

Courses in economics may be applied to the B.S. degree only if passed with a grade of C or better. No more than six hours of D grades in other required courses may be applied to the B.S. degree.

Students considering graduate study in economics are advised to complete at least one course in calculus beyond MATH 114.

Since changes in the program may be made after the catalog is published, students should obtain a complete list of requirements from the Economics Department office.

Teacher Certification

Students who wish to become elementary, middle, or secondary school teachers should consult the sections on certification under the Graduate School of Education. Those interested in secondary school teaching should consult with the secondary education advisor in their department.

PAGE Students

The general education requirements (with the exception of foreign language) for the B.A. and B.S. degrees are satisfied by successful completion of the Program for Alternative General Education (PAGE). See PAGE category in this catalog; sample schedules for economics majors are available in the PAGE office.

Sample Schedule for B.A. with Major in Economics

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<th>First Semester</th>
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<td>MATH 108</td>
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Sample Schedule for B.S. with Major in Economics

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Course Work
The English Department offers all course work designated ENGL in the Course Descriptions section of this catalog.

B.A. Degree with a Major in English
To major in English, students must complete the General Education requirements listed under the Bachelor of Arts Degree Requirements in this catalog and 10 courses (30 semester hours) in English beyond the 200 level. General education requirements (except foreign language) for the B.A. degree may be satisfied by successfully completing the Program for Alternative General Education (PAGE). See the PAGE section of this catalog for a description of the program; sample schedules for English majors are available in the PAGE office.

The English Department offers two programs within the English major: the Literature Program and the Writing Program. Both include required and elective courses. Students should seek the help of their advisers in choosing elective courses.

Literature Program
The Literature Program prepares students for graduate work in a variety of disciplines, for teaching, and for careers in industry and government in which skills in English are important. The program focuses on the history and nature of literary texts, including fiction, non-fiction, drama, poetry, and film. It requires 10 English courses beyond the 200 level, distributed as follows:

1. ENGL 325, Dimensions of Literature (may be taken at the same time as the second sophomore literature course). A minimum grade of C is required.
2. Four literature courses at the 400 level.
3. One course in a major author (ENGL 471, 472, 473, 474, 477, 478).
4. One course in language, style, or criticism (ENGL 337, 397, 398, 481, 485, 489, 494, 495, 511, 551, 556, 557, and 592).
5. Three elective English courses above ENGL 302.

Writing Program
The Writing Program prepares students for graduate work in a variety of disciplines, for teaching, for careers in creative writing, and for careers in industry and government in which skills in English are important. The program places special emphasis on the writing of fiction, poetry, and non-fiction. It requires 10 English courses beyond the 200 level, distributed as follows:

1. ENGL 325, Dimensions of Literature (may be taken at the same time as the second sophomore literature course). Minimum grade of C is required.
2. At least four writing courses (ENGL 309, 397, 398, 410, 458, 464, 489, 503, 504).
3. Three elective literature courses above ENGL 302.
4. Two elective English courses, including but not limited to literature courses, above ENGL 302.

Related Courses
Students interested in courses in Classicism and Romanticism or the Twentieth Century in Europe should see EUST 350 and EUST 450 in the Course Descriptions section of this catalog. Either, but not both, may be counted toward the English major. Courses offered by other departments are occasionally cross-listed with English and given ENGL course numbers; such courses may be counted toward the English major.

The Comparative Literature Option
The English Department and the Department of Foreign Languages and Literatures offer a B.A. in English with a concentration in Comparative Literature. This program permits the student to combine the study of literature in English with the study of one or more foreign literatures and with cross-cultural literary study. It requires 10 courses above the 200 level, distributed as follows:

1. Two courses in English and/or American Literature.
2. Two courses in a literature other than English or American, with selected reading in the original language.
3. Three courses designated as comparative or world literature courses by the comparative literature committee. These courses include ENGL 431, 432, 433, 434, 436, 437, CLAS 390, and appropriate special topics courses in FREN, GERM, RUSS, and SPAN.
4. CL 300, Introduction to Comparative Literature.
5. One course in literary criticism: ENGL 494, ENGL 551, FREN 381, or SPAN 311, as appropriate for the student’s focus.
6. CL 514: Theories of Comparative Literature Students should consult with their adviser to design a program of study on a specific genre, period, issue, or other cross-cultural topic.

For more information, contact the English Department or the Department of Foreign Languages and Literatures.
English in a Double Major
For students who want a double major, the English Department accepts certain courses outside of English for credit toward the English major. The English Department offers a double English-Philosophy major in cooperation with the Department of Philosophy and Religious Studies. The Philosophy and Religious Studies section of this catalog describes the English-Philosophy major. Contact the English Department for details. Students interested in designing their own double majors are encouraged to discuss their plans with their English advisers and the Director of Undergraduate Programs in English.

Undergraduates in Graduate English Courses
The English Department permits qualified undergraduates to enroll in its graduate courses numbered 500-599, either for undergraduate or for reserved graduate credit. See the department for details on how to enroll.

Teacher Certification
Students interested in becoming elementary, middle, or secondary school teachers should consult the requirements for teacher certification listed in this catalog under Graduate School of Education. See the English Department’s secondary education adviser for more information.

Graduation with Distinction and Recognition
Students who wish to graduate with distinction in English must meet the requirements for grade point average listed under Academic Policies in this catalog. Those who wish to graduate with recognition in English must meet the requirements for graduation with distinction and successfully complete the English Department’s Honors Program. This may be done in one of two ways:

1. By completing four special studies seminars, or Honors Seminars, in sequence during the junior and senior years. Although the Honors Seminars are open to all English majors, students must obtain permission from the department to enroll in them. See the English Department for application procedures and further information. In addition, students must submit term papers from three Honors Seminars to the English Honors Committee for evaluation. If the committee judges all three papers to be of distinguished quality, the student graduates with recognition.

2. By completing an honors thesis, for which the student receives three hours of independent study credit. The thesis may be submitted as a substitute for the four Honors Seminars. If the thesis is judged by the student’s thesis director and two other members of the English Department to be of distinguished quality, the student graduates with recognition.

Sample Schedule for Undergraduate English Majors

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
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<tbody>
<tr>
<td>ENGL 101</td>
<td>ENGL (200 level)</td>
</tr>
<tr>
<td>Natural science</td>
<td>Natural science</td>
</tr>
<tr>
<td>Economics, government, geography or history</td>
<td>Economics, government, geography or history</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
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<table>
<thead>
<tr>
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</thead>
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<td>ENGL (200 level)</td>
<td>ENGL 325</td>
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<tr>
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<td>Foreign language</td>
</tr>
<tr>
<td>Logic or mathematics</td>
<td>Non-Western culture</td>
</tr>
<tr>
<td>Non-Western culture, e.g., ANTH 114</td>
<td>(300+ level)</td>
</tr>
<tr>
<td>Oral Communication</td>
<td>Philosophy or religion</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
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</thead>
<tbody>
<tr>
<td>ENGL 302</td>
<td>Advanced English courses</td>
</tr>
<tr>
<td>Advanced English courses</td>
<td>PSYC or SOCI</td>
</tr>
<tr>
<td>PSYC or SOCI</td>
<td>Art, dance, film, or theater</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
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<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced English courses</td>
<td>Advanced English courses</td>
</tr>
<tr>
<td>Electives (300+ level)</td>
<td>Electives (300+ level)</td>
</tr>
<tr>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

The Writing Center
The Writing Center offers one-to-one conferencing on all stages of the writing process. Conferences are available, free of charge, to all GMU students, faculty, staff, and alumni. Writing Center tutors, who are graduate teaching assistants in the English Department, have been trained in current methods of composition instruction. They can help clients overcome writing anxiety, develop organizational and revision skills, and learn useful strategies for editing their own work.

Appointments should be made in advance. Call 993-1200, or stop by the center at Robinson Hall, Room A116, to schedule a session.
Foreign Languages and Literatures

Faculty

Professors: Aguera, Aksyonov (Robinson Professor), Elstun, Francescato, Gilbert, Hecht, Wagner, Warner (Chair)

Associate Professors: Berroa, Chamberlain, Cordero, Garrett, Goldin, LePage, Levine, Meyer, Ricouart, Winkler

Assistant Professors: Christensen, Wekerle, Williams

Visiting Assistant Professors: Cabrera, Curet, Kabia, Morton, Sendra

Course Work

This department offers all course work designated CL, CLAS, FREN, FRLN, GERM, ITAL, JAPA, LATN, RUSS, and SPAN, in the Course Descriptions section of this catalog.

B.A. Degree in Foreign Languages with Concentrations in French, German, Russian, or Spanish

Concentrations in French, German, Russian, or Spanish prepare students for teaching careers at the secondary school level, for graduate study in a foreign language, and for research and professional work in government and private enterprise.

Foreign language majors are encouraged to complete a minor or, if possible, a second major in another field. Students who want a double major in a foreign language and another subject should plan a program of study in consultation with advisors from both disciplines.

Courses Offered in English

The following courses are offered in English (the knowledge of a foreign language is not required):

- CLAS 250, 300; FREN 325, 329; FRLN 431
- GERM 301, 302, 305, 325; JAPA 301; RUSS 300, 326, 327, 353, 354; SPAN 321, 322, 325, 329.

(Courses numbered 325 may be repeated once for credit if the authors studied are different.)

Courses that Fulfill General Requirements

1. Language courses through the intermediate level fulfill the foreign language requirement.

2. All literature courses offered by the Department of Foreign Languages and Literatures fulfill the general requirement in literature for baccalaureate degrees.

3. The following courses fulfill the non-Western culture requirement: FREN 451; RUSS 353, 354.

Teacher Certification

Students interested in becoming elementary, middle, or secondary school teachers should consult the requirements for teacher certification listed in this catalog under Graduate School of Education. See the Foreign Languages and Literatures Department's secondary education adviser for more information.

Comparative Literature Option

The Department of Foreign Languages and Literatures and the Department of English offer a B.A. in Foreign Languages with a concentration in Comparative Literature. This program permits the student to combine the study of a foreign language with cross-cultural literary study. It requires 10 courses above the 200 level, distributed as follows:

1. Two courses in a foreign literature with selected readings in the original language.
2. Two courses in English and/or American Literature.
3. Three courses designated as comparative or world literature courses by the comparative literature committee. These courses include ENGL 431, 432, 433, 434, 436, 437; CLAS 390, and appropriate special topics courses in FREN, GERM, RUSS, and SPAN.
4. CL 300: Introduction to Comparative Literature.
5. One course in literary criticism: ENGL 494, ENGL 551, FREN 381, or SPAN 311, as appropriate for the student's focus.
6. CL 514: Theories of Comparative Literature

Students should consult with their adviser to design a program of study focusing on a specific genre, period, issue, or other cross-cultural topic.

For more information, contact the Department of Foreign Languages and Literatures or the English Department.

Certificate in Translation

The Department of Foreign Languages and Literatures offers a program leading to a certificate in translation. For details, see the catalog section on Certificates, Interdisciplinary Minors, and University Courses.
B.A. Degree In Foreign Languages with a Concentration in French

In addition to meeting the general requirements for the B.A. degree, students must complete a minimum of 27 semester hours in French courses at the 300 level and above. Students are expected to complete a balanced program that includes courses in language, culture and civilization, and literature. The 27 hours required in the major must include the following:

1. One advanced language course (FREN 350, 351, 352, 355, 356, 460, 461, or 462)
2. One course in French civilization (FREN 375 or 376)
3. One survey course in French literature (FREN 377 or 378)
4. Four courses at the 400 level or above
No more than one course (3 credit hours) conducted in English may be taken for major credit in French.

Students are encouraged to take courses in other languages and literatures, and in related disciplines such as music, art, history, and philosophy.

B.A. Degree In Foreign Languages with a Concentration in German

In addition to meeting the general requirements for the B.A. degree, students must complete 27 semester hours in German courses at the 300 level or above. No more than 6 hours of courses taught in English may be applied to the major; in addition to certain courses listed in the Course Descriptions under GERM, these may include EUST 350 and 450. Students are expected to complete a balanced program that includes courses in language, culture and civilization, and literature. GERM 340 and either GERM 301 or 302 are required. Students are encouraged to include related courses in English, history, and philosophy among their electives.

Study in Germany

George Mason University's student exchange program with the University of Wurzburg in south central Germany is open to undergraduates in all majors who have attained junior standing. Students interested in applying for admission to the program should contact Professor Esther N. Elstun, Department of Foreign Languages and Literatures, or Professor Vernon W. Gras, Department of English.

B.A. Degree In Foreign Languages with a Concentration in Russian

In addition to meeting the general requirements for the B.A. degree, students must complete a minimum of 27 semester hours in Russian courses at the 300 level and above. Students are expected to complete a balanced program that includes courses in language, culture and civilization, and literature. The 27 hours required in the major must include the following:

1. Three advanced language courses (RUSS 380, 381, and either 480 or 481);
2. One conversation course (RUSS 302 or 303);
3. One culture/civilization course (RUSS 353 or 354);
4. Two Russian literature readings courses in the Russian language (e.g., RUSS 310, 311, 410);
5. One of the following courses: RUSS 325, 326, 327, 407;

Students are encouraged to take additional courses in Russian language to strengthen their comprehension and speaking ability.

Students are also encouraged to participate in an active student exchange/university study program in the Soviet Union. Short study tours to the U.S.S.R. are also offered.

B.A. Degree in Foreign Languages with a Concentration in Spanish

In addition to meeting the general requirements for the B.A. degree, students must complete 27 semester hours in Spanish courses at the 300 level or above for the Spanish major. Students are expected to complete a balanced program that includes courses in language, culture and civilization, and literature. The 27 hours required in the major must include the following:

1. One course in Hispanic civilization (SPAN 461 or 466);
2. Two advanced language courses—one at the 300 level and one at the 400 level (SPAN 301, 351, 352, 353, 359, 451, 452);
3. Three literature courses (SPAN 311, 471, 472). Students considering graduate study in Hispanic literature are encouraged to take at least two 400-level courses in literature.
No more than one course (3 credit hours) conducted in English may be taken for major credit in Spanish.
Minor in Foreign Languages
(French, German, Russian, or Spanish)
Prerequisite: completion of an intermediate (202 or 209) course in French, German, Russian, or Spanish, or equivalent placement test score.
A minor in a foreign language consists of 18 credit hours above the intermediate level in a single foreign language. No more than one course taught in English may be applied to the minor.

Requirements for the Minor in French
Three of the following (9 hours):
FREN 350 French Conversation
FREN 351 Advanced French Grammar
FREN 352 French Composition
FREN 357 Translation of Texts in Specialized Fields
FREN 391 French for the Business World I
Two of the following (6 hours):
FREN 375 French Civilization: From Ancient Gaul to the French Revolution
FREN 376 French Civilization: From the Revolution to Contemporary France
FREN 377 Survey of French Literature: Middle Ages to 1800
FREN 378 Survey of French Literature: 1800 to Present
One French elective at the 300 level or higher (3 hours)

Requirements for the Minor in German
Three of the following (9 hours):
GERM 310 German Conversation and Composition
GERM 316 German for the Business World
GERM 318 Translation of Texts
GERM 415 Advanced Grammar and Style
GERM 418 Advanced Composition
One of the following (3 hours):
GERM 340 Survey of German Literature
Genre courses at the 300 level
Period courses at the 400 level
One of the following (3 hours):
GERM 301 German Culture and Civilization
GERM 302 Germany Today
One German elective at the 300 level or higher (3 hours)

Requirements for the Minor in Russian
Three of the following (9 hours):
RUSS 252 Russian Conversation and Composition or RUSS 303 Russian Advanced Conversation
RUSS 380 Advanced Russian I
RUSS 381 Advanced Russian II
One of the following (3 hours):
RUSS 310 Readings in Russian Literature
RUSS 311 Contemporary Soviet Short Fiction
One of the following (3 hours):
RUSS 353 Russian Civilization
RUSS 354 Contemporary Soviet Life
One Russian elective at the 300 level or higher (3 hours)

Requirements for the Minor in Spanish
Three of the following (9 hours):
SPAN 301 Grammar and Syntax
SPAN 351 Spanish Conversation
SPAN 352 Spanish Composition
SPAN 353 Spanish for the Business World
SPAN 359 Introduction to Translation
SPAN 451 Advanced Oral Spanish
SPAN 452 Advanced Written Spanish
Two of the following (6 hours):
SPAN 311 Introduction to Hispanic Literary Analysis
SPAN 461 Spanish Civilization and Culture
SPAN 466 Latin American Civilization and Culture
SPAN 471 The Literature of Spain
SPAN 472 The Literature of Spanish America
One Spanish elective at the 300 level or higher (3 hours)

Geography and Earth Systems Sciences

Faculty
Professors: Haynes (Dean, Graduate School), Hazen (Robinson Professor), Stough
Associate Professors: Andrews, Diecchio (Director, Earth Systems Science), Fonseca, Harrington, Haack, J. Wood (Chair)
Assistant Professors: P. Williams
Affiliate Assistant Professor: Wheeler
Adjunct Lecturers: Craven, Flynn, Grimaldi, Keer, Larsen, P. Mobley, Nebert, Rennick
Course Work
This department offers all course work designated GECA, GEOG, GEOL, and USST in the Course Descriptions section of the catalog.

PAGE Students
The general education requirements (with the exception of foreign language) for the B.A. and B.S. degree are satisfied by successful completion of the Plan for Alternative General Education (PAGE). See PAGE category in this catalog. See the PAGE office for sample schedules for majors in geography, geology, and earth systems science.

Teacher Certification
Students interested in becoming elementary, middle, or secondary school teachers should consult the department's secondary education adviser for more information.

B.A. Degree with a Major in Geography
In addition to the general requirements for the B.A. degree, candidates must present 37 semester hours of credit in geography including GEOG 102, 103, 310, and 415. GEOG 300 or STAT 250 is also required, but STAT 250 may not be counted toward the 37 hours in geography. Geography students should consider GECA 500-level courses. A total of 120 credit hours is required for the degree.

Minor in Geography
The minor in geography consists of 18 semester hours of credit in geography, including
1. GEOG 101 or 103 and GEOG 102
2. Four upper-level courses, including one systematic course (such as GEOG 301, 303, 304, 305, 306, or 309) and one regional course (such as GEOG 315, 316, 320, 325, 330, or 380)

Minor In Urban and Suburban Studies
The minor in urban and suburban studies is administered by the department. See description under Certificates, Interdisciplinary Minors, and University Courses.

Certificate Program in Cartography
The Certificate in Cartography is administered by the department. See description under Certificates, Interdisciplinary Minors, and University Courses.

Earth Systems Science
Faculty: Diecchio, Haack, Hazen, Heliotis, R. Jones, Kelso, Mose
Students pursuing a degree in Earth Systems Science receive broad training in physical science and the natural science of Earth's systems. Students select a specialty track to which they apply this Earth Systems Science background.

B.S. Degree with a Major In Earth Systems Science
In addition to the general requirements for the B.S. degree, candidates are required to submit the following:
1. 49 hours of core science including MATH 113, 114; CHEM 211, 212; PHYS 343, 344, 345, 346; GEOL 101, 102; BIOL 103, 104; BIOL/GEOL 309; GEOG 309 (prerequisite: GEOG 102 or POI); BIOL 377.
2. One of the following required specialty tracks:

   Geology
   GEOL 301 (structural geology) 4
   GEOL 302 (mineralogy) 4
   GEOL 304 (sedimentary geology) 4
   GEOL 308 (igneous/metamorphic geology) 4
   GEOL 317 (geomorphology) 3
   GEOL 203, 303 (field techniques I and II) 4
   (Field camp is recommended and may be substituted for GEOL 203 and 303.)

   Environmental Geochemistry
   GEOL 203 (field techniques I) 2
   GEOL 205 (environmental geology) 3
   CHEM 313, 314 (organic chemistry) 6
   CHEM 315, 318 (organic chemistry lab) 4
   CHEM 321 (elemental quantitative analysis) 4
   CHEM 335 (physical chem for life science) 3
   (Field camp is recommended and may be substituted for CHEM 335.)

Minimum course requirements for B.S. In Earth Systems Science
Sample Schedule for B.S. in Earth Systems Science

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<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
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<tbody>
<tr>
<td>ENGL 101</td>
<td>Literature</td>
</tr>
<tr>
<td>GEOL 101</td>
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<td>MATH 113</td>
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<td>General elective</td>
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<tr>
<td>Third Semester</td>
<td>Fourth Semester</td>
</tr>
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<td>CHEM 212</td>
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<td>BIOL 213</td>
<td>BIOL 304</td>
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<tr>
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<tr>
<td>Fifth Semester</td>
<td>Sixth Semester</td>
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<td>PHYS 343, 344</td>
<td>PHYS 345, 346</td>
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<td>BIOL/GEOL 309</td>
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<td>ENGL 302</td>
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<tr>
<td>Seventh Semester</td>
<td>Eighth Semester</td>
</tr>
<tr>
<td>Track electives</td>
<td>Track electives</td>
</tr>
<tr>
<td>General electives</td>
<td>General electives</td>
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</tbody>
</table>

B.A. Degree with a Major in Geology

In addition to the general requirements for the B.A. degree, candidates are required to submit the following:

1. 30 hours of geology including: GEOL 101, 102, 203, 301, 302, 303, 304, 308, 317 (Field camp is recommended and may be substituted for GEOL 203 and 303);
2. MATH 110, 111, or 113;
3. CHEM 211 and 212;
4. a computer science course;
5. 12 credits from one of the following tracks of courses:
   - Cartography: GEOG 110, 300, 310, 311, 411
   - Computing and information systems: CS 112, 211, 312; GECA 553; GEOL 300, 411; GEOL 316; INFS 310, 311, 312, 315, 316; STAT 362
   - Earth science education: GEOL 408, 409;
   - ASTR 103; BIOL/GEOL 309; GEOG 309
   - Environmental geology: BIOL 307, 377;
   - BIOL/GEOL 309; GEOL 205, 305; GEOG 303, 309; MATH 209; PHIL 555; PHYS 520;
   - PRLS 402
   - Environmental geochemistry: BIOL 577; CHEM 313, 314, 331 or 335, 504, 505, 551; USE 351, 352, 353; MATH 209
   - Geographic information systems: CS 112, 211;
   - GEOG 300, 411; GECA 553; STAT 344, 354, 362
   - Geophysics: MATH 213, 304; PHYS 352, 353, 355, 361; GEOL 417
   - Geotechnical engineering: ENGR 107, 205, 208, 210; GEOL 306; SYST 301; USE 210, 405, 436

Global systems and policy: BIOL/GEOL 309; BIOL 377, 577; COMM 300, 330, 350; ECON 103, 104, 309; GEOG 300, 303, 305, 309; GOVT 103 or 113, 339, 401; PHIL 555; STAT 250, 344, 354

Hydrology: BIOL/GEOL 309; GEOL 313;
ENGR 308; USE 350, 464; MATH 209

Natural resources: CHEM 313, 314, 331 or 335, 341; GEOG 300, 303; GEOL 305, 405; ENGR 209

Paleontology: BIOL 113, 114, 471, 526, 529;
GEOL 202

Planetary geology: ASTR 105, 106, 228, 328;
GEOL 417

Remote sensing: GEOG 300, 412, 416; GECA 562, 579, 580
Urban systems: GEOG 306, 406; GEOL 306 or USE 405; USE 210, 300, 400, 405; USST 301, 401

Minimum requirements for the B.A. in Geology

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Geology</td>
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<tr>
<td>Specialty track</td>
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<tr>
<td>MATH 110, 111, OR 113</td>
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<td>CHEM 211 AND 212</td>
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<td>Computer science</td>
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<tr>
<td>ENGL 101, 302</td>
<td>6</td>
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<tr>
<td>COMM 100, 101, 110, 120, or 130</td>
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<td>Foreign language</td>
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<tr>
<td>Humanities</td>
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<tr>
<td>Social science</td>
<td>12</td>
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<tr>
<td>Non-Western culture</td>
<td>6</td>
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<tr>
<td>General electives</td>
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Total: 120

Sample Schedule for B.A. in Geology

<table>
<thead>
<tr>
<th>First semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>Literature</td>
</tr>
<tr>
<td>Literature</td>
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<tr>
<td>MATH</td>
<td></td>
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<tr>
<td>Foreign Language</td>
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<tr>
<td>Non-western</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Third Semester</td>
<td>Fourth Semester</td>
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<tr>
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<td>GEOL 102</td>
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<tr>
<td>CHEM 211</td>
<td>CHEM 212</td>
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<tr>
<td>Foreign Language</td>
<td>Foreign Language</td>
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<tr>
<td>General elective</td>
<td>Social Science</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fifth Semester</td>
<td>Sixth Semester</td>
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<tr>
<td>ENGL 302</td>
<td>GEOL 308</td>
</tr>
<tr>
<td>GEOL 302</td>
<td>GEOL 304</td>
</tr>
<tr>
<td>GEOL 317</td>
<td>GEOL 203</td>
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<tr>
<td>Non-western</td>
<td>Computer science</td>
</tr>
<tr>
<td>Track elective</td>
<td>Track elective</td>
</tr>
</tbody>
</table>

Total: 120
Minor in Geology
A minor in geology requires 18 semester credit hours including GEOL 101, 102, and 302, plus 6 credits from the following courses: GEOL 203 and 303 (both must be taken for either to count), 202, 301, 304, 308, 309, 313, 317, 403, or 417.

History

Faculty
Professors: Bakhash (Robinson Professor), J. R. Cohen, Diner, Lovett (Provost), Pacheco, Wade, Wilkins (Robinson Professor)
Associate Professors: Deshmukh (Chair), Gleissner, Harsh, Henriques, Holt, Jensen, Lytton, Rosenzweig, Saeed, Soder, Walker
Assistant Professors: J. T. Censer, Cohen, Copelman, Hawkes, Mitchell, J. Stewart
Lecturers: Ambacher, Angel, Bailey, Butowsky, Herman, Hood, Horowitz, Orens, Ramirez, B. Stewart, Swann

Course Work
This department offers all course work designated HIST in the Course Descriptions section of this catalog.

B.A. Degree with a Major in History
In addition to the general requirements for a B.A. degree, candidates must complete 36 semester hours of history, with at least 21 hours of the total presented for the degree in the 300 and 400 series. Additional hours of history in excess of 36 may be presented as elective hours to be counted toward graduation. No more than 6 hours of D grades may be used for the major. Three hours of the history major requirement may be satisfied by LAS 491; AMST 310, 320, 330, 340; or EUST 300 or 400. Requirements for a degree in history include:

1. U.S. history: 6 semester hours
2. European history (including Russia): 6 semester hours
3. Global, Latin American, African, Asian, or Middle Eastern history: 6 semester hours
4. HIST 300 Introduction to Historical Method: 3 semester hours
5. HIST 499 Senior Seminar in History: 3 semester hours
6. At least 12 hours of history electives at the 300 and/or 400 levels to complete the 21-hour upper-division history requirement.

Total: 36 semester hours

See Bachelor of Arts Degree Requirements section for history courses that can be used to fulfill the non-Western culture requirement. See Baccalaureate Degree Requirements section for academic requirements, especially the 45 hours of upper-division (300 or 400 level) course work graduation requirement.

Minor in History
A minor in history requires 18 semester hours in history, including 12 semester hours at the 300 and 400 level. HIST 300 is required.

Teacher Certification
History majors and majors in disciplines other than history who wish to become secondary school teachers in history or history and social science should consult the secondary education adviser in the Department of History. The professional preparation component of the state-approved teacher education programs for elementary, middle, and secondary school teachers is offered in the Graduate School of Education. See the sections on certification under that school's listing in the catalog.

Sample Schedule for B.A. in History

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST (100 or 200 level)</td>
<td>HIST (100 or 200 level)</td>
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<tr>
<td>Foreign language</td>
<td>Foreign language</td>
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<tr>
<td>ENGL 101</td>
<td>Literature</td>
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<tr>
<td>Social science</td>
<td>Social science</td>
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<tr>
<td>(Group B)</td>
<td>(Group B)</td>
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<tr>
<td>Fine arts</td>
<td>Mathematics or logic</td>
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<tr>
<td>15</td>
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<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST (100 or 200 level)</td>
<td>HIST (100 or 200 level)</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Natural science</td>
<td>ENGL 302*</td>
</tr>
<tr>
<td>Literature</td>
<td>Natural science</td>
</tr>
<tr>
<td>Non-Western culture</td>
<td>Philosophy or religious studies</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>
### Mathematical Sciences

**Faculty**

**Professors:** Levy (Chair), Saperstone, Smith (Mathematics Education), Struppa  
**Associate Professors:** Alligood, Fischer, Gabel, Kiley, J. Lawrence, Lim, Lin, Sachs, Sauer, Shapiro, Zoltek  
**Assistant Professors:** Beslagic, Colonna, Kan, Kulesza, B. Lawrence, Loustaunau, McDaniel, Morris, Singman, Walnut  
**Lecturers:** Lawson, Lieberman, Mohler, Morse, Paralognou, Youngflesh  
**Visiting Lecturers:** Nelson, Paddock

The degree programs in mathematics serve the needs of students with various interests and career goals from business/industry/research to graduate and professional school. Concentrations are available for students in traditional mathematics or applied mathematics. Students may complement other interests by taking a double major in mathematics and a related field such as economics, physics, computer science, or engineering.

**Course Work**

This department offers all course work designated MATH in the Course Descriptions section of this catalog.

**B.A. Degree with a Major in Mathematics**

In addition to general requirements for a B.A. degree, the following courses are required: MATH 113, 114, 125, 215, 216, and 290, plus 15 additional hours numbered above 310 for a total of 37 semester hours in mathematics. Computer Science 112 is recommended.

Students who are not majoring in mathematics but are pursuing certification for secondary school teaching are advised to take MATH 203, 290, 302, and CS 103 or 112.

**B.S. Degree with a Major in Mathematics**

In addition to the general requirements for a B.S. degree, the student must complete all course work in each of the four groups A, B, C, and D below:


B. Science Requirement (14-16 semester credits):
   1. A year of natural science must be chosen from one of the following four sequences:
      - (a) BIOL 113 and 303 or 304
      - (b) CHEM 211, 212
      - (c) GEOL 101, 102
      - (d) PHYS 250, 350, 351
   2. A second year must be chosen from one of the following three options:
      - (a) The list above
      - (b) 6 semester hours chosen from more advanced courses in one of the natural science fields represented in the list above. (Only courses that are acceptable for credit toward the natural science major are permitted.)
      - (c) PHYS 352, 353

C. Computer Science Requirement: CS 112

D. Concentrations: The student must choose traditional mathematics or applied mathematics.
   1. Traditional mathematics concentration (18 semester credits)
      - (a) MATH 316
      - (b) MATH 321 or 431
      - (c) 12 semester credits, 9 of which must be numbered above MATH 310
   2. Applied mathematics concentration (18 semester credits)
      - (a) MATH 325, 351, 413, and 414
      - (b) 6 semester credits, 3 above MATH 310

The department recommends that a two-year proficiency in either French, German, or Russian be demonstrated.

MATH 213 and 214 are not recommended for mathematics majors. In special circumstances a student may substitute both MATH 203 and 214 for MATH 216. MATH 106, 108, 110, 111, 271, and 272 do not count toward satisfying the requirements for a major in mathematics.

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<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 300*</td>
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<tr>
<td>History elective*</td>
<td>History elective*</td>
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<tr>
<td>Oral communication</td>
<td>Non-Western culture</td>
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<tr>
<td>Elective*</td>
<td>Elective*</td>
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<thead>
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<th>Seventh Semester</th>
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<tbody>
<tr>
<td>HIST 499</td>
<td>HIST 499</td>
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<tr>
<td>(or history elective)*</td>
<td>(or history elective)*</td>
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<td>History elective*</td>
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<tr>
<td>Elective</td>
<td>15</td>
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</table>

*45-hour upper-division (300 or 400 level) course work graduation requirement.
For all students:
1. Students may not receive credit for
   (a) both MATH 125 and MATH 305
   (b) both MATH 203 and MATH 216
   (c) both MATH 214 and MATH 216
   (d) both MATH 213 and MATH 215
   (e) both MATH 351 and STAT 344

2. After receiving a grade of C or better in one of
   the courses listed below in the left column, students
   may not receive credit for the corresponding
   course in the right column.
   MATH 113 . . . . . . MATH 105 or 108
   MATH 351
   or STAT 344 . . . . . . . MATH 110
   MATH 441 . . . . . . . . MATH 111
   MATH 325 . . . . . . . . MATH 305

For Nonmajors:
MATH courses 108, 110, and 111 are designed for
students in the social and behavioral sciences. Liberal
arts majors are advised to take either MATH 106 or the
sequence 110, 111. Students in the natural sciences who plan to do graduate work are
advised to add to their basic calculus sequence
courses from MATH 313, 314, 351, 352, 382, 441, 442, 446, 447.

PAGE Students
The general education requirements (with the ex­
ception of foreign language) for the B.A. degree
are satisfied by successful completion of the Plan
for Alternative General Education (PAGE). See
PAGE category in this catalog, and see PAGE office
for sample schedule for majors in mathemat­
ics.

Sample Schedule for B.A. in Mathematics

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>Literature</td>
</tr>
<tr>
<td>FRLN 101</td>
<td>FRLN 102</td>
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<tr>
<td>MATH 113</td>
<td>MATH 114</td>
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<tr>
<td>Natural science</td>
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<tr>
<td></td>
<td>MATH 125</td>
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<td>Third Semester</td>
<td>Fourth Semester</td>
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<tr>
<td>MATH 215</td>
<td>MATH 216</td>
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<td>CS 112</td>
<td>Literature</td>
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<td>Fifth Semester</td>
<td>Sixth Semester</td>
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<td>MATH (above 310)</td>
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<tr>
<td>Electives</td>
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<td>ENGL 302</td>
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<tr>
<th>Sample Schedule for B.S. in Mathematics</th>
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<tbody>
<tr>
<td>First Semester</td>
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<tr>
<td>ENGL 101</td>
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<td>MATH 113</td>
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<td>MATH (above 310)</td>
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<tr>
<td>Electives</td>
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<tr>
<td>ENGL 302</td>
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<th>Seventh Semester</th>
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<tr>
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<tr>
<td>9</td>
<td>Electives</td>
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</tbody>
</table>

The above sample schedules are meant for illustra­
tive purposes only; some courses listed are not re­
quired, only suggested. Electives should be chosen
to satisfy distribution requirements and the re­
qurement of 45 upper-division semester credits.
A student who chooses to take physics as a natural
science will not start the physics sequence until
the second semester. CS 112 would be an appro­
riate replacement in the first semester.

Music

Faculty
Professors: Burton, di Bonaventura, Gabriel (Chair), Maiello, J. Smith
Associate Professors: Brawley, Engebretson, Hill, Kanyan (Assistant Dean), G. Smith
Visiting Commonwealth Associate Professor: Miller
Assistant Professor: Giles
Lecturers: Adams, Anthony, Cooley, Edelbrock, Maley, Renfroe, Signell
Applied Music Faculty:

**Accompanying.** Dale Anthony, Adjunct Associate Professor. B.A., Bob Jones University; M.M., University of Southern California; coach and accompanist for Metropolitan Opera singers and other renowned musicians in the United States.

**Bassoon.** Truman Harris, Adjunct Associate Professor. B.A., North Texas State University; M.M., The Catholic University of America; bassoonist, National Symphony Orchestra.

**Cello.** Yvonne Caruthers, Adjunct Assistant Professor. B.M., Eastman School; cellist, National Symphony Orchestra.

**Clarinet.** Lora Ferguson, Adjunct Associate Professor. B.M., Oberlin Conservatory; M.M., The Catholic University of America; former clarinetist, Kennedy Center Opera House Orchestra.


**Composition.** Stephen Burton, Professor. M.M., Peabody Conservatory.

Sam di Bonaventura (see listing under Violin).

Glenn Smith, Associate Professor. B.A., M.A., California State University, Hayward; D. Mus., Indiana University.

**Conducting.** Stanley Engebretson, Associate Professor. B.A., M.A., University of North Dakota; D.M.A., Stanford University; Director of Choral Studies, George Mason University; former conductor, Minnesota Chorale.

Arnold Gabriel, Professor. B.S., M.S., Ithaca College; conductor, GMU Symphony Orchestra; former conductor, U.S. Air Force Band and Symphony Orchestra.

Anthony Maiello, Professor. B.S., M.S., Ithaca College; Director of Bands, George Mason University.

**Euphonium.** Roger L. Behrend, Adjunct Assistant Professor. B.M.E., Michigan State University; M.A., George Mason University; solo/principal euphoniumist, U.S. Navy Band of Washington, D.C.

**Flute.** Thomas Perazzoli, Adjunct Associate Professor. Philadelphia Musical Academy; flutist, National Symphony Orchestra.

**Guitar (Classic).** Jeffrey Meyerriechs, Adjunct Associate Professor. B.M., North Carolina School of the Arts; concert tours in the United States, Europe, South America, and Caribbean; former guitarist, U.S. Navy Band of Washington, D.C.

Larry Snitzler, Adjunct Associate Professor. Studied with Andres Segovia (guitar) and Nadia Boulanger (theory); international concert tours; former free-lance music producer, National Public Radio.

**Harp.** Jeanne Chalifoux, Adjunct Assistant Professor. Artist Diploma, Curtis Institute of Music; former harpist, National Gallery Orchestra and National Symphony Orchestra.

**Harpsichord.** Webb Wiggins, Adjunct Assistant Professor. B.M., Stetson University; M.M., Eastman School; harpsichordist, Smithsonian Chamber Orchestra and Smithsonian Chamber Players.

**Horn.** Edwin Thayer, Adjunct Associate Professor. B.M., M.M., University of Illinois; principal hornist, National Symphony Orchestra.

**Oboe.** Gene Montooth, Adjunct Associate Professor. B.M.E., Indiana University; principal oboist, Kennedy Center Opera House Orchestra, Filene Center (Wolf Trap) Orchestra, and National Gallery Orchestra.

**Organ.** Celia Amstutz, Adjunct Assistant Professor. B.A., Oberlin Conservatory; M.M., University of Maryland; M.M., Peabody Conservatory; recitalist; Director of Music, Fairfax United Methodist Church.


**Percussion.** Kenneth Harbison, Adjunct Associate Professor. B.M., Eastman School; M.M., The Catholic University of America; percussionist, National Symphony Orchestra.

**Piano.** Dale Anthony (see listing under Accompanying).

Thomas Brawley, Associate Professor. B.M., Greensboro College; M.M., Ph.D., Northwestern University.

Joanne Haroutounian, Adjunct Assistant Professor. B.A., Trenton State College; M.A., The American University.
Judith Harrison, Adjunct Associate Professor.  
B.M.E., Florida State University; M.A., University of North Carolina, Chapel Hill; Ed.D., University of North Carolina, Greensboro.

Edward Newman, Adjunct Associate Professor.  
B.M., M.M., Juilliard School of Music; international concert artist.

Anita Renfroe, Adjunct Associate Professor.  
B.M., Florida State University; M.M., Memphis State University; D.M.A., Southern Baptist Theological Seminary; recitalist, lecturer, and clinician.

Elvin Schmitt, Adjunct Professor. Columbia University; Tobias Matthey Pianoforte School, London; Ecole Normale, Paris; Sorbonne, Paris; former soloist, U.S. and European orchestras.

Saxophone. Richard Parrell, Adjunct Assistant Professor. B.A., B.M., George Mason University; M.M.E., North Texas State University; saxophonist, U.S. Army Band of Washington, D.C.

Dale Underwood, Adjunct Associate Professor. Texas Tech University; saxophone soloist, U.S. Navy Band of Washington, D.C.


Trombone. Paul Schultz, Adjunct Associate Professor. B.M., North Central College (Illinois); M.M., Northwestern University; D.M.A., The Catholic University of America; trombonist, U.S. Army Band of Washington, D.C.


David Flowers, Adjunct Associate Professor.  
B.M., M.M., University of Michigan; D.M.A., The Catholic University of America; trumpeter, National Symphony Orchestra.

Tuba. Michael Murray Bunn, Adjunct Assistant Professor. B.M., M.M., Peabody Conservatory; tubist, Kennedy Center Opera House Orchestra, Filene Center (Wolf Trap) Orchestra, and National Gallery Orchestra.

Viola. Richard Parnas, Adjunct Associate Professor. Curtis Institute of Music; principal violist, National Symphony Orchestra.

Ramon Scavelli, Adjunct Associate Professor. Philadelphia Musical Academy; violist, National Symphony Orchestra.

Viola Da Gamba. Kenneth Slowik, Adjunct Associate Professor. B.M., M.M., Roosevelt University; principal viola da gambist and cellist, Smithsonian String Quartet, Smithsonian Chamber Orchestra, and Smithsonian Chamber Players.

Violin. Sam di Bonaventura, Professor. B.S., Juilliard School; B.M., M.M., Yale University; M.A., Harvard University; D.M.A., Peabody Conservatory of Music.

William Haroutounian, Adjunct Associate Professor. B.M., Curtis Institute of Music; M.M., The Catholic University of America; violinst, National Symphony Orchestra.

Voice. Thomas Beveridge, Adjunct Associate Professor. A.B., Harvard University; Soloist's Diploma, The Longy School of Music; conductor, McLean (Va.) Choral Society and Washington Men's Camerata; oratorio soloist in Europe and U.S.; recitalist at Library of Congress and National Gallery of Art.

Raymond Brown, Adjunct Professor. B.S., Johns Hopkins University; Teacher's Certificate, Peabody Conservatory.

Stanley Engebretson (see listing under Conducting).

Martha Giles, Assistant Professor. B.M.E., M.M.E., D.M.E., University of Oklahoma.

Rilla Mervine. Adjunct Associate Professor. A.A., North Dakota State School of Science; Certificate, Peabody Conservatory; soloist, U.S. orchestras, oratorio and choral societies, Phillips Collection, and National Gallery of Art.

Patricia Miller, Associate Professor. B.M., Boston University; M.M., New England Conservatory; Artists' Diploma, Academia di Santa Cecilia (Rome); international opera, concert, and recording artist with North American, South American, and European opera companies and orchestras.

Vera Tilson, Adjunct Associate Professor. Mannes College of Music; music director, Unitarian Church of Arlington; former music director and conductor, Arlington Metropolitan Chorus.

Anastios Vrenios, Adjunct Associate Professor. B.M., University of the Pacific; M.M., Indiana University; soloist and recording artist, U.S. and European orchestras and opera companies.

Course Work

This department offers all course work designated MUSI in the Course Descriptions section of the catalog.
PAGE Students

The general education requirements (with the exception of foreign language) for the B.A. degree are satisfied by the successful completion of the Plan for Alternative General Education (PAGE) sequence of courses. For information, see the PAGE section in this catalog. Sample schedules for music majors are available in the PAGE Office.

Teacher Certification

Students seeking certification to teach vocal/general or instrumental music on the elementary and secondary levels must earn the Bachelor of Music degree. For students who have earned a baccalaureate degree and who are seeking state certification to teach music, this recommendation is normally made contingent upon completion of the sequence of courses listed under Bachelor of Music—Concentration in Music Education. The courses listed under General Education and Additional Courses in the Music Education Concentration are used to fulfill National Council for the Accreditation of Teacher Education (NCATE), state certification, and university requirements.

Affiliation with Shenandoah University

George Mason University and Shenandoah University have an affiliation whereby GMU music majors may take music courses at Shenandoah University.

Requirements for the Minor in Music

All music minors must pass a music audition. Music minors in the keyboard area use the Class Piano I credit as a music elective.

Total Required .......................... 21
Music Appreciation .......................... 3
Class Piano I ................................ 1
Harmony I and II .............................. 6
Sight Singing and Ear Training I .......... 2
Undergraduate Private Music ............... 6
Instruction ..................................
Ensembles .................................. 3

Requirements for the Major in Music (B.A., B.M.)

The two undergraduate degree programs prepare students for graduate work in music and music literature, for research and professional work in musical activities, and for state certification to teach vocal/general or instrumental music on the elementary and secondary levels. Entrance to all music degree programs is by audition. Arrangements for an audition must be made in advance by contacting the Department of Music before the scheduled audition date. Auditions are held in November, January, and March through August (normally on the first Monday of each month except for January and August, when dates are scheduled during the university registration period). Competency placement tests are required of all transfer students who desire to present transfer credit in any of the following areas: keyboard harmony, sight singing, ear training, and class piano. (For dates, see the Academic Calendar in the front of this catalog.)

B.A. Degree with a Major in Music

In addition to general requirements for a B.A. degree, music majors must complete a minimum of 42 hours in music. A total of 120 semester hours is required for the bachelor of arts degree with a major in music.

Required Courses ....................... 42
Harmony I, II, III, IV .......................... 11
Keyboard Harmony .......................... 1
Sight Singing and Ear Training I, II ...... 4
Historical, Theoretical, and Analytical Study of Music .......................... 9
Class Piano I, II .............................. 2
(Keyboard majors must substitute MUSI 271 and 272)
Major Instrument or Voice (Private Music Instruction) ....................... 8
Ensemble .................................... 7
*Voice majors must earn seven credits in University Chorale and/or Symphonic Chorus. Orchestral string majors must earn seven credits in Symphony Orchestra and/or Symphonic Band. Piano, harpsichord, and guitar majors must earn at least four credits in large ensembles: University Chorale, Symphonic Chorus, Symphony Orchestra, Symphonic Band.

B.M. Degree

A total of 130 semester hours is required for the Bachelor of Music degree. A total of 136 semester hours is required for a concentration in music education. The requirements by area are as follows:

General Education .......................... 32
See general education requirements for B.M. degree in the College of Arts and Sciences section of the catalog.

Basic Musicianship .......................... 58
Harmony I, II, III, IV .......................... 11
Keyboard Harmony .............................. 1
Sight Singing and Ear Training I, II .................. 4
Survey of World Music ............................ 3
Historical, Theoretical, and Analytical Study of Music I, II, III, IV ......................... 12
Class Composition and Arranging I ................. 3
General Conducting ................................ 2
Class Piano I, II (Keyboard majors must substitute MUSI 271 and 272) .................. 2
Major Instrument or Voice (Private Music Instruction) ........................................ 12
Ensemble ............................................. *8

*Voice majors must earn eight credits in University Chorale and/or Symphonic Chorus. Orchestral string majors must earn eight credits in Symphony Orchestra. Wind and percussion majors must earn eight credits in Symphony Orchestra and/or Symphonic Band. Piano, harpsichord, organ, and guitar majors must earn at least four credits in large ensembles: University Chorale, Symphonic Chorus, Symphony Orchestra, and Symphonic Band. Voice, orchestral string, wind and percussion majors need earn only seven credits in the indicated ensembles if they are in the music education concentration.

**Music Concentration ................................. 18

To earn a B.M. degree, a music concentration must be selected from one of the following categories: accompanying, composition, performance, music history and literature, or music education.

Free Electives ........................................... 22
Total ....................................................... 130

<table>
<thead>
<tr>
<th>Concentrations in Music (Bachelor of Music)</th>
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</thead>
<tbody>
<tr>
<td>Concentration in Accompanying</td>
</tr>
<tr>
<td>To be admitted into the concentration in accompanying, a student must be approved by an Accompanying Concentration Audition Committee.</td>
</tr>
<tr>
<td>The following required sequence of courses is in addition to those listed under Basic Musicianship (Bachelor of Music Degree). Students must also earn nine semester hours in foreign languages: one semester each in French, German, and Italian.</td>
</tr>
<tr>
<td>Private Music Instruction .......................... *8</td>
</tr>
<tr>
<td>Junior Recital ....................................... 1</td>
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<tr>
<td>Senior Recital ....................................... 1</td>
</tr>
<tr>
<td>Music Literature ..................................... 3</td>
</tr>
<tr>
<td>(Vocal, opera, or chamber music literature are recommended.)</td>
</tr>
<tr>
<td>Voice ................................................... 2</td>
</tr>
<tr>
<td>(Class Voice and/or Undergraduate Private Music Instruction)</td>
</tr>
<tr>
<td>Diction .................................................. 1</td>
</tr>
<tr>
<td>(Undergraduate Private Music Instruction in voice may be substituted.)</td>
</tr>
<tr>
<td>Chamber Ensembles .................................... 2</td>
</tr>
<tr>
<td>The 12 credits listed under Major Instrument or Voice (Basic Musicianship) and the 8 credits listed under Private Music Instruction (Music Concentration in Accompanying) must be divided as follows: 8 credits in Undergraduate Private Music Instruction—Instrumental (piano or harpsichord) and 12 credits at the 3-credit level in Undergraduate Private Music Instruction—Accompanying (piano).</td>
</tr>
</tbody>
</table>

**Concentration in Composition**

To be admitted into the concentration in composition, a student must submit a portfolio of compositions and be approved by a faculty committee.

The following required sequence of courses is in addition to those listed under Basic Musicianship (Bachelor of Music degree):

| Private Music Instruction .......................... 8 |
| Composition ........................................... 1 |
| Orchestration ......................................... 3 |
| Theory Elective ....................................... 3 |
| Advanced Conducting .................................. 2 |
| Improvisation ......................................... 1 |

**Concentration in Performance**

To be admitted into the concentration in performance, a student must be approved by a Performance Concentration Audition Committee.

The following required sequence of courses is in addition to those listed under Basic Musicianship (Bachelor of Music degree):

<table>
<thead>
<tr>
<th>Concentration in Keyboard Performance (total of 18 semester hours)</th>
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<tbody>
<tr>
<td>Major Instrument (Private) ........................................ 8</td>
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<tr>
<td>Music Instruction ............................................... 1</td>
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<tr>
<td>Junior Recital ............................................... 1</td>
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<tr>
<td>Senior Recital ............................................... 1</td>
</tr>
<tr>
<td>Keyboard Literature .......................................... 3</td>
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<tr>
<td>Keyboard Pedagogy ........................................... 3</td>
</tr>
<tr>
<td>Improvisation ................................................. 1</td>
</tr>
<tr>
<td>Music Elective ............................................... 1</td>
</tr>
</tbody>
</table>

**Concentration in Vocal Performance (total of 18 semester hours; plus 9 semester hours of French, German, Italian, or any combination of these)**

| Private Voice (Private) .................................... 8 |
| Music Instruction ......................................... 1 |
| Junior Recital ............................................. 1 |
| Senior Recital ............................................. 1 |
| Choral Literature .......................................... 3 |
| Operatic Literature ......................................... |
| Advanced Conducting ........................................ 2 |
| Improvisation .............................................. 1 |
| Ensembles ................................................... 2 |

**Concentration in Winds/Strings/Percussion Performance (total of 18 semester hours)**
Major Instrument (Private) ..... 8
Music Instruction)                                         
Junior Recital ..................... 1
Senior Recital ..................... 1
Orchestration ..................... 3
Advanced Conducting .......... 2
Improvisation .................... 1
Ensembles ......................... 2

Concentration in Music History and Literature
To be admitted into the concentration in music history and literature, a student must pass an aural music literature identification test, as well as demonstrate basic writing skills through an essay on an assigned topic.

The following required sequence of courses is in addition to those listed under Basic Musicianship (Bachelor of Music degree). Students must also earn 12 semester hours in German.

Music Literature ................ 12
Theory Elective ................. 3
Independent Study ............. 3

Concentration in Music Education
(Virginia Certification to Teach Music)
The Music Education degree program is approved by the Virginia State Department of Education and the National Council for the Accreditation of Teacher Education (NCATE). General education courses and additional courses are derived from state certification and NCATE requirements as outlined under the Department of Education. The National Teachers Examination and the related music examination must be taken before state certification can be granted.

A total of 136 semester hours is required for the bachelor of music with a concentration in music education.

To be admitted into the concentration in music education, a student must satisfy the following requirements:
1. Maintain an overall GPA of 2.8
2. Earn no grade lower than C in music courses needed for graduation
3. Maintain a satisfactory level of musical performance and interpersonal relationships as determined by a yearly screening procedure conducted by the music education faculty
4. Obtain a satisfactory recommendation from the full-time music faculty for the Teacher Education Screening Committee
5. Meet all requirements set by the Teacher Education Screening Committee, including National Teachers Examination scores.

Requirements by area:

<table>
<thead>
<tr>
<th>Semester Hours</th>
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<td>General Education</td>
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| Basic Musicianship | Harmony I, II, III, IV | 11 |
|                    | Keyboard Harmony    | 1 |
|                    | Sight Singing and Ear Training I, II | 4 |
|                    | Survey of World Music | 3 |
|                    | Historical, Theoretical, and Analytical | 12 |
|                    | Study of Music I, II, III, IV | 1 |
|                    | Class Composition and Arranging I | 3 |
|                    | General Conducting | 2 |
|                    | Class Piano I, II   | 2 |
|                    | Major Instrument or Voice | 12 |
|                    | (Private Music Instruction) | |
|                    | Ensemble            | **7 |
|                    | Laboratory Ensemble | 1 |

| Music Education Concentration | Laboratory Ensemble | 1 |
|                              | Secondary Instruments or Voice | 18 |
|                              | Advanced Conducting            | 2 |
|                              | Improvisation                  | 1 |
|                              | Music Methods                  | 6 |

| Additional Courses | Intro to Early Childhood and Middle | 3 |
|                   | Education (EDUC 300) or Intro to Secondary Education (EDUC 522) | |
|                   | Human Growth and Development (EDUC 302) or Psychological Foundations of Adolescent Learning and Dev. (EDUC 539) | |
|                   | Educationally Diverse Populations: | 3 |
|                   | Handicapped, Gifted, Multicultural (EDUC 301) or Pluralism and Exceptionality in U.S. Education (EDUC 529) | |
|                   | Computer science or Intro to Electronic Music (MUSI 561) | 3 |
|                   | Electives                       | 9 |

<table>
<thead>
<tr>
<th>Student Teaching</th>
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</thead>
</table>

| Total | 136 |

*Keyboard majors must take two semesters of Techniques of Accompanying instead of Class Piano I and II. Non-keyboard majors who test out of Class Piano are not required to take Techniques of Accompanying.
**Voice majors in the music education concentration must earn seven credits in University Chorale and/or Symphonic Chorus. Instrumental majors must earn seven credits in Symphony Orchestra. Wind and percussion majors must earn seven credits in Symphony Orchestra and/or Symphonic Band. Piano, organ, harpsichord, and guitar majors must earn at least four credits in large ensembles: University Chorale, Symphonic Chorus, Symphony Orchestra, Symphonic Band.**

† Instrumental Emphasis. The following secondary instrument/voice courses are required: Class Voice I and all of the following instrument classes: Class Guitar; Class Strings: Violin and Viola; Class Strings: Cello and String Bass; Class Woodwinds: Flute and Clarinet; Class Woodwinds: Oboe and Bassoon; Class Brass: Class Percussion. Five of the seven required ensemble credits must be earned in Symphonic Band and/or Symphony Orchestra for students whose major instrument is not a band or orchestral instrument. Students whose major performance medium is something other than a band or orchestral instrument must earn a minimum of six additional credits of Private Music Instruction (or the equivalent) on such an instrument, the actual number to be determined by an audition committee.

Vocal/General Emphasis. One credit in each of the following courses is required: Class Woodwinds; Class Guitar; Class Percussion; Techniques of Accompanying. Keyboard majors must take Class Voice I and earn three credits of Undergraduate Private Music Instruction in voice. Voice majors must earn four credits of Undergraduate Private Music Instruction in piano, guitar, percussion, and other instrumental majors must take Class Voice I and earn one credit of undergraduate Private Music Instruction in voice and two credits of Undergraduate Private Music Instruction in piano. Five of the seven required ensemble credits must be earned in University Chorale and/or Symphonic Chorus.

‡ MUSI 461 and 463 or MUSI 464 and 466

§ May not be used to satisfy the 130 credit hours required for the B.M. degree.

### Sample Schedule for B.A. with a Major in Music

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<thead>
<tr>
<th>Semester</th>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td>ENGL 101</td>
<td>Literature (English or foreign languages)</td>
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<tr>
<td></td>
<td>Foreign language 101</td>
<td>3</td>
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<td></td>
<td>Social science</td>
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<td></td>
<td>MUSI 115</td>
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<tr>
<td><strong>Natural science</strong></td>
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<tr>
<td><strong>MUSI 215</strong></td>
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</table>
Sample Schedule for B.M. with Concentration in Music Education (Virginia Certification to Teach Music)

First Semester
ENGL 101 3
Social or behavioral science 3
Mathematics or logic 3
MUSI 115 3
MUSI 171 1
Secondary instrument 1
Major instrument 2
Ensemble 1

Second Semester
ENGL 302 or 539 3
MUSI 215 3
MUSI 114 2
MUSI 335 2
Secondary instruments 2
Major instrument 2
Ensemble 1

Third Semester
EDUC 302 or 539 3
MUSI 171 1
Secondary instrument 1
Major instrument 2
Ensemble 1

Fourth Semester
ENGL 302 or 522 3
MUSI 215 3
MUSI 218 2
MUSI 336 3
MUSI 396 1
Secondary instrument 2
Major instrument 2
Ensemble 1

Fifth Semester
ENGL 302 3
MUSI 435 3
MUSI 319 3
MUSI 391 2
MUSI 379 or 390 1
Secondary instruments 2
Major instruments 2
Ensemble 1

Sixth Semester
EDUC 300 or 522 3
MUSI 436 3
MUSI 396 2
Secondary instrument 1
Major instrument 2
Ensemble 1

Summer I
HIST 121 or 122 3
HEAL 110 3
Natural Science 3

Summer II
Computer Science or MUSI 531 3
Dance 3

Seventh Semester
EDUC 301 or 529 3
MUSI 463 or 466 3
MUSI 386 1
Ensemble 1
Electives 9

Eighth Semester
Student Teaching 6

PAGE (Plan for Alternative General Education)

Faculty
Story (Director), Albanese, Bergmann, Black, Bolstein, Brawley, Broome, B. Brown, E. Brown, Burns, Carroll, Censer, Clark, Comito, Davies, De Nys, Deshmukh, di Bonaventura, Dienemann,


Course Work
The PAGE faculty offers all course work designated PAGE in the Course Descriptions section of this catalog.

PAGE Program
The George Mason Plan for Alternative General Education (PAGE) is an integrative, sequential, general education program that introduces students to a wide range of concepts and subject matter in the humanities, social sciences, sciences, and mathematics, as well as developing and increasing skills in writing, speaking, and using the computer. The PAGE program fulfills general education and graduation requirements for a bachelor's degree at George Mason University, with the exception of the foreign language requirement.

Students in PAGE not only explore a range of diverse academic fields, such as computer science, history, mathematics, physics, biology, arts, literature, sociology, and political science, but also learn how these disciplines influence and interact with each other. The program emphasizes both breadth of knowledge and acquisition of skills. It provides opportunities for students to integrate and apply both knowledge and skills to prepare themselves for the major of their choice, as well as for living and working in contemporary society. Augmenting the interdisciplinary nature of the various courses in PAGE are two weekly lecture and performance series (one credit each) by PAGE faculty members and guests during each of the first three semesters.

Academic Policies and Procedures Unique to PAGE
Students in PAGE are subject to university policy on admissions, transfers, and failure as stated in this catalog. In addition, students in PAGE (a special curriculum within this university structure) are
subject to certain academic policies and procedures that are unique to this sequential program:

Admission
Admission to the PAGE program is open to all full-time entering freshmen on a space available basis.

Majors
Not a major in itself, PAGE fulfills general education requirements for every major a student may choose, except for the foreign language requirement in the College of Arts and Sciences. Specific requirements of the departments in regard to their majors are available in the PAGE office and in the department offices.

Transfers
Within GMU — Because of the sequential and integrative nature of the program, PAGE courses do not correspond exactly to the general education courses in the traditional programs. A list of equivalencies is available in the College of Arts and Sciences section of this catalog, in the PAGE office, and in the offices of the deans.

Outside GMU — The PAGE program meets the general education requirements at other universities. Students transferring after one year or less, however, may have to take additional courses.

Failures
In addition to the university’s policies on unsatisfactory work (grades of D or F) and on incompletes, the following apply to students in PAGE:

1. PAGE students failing (grade of F) a total of five or more hours of course work in PAGE in the first semester of the freshman year are dropped from the program.

2. PAGE students failing (grade of F) 2 to 4 hours of course work in PAGE in a given semester are placed on “Notice.”

3. If a student is placed on “Notice” in the first semester of the freshman year and then receives failing grades in five or more hours of the second semester, that student is dropped from the program.

4. If a student is placed on “Notice” in both semesters of the freshman year and then receives failing grades in five or more hours in PAGE in the first semester of the sophomore year, that student is dropped from the program.

5. Failing grades occurring in the second semester of the sophomore year do not lead to immediate dismissal from the program; however, students must realize that failing grades received at this time most likely mean a delay of at least two semesters before they can complete the PAGE program.

6. Unless they receive special permission from the director, students must retake the PAGE courses they have failed in the next semester in which these courses are offered. In exceptional cases, the PAGE office may allow a student to substitute a similar course, offered elsewhere in the university, for the PAGE course a student has failed.

7. Students may appeal to the director the policies stated above. Academic counseling is provided for all students failing courses in PAGE.

Like all other students in the university, PAGE students are bound by university policies governing “good academic standing.” Students should become familiar with these policies as they are stated in this catalog.

Students dropped from the PAGE program for reasons of failure must meet the traditional general education requirements of the university. A list of equivalencies between PAGE courses and courses in the traditional general education program is available in the PAGE office and in the offices of the deans. Special requirements of the departments in regard to their majors are available in the PAGE office and in the department offices.

Philosophy and Religious Studies

Faculty
Professors: Bergoffen, Lavine (Robinson Professor), McFarlane (Emeritus Professor)
Associate Professors: De Nys, Fletcher (Associate Provost), Froman (Chair), Holman, Jordan, McDermott, Ro, Rothbart, Yance (Emeritus Associate Professor)
Assistant Professors: Burns, Paden, Riley, Wehrle
Lecturers: D. Gregory, M. Gregory, Mackin, Scherer, Schneider, Sojka, Steenhuisen

Course Work
This department offers all course work designated PHIL and RELI in the Course Descriptions section of this catalog.

B.A. Degree with a Major in Philosophy
The degree program in philosophy serves the needs of students with various interests and career goals. Major concentrations are available for stu-
dents who wish to pursue graduate studies in philosophy; emphasize philosophy in acquiring a broad liberal arts education; prepare for certain professions, such as law, the ministry, government service; or complement other interests by taking a double major in philosophy and a related field of study.

The department offers a traditional philosophy major, a specially designed philosophy-English major in cooperation with the English Department, a specially designed philosophy-psychology major, and a specially designed religion track within the philosophy major. Each of these programs leads to a B.A. in philosophy.

The general education requirements (with the exception of foreign language) for the B.A. degree are satisfied by successful completion of the Program for Alternative General Education (PAGE). See PAGE category in this catalog, and see PAGE office for sample schedule for majors in philosophy.

Traditional Philosophy Major

In addition to the general requirements for a bachelor of arts degree, philosophy majors must complete at least 33 semester hours in philosophy. At least 21 semester hours must be courses at the 300 level or above, including 6 credit hours at the 400 level or above.

These hours must be distributed in the following way:

1. All majors must take:
   PHIL 173 Introduction to Logic or
   PHIL 376 Symbolic Logic
   PHIL 301 History of Western Philosophy
      (Ancient)
   PHIL 303 History of Western Philosophy
      (Modern)

2. All majors must submit a minimum of three credits each from category A and category B courses:
   Category A: The Analytic Tradition
   PHIL 332 Twentieth-Century Analytic Philosophy
   PHIL 355 Contemporary Ethical Theory
   PHIL 371 Philosophy of Natural Sciences
   PHIL 373 Theory of Knowledge
   PHIL 374 Philosophy of Mind
   PHIL 520 Current Issues in Philosophy of Science
   PHIL 574 Current Issues in Philosophy of Psychology
   Category B: The Continental Tradition
   PHIL 325 Karl Marx's Social and Political Thought
   PHIL 335 Nineteenth-Century Philosophy
   PHIL 336 Contemporary Continental Thought

   PHIL 337 Twentieth-Century Continental Thought
   PHIL 340 Hermeneutic Philosophy
   PHIL 531 Freud and Philosophy

   When the subject matter is appropriate, and at the discretion of the professor, PHIL 391, 392, 421, 422, 423, 424, 425, or 426 may count as Category A or Category B courses.

3. All majors may submit no more than three credits from category C as credit toward the major:
   Category C: Ethics
   PHIL 305 Business Ethics
   PHIL 306 Criminal Justice Ethics
   PHIL 309 Medicine and Human Values
   PHIL 510 Seminar in Ethics of Health Care
   PHIL 555 Environmental Ethics

For students who plan to pursue graduate studies in philosophy, the following courses are recommended:

   Ethics or Social and Political Philosophy
   Metaphysics
   Philosophy of Mind or Theory of Knowledge
   Twentieth-Century Analytic Philosophy
   Contemporary Continental Thought
   (Existentialism and Phenomenology)

Religious Studies Track in Philosophy

This program offers students the opportunity to reflect on reciprocal relations, past and present, between philosophy and religion, and to approach contemporary questions and issues in religion, both substantive and methodological, through philosophical ideas pertinent to them. Students who plan to pursue a program in philosophy and religious studies must complete at least 33 semester hours in philosophy and religious studies.

   All students pursuing this track must take:
   PHIL 173 Introduction to Logic or PHIL 376 (formerly 273)
   Introduction to Symbolic Logic
   PHIL 301 History of Western Philosophy
      (Ancient)
   PHIL 303 History of Western Philosophy
      (Modern)
   PHIL 313 Philosophy of Religion
   RELI 300 Approaches to the Study of Religion
   RELI 490 Comparative Religions

   Students must also submit a minimum of nine credits from among the following courses:
   RELI 315 Buddhism
   RELI 370 Judaism
   RELI 371 History of Western Christian Thought (I)
   RELI 372 History of Western Christian Thought (II)
   RELI 374 Islamic Thought
Also allowed are six hours of credit from among the following courses for credit toward the major:
  HIST 306 Reformation
  SOCI 385 Sociology and Religion
  ANTH 313 Anthropological Perspectives on Religion
  ENGL 337 Myth and Symbol in Western Literature

Minor in Philosophy
The minor in philosophy introduces students to the major traditions and issues that define philosophical thought. The minor also permits students the flexibility to pursue individual interests. A grade of C or better is required for the course to count toward the minor. The minor consists of 18 credits distributed as follows:

1. PHIL 173 Introduction to Logic or PHIL 376 Symbolic Logic (3 credits)
2. Any course at the 100 level or above, excluding PHIL 105 Critical Reasoning (3 credits)
3. PHIL 301 History of Philosophy: Ancient (3 credits)
4. One course from the following (3 credits):
   PHIL 302 History of Philosophy: Medieval
   PHIL 303 History of Philosophy: Modern
   PHIL 335 Nineteenth Century Philosophy
5. Any course at the 300 level or above (3 credits)
6. Any course at the 400 level or above (3 credits)
   (No single course can be used to fulfill two or more requirements above.)

Minor in Religious Studies
The minor in religious studies introduces students to the world’s religious traditions. Within the minor students may pursue biblical studies or western or eastern religious traditions. The minor consists of 18 credit hours, at least 9 of which must be taken at the upper division. Three credits must be taken from RELI 100 The Human Religious Experience, RELI 211 Religions of the Near East, or RELI 212 Religions of the Orient.

Philosophy-English Double Major
Students interested in pursuing the specially designed joint major in philosophy and English must fulfill the distribution and core requirements of each major. Students pursuing this program must take one class in philosophy and one in English from the following list of theoretical or methodological courses (6 credits). Both courses count toward both majors (i.e., the philosophy course is counted as part of the English major hours and vice versa).

  ENGL 337 Myth and Literature
  ENGL 494 Special Topics in Criticism
  ENGL 551 Literary Criticism
  PHIL 356 Philosophy of Art
  PHIL 372 Philosophical Methods
  PHIL 375 Metaphysics

Students must take 6 credits from one of the following pairs of historical courses. Both courses count toward both majors. (Some classes of English 496, 444, 446, and Philosophy 391, 392, 421, 422, 423, and 424 may fulfill these requirements, with the prior permission of the departments.)

1. ENGL 471 Chaucer; or ENGL 400 Literature of Middle Ages; or ENGL 431 Medieval Intellectual Topics
   PHIL 302 History of Western Philosophy (Medieval)
2. ENGL 401 English Poetry and Prose of Sixteenth Century, or ENGL 472 (346) Spenser
   PHIL 301 History of Western Philosophy (Ancient)
3. ENGL 405, 406, 450, 423
   PHIL 303 History of Western Philosophy (Enlightenment)
4. ENGL 425 Literature of American Renaissance, or ENGL 452 Development of the American Novel to 1914
   PHIL 331 Philosophy in the United States
5. ENGL 380, 390, 556 (contemporary literature or language study)
   PHIL 332 Twentieth-Century Analytic Philosophy
6. ENGL 448, 376, 377, 378, 454 or 447 continental literature or influence
   PHIL 336 or 337 Contemporary Continental Thought: Phenomenology and Existentialism
7. ENGL 369 Women and Literature
   PHIL 333 Philosophy and Feminism

Students must take a four-credit, 500-level seminar. The topic of the seminar varies from term to term; possible topics include structuralism, technology, form and matter, conceptions of the future. The course is cross-listed and team taught. Prerequisites are senior standing, six hours of 300 level English and six hours of 300 level philosophy, and permission of instructor.

Philosophy-Psychology Double Major
Students pursuing the joint major in philosophy and psychology must fulfill all the requirements for each major, except that they may count up to 6 credits from each of the following lists toward both majors:

  Philosophy
   PHIL 357 Philosophy of the Social Sciences
   PHIL 372 Philosophical Methods
Sample Schedule for Philosophy Majors

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>Natural science</td>
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<tr>
<td>English composition</td>
<td>Literature</td>
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<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>PHIL 100, 111, or 173</td>
<td>PHIL 151, 212, or 273</td>
</tr>
<tr>
<td>Social science</td>
<td>Communication</td>
</tr>
<tr>
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<tr>
<td>Literature</td>
<td>English composition</td>
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<tr>
<td>Social science</td>
<td>Foreign language</td>
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<tr>
<td>Philosophy elective</td>
<td>Non-Western culture</td>
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<tr>
<td>Foreign language</td>
<td>PHIL 303 (232)</td>
</tr>
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<td>PHIL 301 (231)</td>
<td>Philosophy elective</td>
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<td>Social science</td>
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<tr>
<td>Non-Western culture</td>
<td>PHIL 336 or 337</td>
</tr>
<tr>
<td>Philosophy elective</td>
<td>Philosophy electives</td>
</tr>
<tr>
<td>ENGL 302</td>
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</tr>
<tr>
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Course Work

This department offers all course work designated ASTR and PHYS in the Course Descriptions section of this catalog.

B.S. Degree with a Major in Physics

In addition to general requirements for a B.S. degree, candidates must complete 45 semester hours in the major and 20 semester hours in mathematics, divided as follows:

1. A 33-hour core in physics, including PHYS 250, 303, 305, 306 or 307, 350, 351, 352, 353, 361, 402, 407, and 416 (may be taken for credit twice).
   The remaining 12 credits are to be elected from ECE 301, 333, 430, 431, 433, and 442; PHYS 307, 328, 355, 408, 412, 414, 417, 428, 510, 511, 512, and 514; MATH 446 and 447, with at least two semester hours in physics courses.

2. The following mathematics courses: the two-year calculus sequence — MATH 113, 114, 213 and 214; MATH 313; and MATH 314.

The requirements for the B.S. in physics prepare the student for graduate school or for one of the many careers in business or industry where physics graduates are employed. In meeting the requirement for 15 credit hours outside the core, a student has the option of electing an area of concentration. The courses required for each concentration are listed below. Students who wish to complete a concentration should plan a program of study in consultation with their adviser, with whom they are required to meet at least once a semester.

Graduate School Preparatory Concentration

Although any of the options listed here provide the successful student with a fully adequate background to enter graduate school, this concentration is for the student whose career goals definitely include graduate school in physics. To complete this concentration the student should take at least nine hours from the following courses: PHYS 414, 510, 511, 512, and 514. In addition, the student should complete a senior project (PHYS 408) in the specialty which they intend to pursue in graduate school.

Computational Physics Concentration

This concentration is for the student who wishes to pursue a career that applies computers to the solution of physical problems and data analysis. To complete this concentration, the student should take at least nine hours from the following courses: PHYS 355, ECE 442, MATH 446 and 447. In addition, the student should complete a senior project (PHYS 408) on a problem that in-

---

Physics

Faculty

Professors: Blaisten-Barojas, Dworzecka, Ehrlich, Ellsworth, Kafatos, Lankford, Lieb (Chair), Mielczarek, Trefil (Robinson Professor)

Associate Professors: Ceperley, Evans, Satija

Assistant Professors: Kowalski, Toth-Allen

Instructor: John
volves the use of the computer for the solution of a physical problem.

Astrophysics Concentration
This concentration is for the student who is planning to attend graduate school in astrophysics or pursue a career in industry. To complete this concentration the student should take the following courses: PHYS 328, PHYS 428, 510, or 511; and MATH 446. In addition, the student should complete a senior project (PHYS 408) on an astrophysics problem.

Electronics Concentration
This concentration is for the student who wishes to pursue a career in industry applying a strong background in electronics to physical problems. To complete this concentration, the student should take at least nine credit hours from the following courses: ECE 301, 333, 430, 431, and 433. In addition, the student should complete a senior project (PHYS 408) on an electronics problem.

Applied Solid State Physics Concentration
This concentration is for the student who wishes to pursue a career in the semiconductor industry. To complete this concentration, the student should take the following courses: PHYS 512, ECE 430, and ECE 431. In addition, the student should complete a senior project (PHYS 408) in applied solid state physics.

B.A. Degree with a Major in Physics
In addition to the general requirements for a B.A. degree, candidates must complete 31 semester hours in the major and 17 semester hours of mathematics. The following physics courses are required: PHYS 250, 350, 351, 352, 353, 303, 305, 361, and 416.

Minor in Physics
A minor in physics requires 20 credits, including PHYS 250, 350, 351, 352, and 353 and any two upper-level physics courses, except PHYS 300, 315, 316, 326, 343, 344, 345, 346, and 416.

Minor in Astronomy
A minor in astronomy requires the completion of a physics prerequisite and 15 credits in astronomy. The prerequisite consists of one of the two sequences PHYS 343, 344, 345, 346 or PHYS 250, 350, 351, 352, 353. Following the introductory physics sequence, students are required to take ASTR 105-106, PHYS 416, and two astronomy courses chosen from ASTR 228, 328, and 428.

PAGE Students
The general education requirements (with the exception of foreign language) for the B.A. degree are satisfied by successful completion of the Plan for Alternative General Education (PAGE). See PAGE category in this catalog, and see PAGE office for sample schedule for majors in physics.

Teacher Certification
Students who want to become elementary, middle, or secondary school teachers should consult the sections on certification found in the catalog under the Graduate School of Education. Those planning to become secondary school teachers should consult with the secondary education advisor in their department.

Physics for Majors
Students who intend to major in physics should take the physics introductory sequence (PHYS 250, 350, 351, 352, 353). However, students who decide to major in physics after completing PHYS 343-345 may do so, but only with written permission of the physics department. Such students are required to take at least five additional credits in approved physics courses.

Physics for Nonmajors
PHYS 343, 344, 345, and 346 are recommended for biology, chemistry, geology, and premedical students and for mathematics majors who seek a bachelor of arts degree. PHYS 106 and 107 are also recommended for biology majors. PHYS 103, 104, 141, 201, 300, 315, and 316 are intended for nonscience majors. PHYS 250, 350, 351, 352, and 353 consist of a calculus-based sequence in general physics to be taken by physics and engineering majors and chemistry, computer science, and mathematics students who pursue a bachelor of science degree. Students may receive credit for only one of the following three sequences: 343-346, or 103, 104, or 250, 350, 351, 352, and 353.

Sample Schedule for Physics Majors

<table>
<thead>
<tr>
<th>First Semester</th>
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</tr>
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<tbody>
<tr>
<td>MATH 113</td>
<td>4 PHYS 250</td>
</tr>
<tr>
<td>CHEM 211 or BIOL 113</td>
<td>4 MATH 114</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>3 CHEM 212 or</td>
</tr>
<tr>
<td>Elective</td>
<td>3 BIOL 303 or 304</td>
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<tr>
<td></td>
<td>4 Elective</td>
</tr>
<tr>
<td></td>
<td>14</td>
</tr>
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<td></td>
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<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 350</td>
<td>3 PHYS 352</td>
</tr>
<tr>
<td>PHYS 351</td>
<td>2 PHYS 353</td>
</tr>
<tr>
<td>MATH 213</td>
<td>3 MATH 214</td>
</tr>
<tr>
<td>Literature</td>
<td>3 Literature</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
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</table>
Psychology

Faculty
University Professor: Fleishman
Professors: Barocas, Boneau, Mandes (Associate Dean), Pasnak, Tyer (Associate Dean)
Associate Professors: Allen, Blaha, Boehm-Davis, Buffardi, Denham, Erdwins, Flinn (Chair), Gerton, Gessner, Holt, Lehman, Maddux, Mellinger, Moretz, Mumford, Riskind, Rugel, Sanford, R. Smith, Wahl, Zaccaro
Assistant Professors: Friedman, Hershey, Short, Tangney
Adjunct Professors: Mutchler, Weisman
Lecturers: Ballas, Bayer, Chollar, Cogburn, Feuerbach, Goodman, Mutchler, Ross, Stanhope, Wanschura, Werber

Course Work
This department offers all course work designated PSYC in the catalog Course Descriptions.

B.A. Degree with a Major in Psychology
In addition to general requirements for a B.A. degree, students must complete 36 semester hours of course work in psychology, 24 of which must be upper division. These hours must include PSYC 100, 211, 231, 300, 305, 325, 372, and 465.

B.S. Degree with a Major in Psychology
In addition to general requirements for a B.S. degree, candidates must complete the following:

1. 38 semester hours of psychology (24 of which must be upper division), including PSYC 100, 211, 231, 300, 305, 325, 372, and 465; and one of the following: 304, 309, 323 or 372-373
2. BIOL 103 and 104
3. 6 hours of mathematics, selected from MATH 108, 110, 111, 113, 114 and 213
4. CS 103 with CS 262 strongly recommended
5. 9 additional hours of behavioral, natural, or social science, other than psychology, that are not applied to any other requirement
6. ENGL 101, 302
7. 6 semester hours of literature
8. 24 semester hours of cognate courses (for physiological cognate, this must include BIOL 213, 303)
9. 19-21 semester hours of electives

Candidates for the B.S. degree in psychology may choose from six specialty areas: clinical, developmental, experimental, industrial, physiological, and social. Each of these specialty areas requires 24 hours of cognate courses that are not in psychology but in related subjects, chosen from an approved list. Students are required to take psychology courses in their specialty area as determined by their adviser. Before or during their junior year, written approval of cognate and psychology specialty courses must be obtained. Students are required to plan their program of courses with a B.S. adviser in their specialty area. The planned program is then submitted to the undergraduate coordinator for final approval. Students who have not obtained approval by the end of their junior year may not be allowed to graduate with a B.S. degree in psychology. For information concerning cognate areas and specific courses within each cognate, students should contact the psychology department.

Students planning to go to graduate school should ascertain whether the school they plan to attend has a foreign language requirement. If so, they should select foreign language courses as electives.

Information for All Majors in Psychology
A grade of D in a required psychology course may not be used toward graduation. At least 24 of the semester hours credited toward the major must be completed at the 300 level or above. Students intending to major in psychology should note that a grade of C or better in PSYC 300 is a prerequisite to required 300-level laboratory courses.

The following courses may be used to satisfy either the 36-hour psychology requirement for the B.A. degree or the 38-hour psychology requirement for the B.S. degree with the following restrictions:
1. A maximum of 6 hours from PSYC 421, 422, 548, 549;
2. A maximum of 6 hours from PSYC 260, 350, and 460.
3. No more than 9 hours can be taken from 1 and 2 without permission of the department chair.

In addition to course work, undergraduate research experience and letters of recommendation are major factors for admission to graduate school. Therefore, students interested in graduate school should distribute courses across a number of areas in psychology and work closely with one or more professors on an individual research project during the junior and senior years.

Students interested in developing skills in the application of psychology may wish to earn a psychology technician certificate or a gerontology certificate. These programs provide students with technical expertise for use in human service employment settings at the paraprofessional level. Further information on these programs may be found under Certificate Programs in this catalog.

PAGE Students
The general education requirements for the B.A. and B.S. degrees (with the exception of foreign language for the B.A.) are satisfied by successful completion of the Program for Alternative General Education (PAGE). However, the department recommends that CS 103 and BIOL 103 and 104 be taken in addition to the PAGE curriculum. See PAGE category in this catalog, and see PAGE office for sample schedules for majors in psychology.

### Sample Schedule for B.A. Psychology Majors

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<th>First Semester</th>
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<td>ENGL 101</td>
<td>Non-Western culture</td>
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<tr>
<td>PSYC 100</td>
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</tr>
<tr>
<td>Natural science</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>Philosophy or religious studies</td>
</tr>
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<td></td>
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<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature</td>
<td>Literature</td>
</tr>
<tr>
<td>Math or logic (MATH 110 suggested)</td>
<td>PSYC 305</td>
</tr>
<tr>
<td>PSYC 300</td>
<td>PSYC 325 or 372</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Non-Western culture</td>
</tr>
<tr>
<td>Fine arts</td>
<td>16</td>
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<thead>
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<td>ENGL 302</td>
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<tr>
<td>Oral communication</td>
<td>PSYC (300/400)</td>
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<td>Foreign language</td>
<td>ECON/GOVT/GEOG/HIST</td>
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<tr>
<td>PSYC 325 or 372</td>
<td>Electives</td>
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<td>ECON/GOVT/GEOG/HIST</td>
<td>PSYC (300/400)</td>
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Note: Students must select electives so that a total of 45 upper-division hours are earned.

### Sample Schedule for B.S. Psychology Majors

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<th>First Semester</th>
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<tbody>
<tr>
<td>ENGL 101</td>
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<td>BIOL 104</td>
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<td>CS 103</td>
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<td>Literature</td>
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<tr>
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<tr>
<td>Electives</td>
<td>PSYC 305</td>
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<tbody>
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<td>ENGL 302</td>
<td>PSYC 325 or 372</td>
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<tr>
<td>PSYC 304, 309, 323, or 372-373</td>
<td>Cognates</td>
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<td>Electives</td>
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<tbody>
<tr>
<td>Cognates</td>
<td>PSYC 325 or 372</td>
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<tr>
<td>PSYC (300/400)</td>
<td>Elective</td>
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<tr>
<td>Elective</td>
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</tr>
</tbody>
</table>

Note: Approval of program of studies is required by the department before or during the junior year.

### Teacher Certification
Students who want to become elementary, middle, or secondary school teachers should consult the sections on certification found in the catalog under the Graduate School of Education. Those planning to become secondary school teachers should consult with the secondary education adviser in the department.

### Public Affairs

**Faculty**

Robinson Professors: Heclo, Paden

Professors: Clark, Dawisha, Pfiffner, Stillman, White
Associate Professors: Brown, Conlan, Dudley, Friedlander, Gortner, Hart-Nibbrig, Katz, Knight, Mahler, Hung Nguyen, Renick, Sacco, Travis

Assistant Professors: Gifford, Harbour, Hughes, Knutsen, Regan, Rosenblatt

Research Professors: Diem, Gibbons

Adjunct Professor: Cole

Administrative Faculty: Brandwine, Czarda, Delaney, Doyle, First, Rossell

Joint Appointments with the Institute of Public Policy: Harrington, Haynes, Kash, Lipset, Perry, Stough

Joint Appointments with the Center for Conflict Analysis and Resolution: McFerson, Mitchell, Rubenstein, Sandole

Course Work

This department offers all course work designated GOVf and PUAD in the Course Descriptions section of this catalog.

PAGE Students

The general education requirements (with the exception of foreign language) for the B.A. and B.S. (except administration of justice) degrees are satisfied by successful completion of the Program for Alternative General Education (PAGE). See PAGE category in this catalog, and see PAGE office for sample schedule for majors in geography, government and politics, international relations, and public administration.

Teacher Certification

Students who wish to become elementary, middle, or secondary school teachers should consult the sections on certification found in the catalog under Graduate School of Education. Those planning to become secondary school teachers should consult the secondary education adviser in their discipline.

Degree Requirements

B.A. Degree with a Major in Government and Politics

See College of Arts and Sciences section in the catalog for general education requirements for the B.A. degree. In addition to general requirements, candidates must complete the following:

1. 12 credit hours in core requirements: GOVT 103, 132 or 133, 241, 250

2. 24 credit hours in advanced government courses. At least 3 credit hours must be taken from each of the fields listed below:
   - American Institutions and Behavior: GOVT 301, 305, 307, 308, 309, 311, 312, 318, 410, 411, 412, 416
   - Political Theory: GOVT 320, 420, 421, 422, 423
   - Comparative and International: GOVT 331-339, 340, 341, 342, 344, 349, 431, 444, 445, 446, 449
   - GOVT 480 internship or 490 seminar for one of the upper-division courses with prior approval of adviser.

3. 6 credit hours in analytic skills from the following: CS 103, 262; DESC 200; ECON 103, 104; GOVT 359, 459; MATH 106, 108, 110; STAT 250, 362; SOCI 221, 405

A total of 120 credit hours are required for the B.A. degree, 45 of which must be at the 300 and 400 level. Government courses may be applied to the degree only if passed with a grade of C or better.

B.A. Degree with a Major in International Studies

See College of Arts and Sciences section in the catalog for general education requirements for the B.A. degree. In addition to general requirements, candidates must complete the following:

1. 15 credit hours in core requirements, distributed as follows:
   - GOVT 132, 133 (preferably in freshman year)
   - GOVT 244 (preferably in sophomore year)
   - GOVT 340, 341 (preferably in junior year)

2. 12 credit hours of advanced courses in international studies, distributed as follows:
   - GOVT 330s, 340s, 430s, 440s. GOVT 480 or 490 may be substituted with permission of adviser.

3. ECON 103 and 104 (also fulfills 6 credits of general education social sciences requirements)

4. 12 credit hours in upper-level courses selected from list provided in the department and updated annually

5. 3 credit hours in an upper-level course in the same language the student has taken to complete the B.A. general education requirements. Literature courses taught in translation are excluded; RUSS 252 is included. This requirement is waived for international students from non-English-speaking countries.

A total of 120 credit hours is required for the B.A. degree, 45 of which must be at the 300 and 400 level. Government courses may be applied to the degree only if passed with a grade of C or better.
B.S. Degree with a Major in Administration of Justice

This interinstitutional and interdisciplinary program requires a minimum of 128 semester hours of course work. No more than one-half of the 128 semester hours may be transferred from one or more junior or community colleges.

Effective fall 1991, students who would like to major in Administration of Justice will be expected to have completed the requirements for an associate’s degree in Administration of Justice at Northern Virginia Community College, or its equivalent, prior to admission.

1. 20 credit hours in general education requirements: ENGL 101 and 302, 6 credits of literature, and 8 credits of laboratory science.

2. 48 credit hours in core requirements: 39 credits in law enforcement taken at Northern Virginia Community College (NVCC), and GOVT 355, 376, and 377.

3. 21 credit hours in government and public administration courses: GOVT 103, 204, 241, 301, 356, and 451; and one of the following: GOVT 309, 320, or 420.

4. 30 credit hours in supporting requirements, including:
   - PSYC 100, 314, and 325;
   - SOCI 101, and four courses from the following: SOCI 300, 301, 302, 304, 305, 307, 308, 310, 332, 401, 402, 403, and 471
   - 3 credits in computer science
   - 3 credits from the following: STAT 250, 350; DESC 200, 202; SOCI 221, 410

A total of 128 credit hours are required for the B.S. degree, 45 of which must be at the 300 and 400 level.

B.S. Degree with a Major in Public Administration

1. 39 credit hours in general education requirements, including:
   - 9 credits in ENGL 101, 302, and COMM 100 or 101;
   - 6 credits in literature;
   - 9 credits in history, with at least 3 hours at the 300 level or above;
   - 9 credits from PHIL 100 or 151, ANTH 114, PSYC 100, or SOCI 101;
   - and 6 credits in analytic skills, to be fulfilled with either 6 credit hours in statistics (STAT 250 and 350; DESC 200 and 202; SOCI 221), or 3 credit hours each in statistics and math (MATH 106, 108, 110, 111)

2. 18 credit hours of core requirements:
   - GOVT 103, 132 or 133, 204, 241, 250, and 320

3. 18 credit hours of advanced government and public administration courses:
   - GOVT 355, 356, and 451 (students can substitute GOVT 357, 452, or 490 for one of these);
   - one course from 360s or 460s;
   - 6 credits taken outside of GOVT 350s and 450s (can include 480, 490, or 496)

4. ECON 103, 104, and one upper-level course

5. ACCT 201

6. GOVT 359 or 459

7. 12 credit hours in either Option A or B below:
   - **Option A**
     - Information and Reasoning (a maximum of 6 hours is allowed in non-computer based courses like ACCT 202 and all the PHIL courses listed below).
     - CS 103, 262; any MIS or INF5 for which the student has the necessary prerequisites; GOVT 359, or 459; STAT 362; SOCI 405; GEOG 310, 411; ACCT 202, 312; PHIL 105, 173, 212, 371, 372, 373, or 376
   - **Option B**
     - Foreign language: One modern foreign language through the intermediate level.

A total of 120 credit hours are required for the degree, 45 of which must be at the 300 and 400 level. Government courses may be applied toward the degree only if passed with a grade of C or better.

Sociology and Anthropology

**Faculty**

**Professors:** Bateson (Robinson Professor, Anthropology), Borkman (Sociology), Dennis (Sociology), Dumont (Robinson Professor, Anthropology), Scimecca (Sociology), Stone (Sociology, Chair), Williams (Anthropology)

**Associate Professors:** Avruch (Anthropology), Black (Anthropology), Dietz (Sociology), Golomb (Anthropology), Horton (Sociology), Jacobs (Sociology), Kolker (Sociology), Palkovich (Anthropology), Potter (Anthropology, Dean), Rader (Sociology), Rosenblum (Sociology), Tavani (Sociology)

**Assistant Professors:** Colvin (Sociology), Guagnano (Sociology), Lancaster (Anthropology)

**Lecturers:** Neuschatz (Sociology), Trencher (Anthropology)
Course Work
This department offers all course work designated ANTH and SOCI in the Course Descriptions section of this catalog.

Degree Requirements
B.A. Degree with a Major in Anthropology
In addition to meeting the general requirements for a B.A. degree, students majoring in anthropology must complete 36 hours in anthropology, including ANTH 114, 120, 135, 340, 380, 490, and 492 and 15 additional hours at the 300-400 level. SOCI 221 and SOCI 311 may apply toward the 36-hour requirement in anthropology. ENGL 481 (General Linguistics) may substitute for ANTH 380. SOCI 311 may substitute for ANTH 340. The anthropology program offers three optional concentrations: sociocultural anthropology, applied anthropology, and archaeology. Suggested courses in anthropology and electives in other departments for each of these concentrations are detailed in a description of the program, available at the Anthropology office. A certificate in applied archaeology is also offered; see the catalog section on Certificates, Interdisciplinary Minors, and University Courses.

Sample Schedule for B.A. Degree with a Major in Anthropology

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>3 Literature</td>
</tr>
<tr>
<td>Natural science</td>
<td>4 Natural science</td>
</tr>
<tr>
<td>ANTH 114, 120</td>
<td>3 Analytic reasoning</td>
</tr>
<tr>
<td>Psychology, sociology*</td>
<td>3 Economics, geography</td>
</tr>
<tr>
<td></td>
<td>3 government, history*</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Third Semester</td>
<td>Fourth Semester</td>
</tr>
<tr>
<td>Oral communication</td>
<td>3 Philosophy or</td>
</tr>
<tr>
<td>Foreign language</td>
<td>3 religious studies*</td>
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<tr>
<td>Economics, geography, government, history*</td>
<td>3 Foreign language</td>
</tr>
<tr>
<td>Psychology, sociology*</td>
<td>3 Literature</td>
</tr>
<tr>
<td>Anthropology elective</td>
<td>3 Anthropology electives</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Second Summer</td>
<td></td>
</tr>
<tr>
<td>ANTH 220</td>
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<td>Fifth Semester</td>
<td>Sixth Semester</td>
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<tr>
<td>ENGL 302</td>
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<tr>
<td>Foreign language</td>
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<tr>
<td>ANTH 340 (or SOCI 311)</td>
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<tr>
<td>Fine Arts*</td>
<td>3</td>
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Sample Schedule for B.A. Degree with a Major in Sociology

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCI 101</td>
<td>3 SOCI (300-400)</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>3 Literature</td>
</tr>
<tr>
<td>Foreign language</td>
<td>3 Foreign language</td>
</tr>
<tr>
<td>Natural science</td>
<td>4 Natural science</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Third Semester</td>
<td>Fourth Semester</td>
</tr>
<tr>
<td>SOCI (300-400)</td>
<td>3 SOCI (300-400)</td>
</tr>
<tr>
<td>Oral communication</td>
<td>3 SOCI 221</td>
</tr>
<tr>
<td>Foreign language</td>
<td>3 ENGL 302</td>
</tr>
<tr>
<td>Analytical reasoning</td>
<td>3 ANTH 114</td>
</tr>
<tr>
<td>Elective</td>
<td>3 Foreign language</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

In addition to the above requirements for majors, students are advised to elect other relevant anthropology courses, as well as courses in biology, philosophy, psychology, government, and politics.

Secondary Teacher Certification
Students who want to become secondary school teachers should consult the sections on certification found in the catalog under the Graduate School of Education. Those planning to become secondary school teachers should consult with the secondary education adviser in their department.

PAGE Students
The general education requirements (with the exception of foreign language) for the B.A. degree are satisfied by successful completion of the Program for Alternative General Education (PAGE). See the PAGE category in this catalog, and see the PAGE office for a sample schedule for majors in anthropology or sociology.

B.A. Degree with a Major in Sociology
In addition to the general requirements for a B.A. degree, 35 semester hours of work in sociology are required. Students must include SOCI 101, 221, 303, 311, and 412, and 18 additional hours at the 300 and 400 level. ANTH 332 may apply toward the 35-hour sociology requirement.
Fifth Semester
SOCI (300-400) 3
Elective 3
SOCI 303 4
ANTH 332 3
Philosophy or religious studies 3
Elective 3

Sixth Semester
SOCI 311 3
SOCI (300-400) 3
Fine arts 3
Economics, government, geography, or history elective 3
Elective 3

Seventh Semester
SOCI (300-400) 3
Economics, government geography, or history 3
Electives 9

Eighth Semester
SOCI 412 3
SOCI (300-400) 3
Electives 9

Minor in Sociology
Students can select one of five minor concentrations in sociology offered by the department. A minor in sociology requires 21 semester hours in one concentration. All minors require SOCI 101 and either SOCI 311 or SOCI 412. See an adviser in the department for more information.

Minor in Anthropology
A minor in Anthropology requires 21 semester hours. All minors require ANTH 114, 332, 120 or 135, and 430 or 450. See an adviser in the department for more information.
Institute of the Arts
Institute of the Arts

The Institute of the Arts (IOA) strives to maintain a balance between presenting master works of the past and creating a vital atmosphere for the production of new work. The institute is dedicated to the support and encouragement of all artists, including those of culturally diverse backgrounds, from here and abroad.

Dance and Theater majors have strong academic backgrounds and have their performance programs taught by professionals. The institute also searches for innovative ways to involve all students in the artistic process, professional productions, and non-traditional curricula. IOA makes the arts a pervasive presence in the lives of students regardless of age, ethnic background, or academic specialization.

The institute is involved in the community, by participating in appropriate community artistic activities, by inviting extraordinary regional artists to perform at the university, and by increasing audiences to all arts events.

Administration
Sarah Lawless, Director
Rick Davis, Producing Artistic Director, Theater of the First Amendment

Faculty
Aksyonov, Bausch, Brown, Burton, Carter, Cheuse, Clapsaddle, D'Andrea, Engebretson, Gabriel, Gero, Goodwin, Hazen, Kravit, Maiello, Mattusch, Miller, Mones-Hattal, Murphey, Raybuck, Shreve, Studd, Verheyen

Dance and Theater

Dance
Two degrees in dance are offered:
1. Bachelor of Fine Arts with a major in Dance
2. Bachelor of Arts with a major in Dance

The two dance degree programs prepare students for graduate work in performance, choreography, teaching, history, and criticism, and for professional and creative opportunities in dance.

B.F.A. Degree with a Major in Dance

The bachelor of fine arts degree in dance is specifically a performance-oriented program designed to prepare students professionally as performers, choreographers, and teachers, as well as to prepare them for graduate study. Students in this program devote a significant portion of their college careers to an intensive and comprehensive level of dance study.

The B.F.A. degree offers a general modern dance major that allows for concentrated study in performance, choreography, or teaching. Technical training includes ballet, jazz, and a strong emphasis on modern dance. Entrance into the B.F.A. program is by audition. Auditions are held twice a year, in April and November, and interested students must make arrangements in advance by contacting the Department of Dance and Theater. Transfer students are also required to audition. Approval for the dance program does not mean that a student has been admitted to the university. For ad-
mission to the university each student must submit an application to the Office of Admissions.

Because of the professional nature of this degree, the program requires completion of 131 hours of course work.

### Degree Requirements

#### A. General Education

<table>
<thead>
<tr>
<th>Degree Requirement</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. English Composition</td>
<td>6</td>
</tr>
<tr>
<td>2. Literature</td>
<td>6</td>
</tr>
<tr>
<td>3. Natural Science</td>
<td>8</td>
</tr>
<tr>
<td>4. Humanities</td>
<td>6</td>
</tr>
<tr>
<td>5. Nonmajor electives</td>
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<td><strong>Total</strong></td>
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#### B. Major Program Dance Core

<table>
<thead>
<tr>
<th>Dance Requirement</th>
<th>Semester Hours</th>
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</thead>
<tbody>
<tr>
<td>Dance Production</td>
<td>6</td>
</tr>
<tr>
<td>Modern Dance Technique</td>
<td>18</td>
</tr>
<tr>
<td>Ballet Dance Technique</td>
<td>6</td>
</tr>
<tr>
<td>Dance Improvisation</td>
<td>3</td>
</tr>
<tr>
<td>Dance Composition I</td>
<td>3</td>
</tr>
<tr>
<td>Dance Composition II</td>
<td>3</td>
</tr>
<tr>
<td>Dance Composition III</td>
<td>3</td>
</tr>
<tr>
<td>Dance Composition IV</td>
<td>3</td>
</tr>
<tr>
<td>Dance History I</td>
<td>3</td>
</tr>
<tr>
<td>Dance History II</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>75</strong></td>
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</table>

#### Rhythmic Analysis

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhythmic Analysis</td>
<td>3</td>
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#### Dynamic Alignment

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic Alignment</td>
<td>3</td>
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</table>

#### Teaching Principles and Methods

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Principles and Methods</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Dance Performance

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dance Performance</td>
<td>6</td>
</tr>
</tbody>
</table>

#### Choreography

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choreography</td>
<td>3</td>
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</table>

#### Lighting and Costuming for Dance and Theater

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting and Costuming for Dance and Theater</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Acting I (includes required Voice Workshop for Dancers)

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acting I (includes required Voice Workshop for Dancers)</td>
<td>3</td>
</tr>
</tbody>
</table>

#### C. Dance Concentration Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
</tr>
</tbody>
</table>

#### Bachelor of Fine Arts—Dance Sample Schedule

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>Literature</td>
</tr>
<tr>
<td>HIST 130</td>
<td>3</td>
</tr>
<tr>
<td>Dance Comp. I</td>
<td>History</td>
</tr>
<tr>
<td>Modern Dance Tech.</td>
<td>3 Modern Dance Tech.</td>
</tr>
<tr>
<td>Music Appreciation</td>
<td>3 Voice and Acting Tech.</td>
</tr>
<tr>
<td>Dance Production</td>
<td>1 Dance Production</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
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<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature 3</td>
<td>ENGL 302</td>
</tr>
<tr>
<td>Dance History I</td>
<td>3 Dance History II</td>
</tr>
<tr>
<td>Dance Comp. III</td>
<td>3 Dance Comp. IV</td>
</tr>
<tr>
<td>Modern Dance Tech.</td>
<td>3 Modern Dance Tech.</td>
</tr>
<tr>
<td>Lighting and Costuming</td>
<td>3 Dance Improvisation</td>
</tr>
<tr>
<td>Dance elective</td>
<td>3 Dance Production</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
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<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
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</thead>
<tbody>
<tr>
<td>BIOL 124</td>
<td>BIOL 125</td>
</tr>
<tr>
<td>Social science</td>
<td>3 Social science</td>
</tr>
<tr>
<td>Modern Dance Tech.</td>
<td>3 Ballet Technique</td>
</tr>
<tr>
<td>Rhythmic Analysis</td>
<td>3 Dynamic Alignment</td>
</tr>
<tr>
<td>Dance Performance</td>
<td>3 Dance Performance</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>General education elective</td>
<td>3 General education elective</td>
</tr>
<tr>
<td>Ballet Technique</td>
<td>3 Ballet Technique</td>
</tr>
<tr>
<td>Choreography</td>
<td>3 Dance elective</td>
</tr>
<tr>
<td>Teaching Principles</td>
<td>3 Dance elective</td>
</tr>
<tr>
<td>Dance elective</td>
<td>3 Dance elective</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

#### B.A. Degree with a Major in Dance

The bachelor of arts degree with a major in dance does not require an audition. The B.A. degree is a more general program of study allowing the student insights into a broad range of creative and ed-
educational experiences while pursuing a liberal arts degree.

In addition to general degree requirements for a bachelor of arts degree, dance majors must complete a minimum of 42 hours in dance. A total of 120 semester hours is required for the B.A. degree with a major in dance.

**Required Courses** ........................................ 42

- Dance Appreciation .................................. 3
- Modern Dance Techniques ......................... 6
  (must be intermediate level)
- Ballet Technique .................................... 3
- Dance Improvisation ................................ 3
- Dance Composition I ................................. 3
- Dance Composition II ................................ 3
- Dance History I ..................................... 3
- Dance History II ..................................... 3
- Rhythmic Analysis .................................. 3
- Dynamic Alignment .................................. 3
- Teaching Principles and Methods .............. 3
- Dance Performance ................................ 3
- Dance Elective ...................................... 3

**Bachelor of Arts—Dance Sample Schedule**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>Math/Logic</td>
</tr>
<tr>
<td>Phil/Religion</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Social Science</td>
</tr>
<tr>
<td>Social science</td>
<td>Non-Western culture</td>
</tr>
<tr>
<td>DANC 150</td>
<td>DANC 101</td>
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<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural science</td>
<td>Natural science</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Literature</td>
<td>Literature</td>
</tr>
<tr>
<td>Modern dance technique</td>
<td>Modern dance technique</td>
</tr>
<tr>
<td>DANC 390</td>
<td>DANC 391</td>
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<table>
<thead>
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<th>Fifth Semester</th>
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<tbody>
<tr>
<td>ENGL 302</td>
<td>Social science</td>
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<td>DANC 313</td>
<td>Oral communication</td>
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<td>Ballet technique</td>
<td>DANC 305</td>
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<td>DANC 251</td>
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<table>
<thead>
<tr>
<th>Seventh Semester</th>
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<tbody>
<tr>
<td>Non-Western culture</td>
<td>DANC 370</td>
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<tr>
<td>DANC 454</td>
<td>Dance elective</td>
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<tr>
<td>Electives</td>
<td>Electives</td>
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<tr>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

**Theater**

The Theater Division of the Department of Dance and Theater offers a B.A. degree in Theater. The course of study stresses the breadth and rigor of the liberal arts ideal in the belief that such study, combined with serious practical training and experience, offers the best preparation for a life in the theater.

Students electing to major in the division complete the Theater Core, a group of courses that provides a broad introduction to the various arts of the theater and strives to create a shared body of knowledge within the department's student population. The Theater Core, in conjunction with certain electives, also satisfies the requirements of a Minor in Theater.

To help organize their advanced work within the major, students will elect a course of study in one of three units: Acting, Playwriting, or Theater Studies. Each unit aims to prepare students for graduate study and/or possible entry into the profession through rigorous, concentrated, and individualized training. The division stresses, however, that students are encouraged to maintain a breadth of interest both inside the department and throughout the university's extensive offerings.

Theater of the First Amendment, a professional theater in residence within the Institute of the Arts, offers students the chance to work closely with professional artists. T.F.A. productions regularly employ student assistants in stage management, directing, dramaturgy, technical crews, and production/company management. Students are eligible to audition for roles in T.F.A. productions subject to the rules of Actor's Equity, the union of professional actors and stage managers.

Participation in Theater Division productions is expected of all declared majors. Up to two practicum credits can be awarded for satisfactory completion of four production assignments in the major (i.e., faculty or guest-directed) productions or on T.F.A. productions.

**Degree Requirements:**

*General Education: (45-62 credits)*

The division strongly recommends the Plan for Alternative General Education (PAGE), which, along with course work or examination credit in foreign languages, satisfies the university's General Education requirement. Students electing not to enroll in PAGE are referred to the Theater Division's General Education requirements below.
A. General Education .......................... 56

1. Communication ............................ 18
   a. English ............................... 6
      ENGL 101, 302. Nonnative speakers of English with limited proficiency in the language may substitute ENGL 100 for ENGL 101. A student must attain a minimum grade of C to have ENGL 100, 101, or 302 fulfill degree requirements.

   b. Foreign language ................. 0-12
      Students must demonstrate proficiency in one foreign language offered by the university at the intermediate level, either by examination or course work.

2. Analytical Reasoning ..................... 3
   PHIL 173 or mathematics

3. Humanities ................................ 15
   a. Literature ......................... 6
      Any course in literature at the 200 level in English, the 300 level or above in foreign languages and literatures, PHIL 253, or CLAS 250.

   b. Fine Arts ............................. 6
      Institute-recommended courses. See Schedule of Classes.

   c. Philosophy and Religious Studies . 3
      One of the following: PHIL 105, 151, 254, 356; RELI 211 or 212.

4. Social Science .............................. 12
   a. History .............................. 6
      3 credit hours in HIST 121 or 122; and 3 credits chosen from HIST 251, 252, 261, 262, 281, or 282.

   b. Government ......................... 3
      GOVT 132, 331, 332, or 333.

   c. ANTH 114, PSYC 101, SOCI 101, or AMST 205 ............... 3

5. Natural Science ............................ 8
   A two-semester laboratory science sequence in astronomy, biology, chemistry, geology, or physics.

B. Major Requirements ....................... 17

   The Theater Core consists of 21 hours. The upper-division Theater Studies and Playwriting Units require 24 additional hours; the Acting Unit requires 30 additional hours.

   Theater Core (and Minor in Theater)
      THR 150, 151 Drama, Stage, and Society I & II ............... 6

   THR 200 Practicum ...................... 2
      (.5 ea, repeated 4x)

   THR 210 Acting I ....................... 3

   THR 230 Introduction to Technical Theater I .................... 3

   THR 350 Script Analysis .................. 3

C. Electives ................................. 4

One from the following group of one credit mini-courses: THR 201 Stage Management, THR 202 Literary Management, THR 203 Production/Company Management

One from the following group of three credit courses: THR 233 Stage Design, THR 234 Lighting Design, THR 235 Costume Design, THR 240 Directing I, THR 351 Dramatic Theory and Criticism*, THR 352 Dramatic Literature Seminar*, THR 355 Moral Vision in American Theater*

(*recommended for those pursuing a Minor in Theater)

Upper-Division Units

Admission to the units is by permission of the division coordinator and the designated unit director. Successful completion of the Acting or Playwriting Units also requires certain courses that are open only by audition.

Acting Unit

This unit is designed for the serious student of acting with performance aspirations. A solid grounding in the fundamentals of analysis and the basic training of the actor's instrument is complemented by intensive, individualized instruction in the various facets of the actor's craft.

NOTE: Acting Ensemble is open by audition only.

Prerequisites: THR 210, THR 310, and THR 350.

   THR 300 Voice and Speech Fundamentals ......................... 3

   THR 301 Voice for the Performer ......................... 3

   THR 303 Movement for the Actor I ......................... 3

   THR 304 Movement for the Actor II ......................... 3

   THR 320, 321 Acting Ensemble I ............... 6

   THR 420, 421 Acting Ensemble II ............... 6

   Electives ............... 6

Two from the following: THR 340 Directing II, THR 351 Dramatic Theory and Criticism, THR 352 Dramatic Literature Seminar, THR 355
Moral Vision in American Theater, THR 440
Advanced Studies in Directing/Dramaturgy

**Total** ............................................. **30**

**Further Acting Unit Offerings:**
THR 322 Alexander Technique/Stage Combat (3)
THR 422 Stage Make-up/Stage Clothing (3)
THR 423 Audition Techniques: Stage and Camera (3)

**NOTE:** These courses, included in the Acting Ensemble time block, are available to all Theater Majors.

**Playwriting Unit**
This unit offers a sequence of playwriting workshops along with periodic opportunities for students to hear their plays in staged or sit-down readings. Occasionally, a fully developed student-written play is considered for production by the division.

*NOTE:* courses marked with an asterisk are open by audition only (review of work samples).

THR 380 Playwriting I ............... 3
THR 381 Playwriting II .............. 3
THR 480 Advanced Playwriting* .... 3
THR 497 Independent Study* ........ 3

Electives ................................. 12
Four from the following: THR 310 Acting II, THR 330 Seminar in Technical Theater, THR 340 Directing II, THR 351 Dramatic Theory & Criticism, THR 352 Dramatic Literature Seminar, THR 355 Moral Vision in American Theater, THR 440 Advanced Studies in Directing/Dramaturgy, or departmental or institute course with unit director's approval.

**Total** ............................................. **24**

**Theater Studies Unit**
This unit is designed to provide the theater generalist with thorough preparation for further study and work in directing, dramaturgy, theater criticism, scholarship, design, and teaching. For specific teacher certification requirements, students are directed to the Office of Teacher Education.

THR 340 Directing II ................. 3
THR 351 Dramatic Theory and Criticism ................. 3
THR 352 Dramatic Literature Seminar ................. 3
THR 355 Moral Vision in American Theater ................. 3

Design elective ............................... 3
Chosen from the following: THR 233 Stage Design, THR 234 Lighting Design, THR 235 Costume Design

Electives ............................... 9
Three from the following: THR 310 Acting II, THR 330 Seminar in Technical Theater, THR 380 Playwriting I, THR 440 Advanced Studies in Directing/Dramaturgy, THR 490 Special Topics in Drama, THR 497 Independent Study

**Total** ............................................. **24**

**Practicum Credit**
Students must acquire one hour of practicum credit outside their unit; for example, members of the Acting Unit may receive one practicum credit for performance (roles in two productions) and must complete two assignments in other fields—technical crew, stage management, publicity, etc.—to complete the second credit. Students in the Playwriting and Theater Studies Units may consider the Literary Management Office of Theater of the First Amendment as their practicum area of concentration, and are limited to one credit in that area.
School of Business Administration
School of Business Administration

Departments and Programs
- Accounting and Business Legal Studies
- Dean's Admission Program
- Decision Sciences and Management Information Systems
- Finance
- General Business Administration
- Japanese Business Program
- Management
- Marketing

Robert Johnston, Associate Dean for Graduate Programs and Faculty Affairs
Sandra Mitchell, Acting Director of Graduate Admissions
Peggy Crawford, Director of Executive M.B.A. Program
Lloyd M. DeBoer, Distinguished Professor of Business Administration
James V. Fare, Assistant Dean for Student Matters
E. Penelope Webb, Director of Undergraduate Student Support Services
Pam A. Allen, Assistant Director of Undergraduate Student Support Services

The School of Business Administration (SBA) strives to provide its students with high-quality education and to prepare them for the changing community needs and market demands of today's world. The school has attracted and continues to support a multidisciplinary faculty that meets the diverse intellectual interests of its students. The school is fully accredited by the American Assembly of Collegiate Schools and Businesses (AACSB).

Acknowledging the interdependence of the university, the community, and the business sector, the school encourages its faculty members to balance teaching, research, scholarship, and community service. The school also fosters an atmosphere of open communication between students and faculty.

Administration
The administrative offices for the School of Business Administration are on the third and fourth floors of Robinson Hall.
Cornelis de Kuyver, Dean
Richard L. Coffinberger, Associate Dean for Undergraduate Programs and Student Affairs

Course Work
The School of Business Administration offers all course work designated ACCF, BULE, DESC, FNAN, MGMT, MIS, and MKTG in the Course Descriptions section of this catalog.

Bachelor of Science Degree
The programs in business administration offered by the university culminate in a B.S. degree with majors in accounting, decision sciences and management information systems, finance, general business administration, management, or marketing. A minimum of 122 hours of course work is required, of which at least 45 hours must be at the 300 or 400 level.

Students should consult the Baccalaureate Degree Requirements section of Academic Policies for information concerning the literacy requirement, English composition requirement, catalog requirements, residence requirements, and academic requirements.

In addition, students should carefully examine course prerequisites for courses offered by the School of Business Administration. Students who
enroll in courses without having fulfilled the pre-requisites may have those courses cancelled.

All students must complete at least 30 semester hours in this degree program following acceptance to the School of Business Administration. The 30 semester hours must include 18-21 credit hours (with grades of C or better) required for the specific major, and MGMT 498: Business Strategy and Policy.

While a student may apply 12 hours of D grades toward graduation, no more than 6 hours of D grades may be applied to the business administration core and no D's may be applied to the major.

Degree Requirements
The following requirements must be met by all degree applicants:

<table>
<thead>
<tr>
<th>Semester hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration Core Courses</td>
</tr>
<tr>
<td>Accounting (ACCT 201, 202)*</td>
</tr>
<tr>
<td>Applied Statistical Analysis</td>
</tr>
<tr>
<td>(DESC 200, 202)*</td>
</tr>
<tr>
<td>Computer-Based MIS (MIS 201)*</td>
</tr>
<tr>
<td>Decision Models (DESC 301)</td>
</tr>
<tr>
<td>Business Legal Studies</td>
</tr>
<tr>
<td>(BULE 301, 401)</td>
</tr>
<tr>
<td>Finance (FNAN 301)</td>
</tr>
<tr>
<td>International Business (MKTG 407)</td>
</tr>
<tr>
<td>Management (MGMT 302)</td>
</tr>
<tr>
<td>Marketing (MKTG 301)</td>
</tr>
<tr>
<td>Business Strategy and Policy</td>
</tr>
<tr>
<td>(MGMT 498 must be taken in the final semester.)</td>
</tr>
</tbody>
</table>

** Major | 18

Must be taken at George Mason University. Grades of C or higher required in each course presented on the graduation application.

| General Education Requirements | 51 |
| Language Arts and Culture | 18 |
| English Composition | 6 |
| (ENGL 100 or 101 and 302)* | |
| Speech Communication | 3 |
| (COMM 100, 101, or 260) | |
| Literature and Humanities | 9 |
| (Humanities include DANC 101; MUSI 101, 104, 105, 106, 107; any art history; any philosophy; any religious studies; or any foreign language course. Literature includes all 200-level English courses and all literature courses offered by the Department of Foreign Languages and Literatures. Students may take either 6 semester hours of literature and 3 semester hours of humanities, or vice versa.) | |

| Social Sciences | 21 |
| Principles of Economics | 6 |
| (ECON 103, 104)* | |
| Economics (upper-level, including | 6 |
| ECON 306 or 310) | |
| History, Government, or Geography | 3 |
| Psychology, Sociology, and/or | 6 |
| Anthropology | |

| General Sciences | 12 |
| Mathematics (MATH 108)* | 3 |
| Laboratory Sciences (Astronomy, | 8 |
| Biology, Chemistry, Geology, Physics) | |
| Computer Science (CS 161) | 1 |

** General Electives | **14

May not include pure activity courses in any department such as those listed under the catalog designations dance, individual sports, physical education, team sports, recreational activities, music, theater, and art. No more than 8 semester hours of general electives may be in courses offered by the School of Business Administration or the Department of Economics. Students must complete at least 6 semester hours of general electives in non-business and/or economics courses.

| Total | 122 |

*Completion with a grade of C or better is required before or during the semester of application to the School of Business Administration.

**Accounting majors must complete 21 semester hours in the major and 11 semester hours of general elective course work of which a maximum of 5 semester hours may be in course work offered by the School of Business Administration and/or Department of Economics.

Acceptance to the School of Business Administration
A student interested in pursuing a major in accounting, general business administration, decision sciences, finance, management, or marketing must make a separate application to the School of Business Administration. Until the application is filed and approved, a student is classified as a pre-business administration major.

To be eligible to apply for acceptance into the School of Business Administration, the following requirements must be satisfied: (1) completion of 60 or more semester hours at George Mason University or through acceptable transfer hours, and (2) completion, at George Mason University or through acceptable transfer hours, of the follow-
ing 30 hours with a grade of C or better in each course:

   English Composition — ENGL 100 or 101 and 302
   Micro and Macro Economics — ECON 103 and 104
   Financial and Managerial Accounting — ACCT 201 and 202
   Business Statistics — DESC 200 and 202
   Business Calculus — MATH 108
   Management Oriented Information Systems — MIS 201

Acceptance to the School of Business Administration is competitive. A composite score is computed by adding the grade point average on the 30 hours of course work listed above with the applicant's cumulative grade point average on all collegiate work attempted, regardless of the age or transferability of that course work. While a straight A average yields a composite score of 8.00, the applicant should check with the SBA dean's office for the standard for the semester of application. The standard, now 5.60, is set by the faculty and may change. Changes in the standard are announced in January and applied to students filing applications during the following fall for acceptance effective with the spring semester. Such changes apply to all students enrolled in the university at the time the change is implemented and thereafter. Applicants who receive an academic warning for the semester of application will be denied acceptance, regardless of their overall academic performance.

Applications for acceptance to the School of Business Administration must be submitted by October 1 for the following spring semester, by February 1 for the following summer session, or by July 1 for the following fall semester. Students should file the application at the beginning of the semester in which they anticipate completing the requirements set forth above.

Students must complete a minimum of 30 hours of course work applicable to the degree program following acceptance to the School of Business Administration. The 30 hours must include the 18-21 credit hours (with grades of C or better) required for a specific major and MGMT 498: Business Strategy and Policy.

The business administration core classes other than MGMT 498 (i.e., BULE 301, 401; DESC 301; FNAN 301; MGMT 302; MKTG 301, 407) and the upper-level economics degree requirements may be completed prior to acceptance to the School of Business Administration.

**Business Administration Students**

Sample schedules for pre-business administration students are available in Robinson Hall, Room B413. Pre-business students are encouraged to periodically consult with academic advisers. Call 993-1880 to schedule an appointment.

The sample schedule for students accepted to the School of Business Administration immediately after completing 60 semester hours is listed below. Courses need not be taken in the precise sequence or semester indicated, except as prerequisites or other necessities dictate.
who qualify for the Dean's Admission Program and who can commit to maintaining full-time enrollment status. The curriculum is structured to immerse students in Japanese culture and language and includes a semester in Japan, as well as internships with the Japanese business community.

Enrichment Program
The enrichment program provides students with contemporary examples of applications of academic theory to business practice using guest speakers from the business community.

PAGE Program
Students enrolled at George Mason University may fulfill their general education requirements through the Plan for Alternative General Education (PAGE) and concurrently fulfill the requirements for applying for acceptance to the School of Business Administration. PAGE students should contact the PAGE office for a sample schedule identifying the preferred sequence of courses during the first two years. PAGE students with questions about the way PAGE courses satisfy School of Business Administration degree requirements should call 993-1880 for an appointment with an academic adviser from the School of Business Administration.

Accounting and Business Legal Studies

Faculty
Professors: Heller (Chair), Godfrey (GMU Foundation Professor of Accounting), Samuels
Associate Professors: Buchanan, Cao, Coffinberger, Cheung, Millsapauh, Tucker
Assistant Professors: Eyler, Gopalakrishnan, Harr, Horn, Quarles, Wilkie
Visiting Assistant Professor: Evanchik
Instructors: Blanchard, Faughnan, Joseph

Degree Requirements
The accounting faculty offers a B.S. in accounting degree that prepares students for professional careers in public, private, and governmental accounting. The B.S. degree in accounting is separately accredited by the American Assembly of Colle-

giate Schools of Business. The B.S. degree provides a basic foundation of accounting and business knowledge in areas such as financial and managerial accounting, auditing, tax accounting, and accounting information systems. The program emphasizes the accounting profession and its role in business, professional responsibilities and ethics, conceptual understanding, technical competency, analytic abilities, communication skills, and computer literacy.

In addition to the general requirements for the B.S. degree, students who pursue the accounting major must complete 21 credit hours in upper-level accounting courses, with grades of C or better in each course. The following courses are required of all accounting majors (18 credit hours): ACCT 311, 312, 331, 332, 351, and 461. Each student in the program must also complete one course from among the following (3 credit hours): ACCT 411, 431, 451, 471, 491, 499.

Advising materials are available in the department office (Robinson Hall, Room B441) to provide guidance regarding recommended electives. Students should see their faculty adviser when selecting courses within the field of accounting. Students who anticipate sitting for the Uniform CPA or CMA examinations should consult applicable state regulations and discuss their program with a member of the accounting faculty.

Decision Sciences and Management Information Systems

Faculty
Professors: Anderson (Chair and GMU Foundation Professor of Decision Sciences and MIS), Haynes, Ruth
Associate Professor: Gulledge
Assistant Professors: Chen, Das, Dewan, Evans, Geriner, Young
Visiting Assistant Professor: Tetzlaff
Instructors: Quitmeyer, Schank
Lecturers: Burgess, Carlson, Eskew, Jones, Overdahl, Rhodes, Schrader, Trigero

Degree Requirements
The Decision Sciences and Management Information Systems Department offers a variety of
courses and programs of study that apply mathematical modeling, statistical analyses, and computer-based information systems to the practical problems of business and government. Graduates receive a B.S. degree with a major in decision sciences. In addition to the general degree requirements for the B.S. degree, students who major in decision sciences must complete 18 hours of upper-level business administration courses with a grade of C or better in each course. Requirements include a common core of courses (9 semester hours) and electives (9 semester hours) as defined below.

Students have considerable flexibility in their choice of electives and may develop programs of study that develop expertise in areas such as computer systems applications, decision analysis, information resource management, knowledge-based systems, managerial and decision economics, production and operations management, and statistical modeling. Students are urged to discuss their choice of electives and programs of study with a faculty adviser in the Decision Sciences and Management Information Systems Department.

Required courses: INFS 310, INFS 311, and DESC 352

Electives: 9 semester hours of noncore, upper-level 300-400 DESC and 300-400 MIS courses; 3 semester hours may be satisfied by ACCT 311, ACCT 312, INFS 312, INFS 315, or INFS 316. Limited electives are available in DESC.

**Finance**

**Faculty**

**Professors:** Ferri (GMU Foundation Professor of Finance), Hanweck

**Associate Professors:** Crawford, Crockett (Chair), Hysom, Johnston

**Assistant Professors:** Hogan, Kieschnick, Sugrue, Yau

**Instructor:** Erickson

**Degree Requirements**

The finance faculty offers a major in finance that prepares students for professional careers in various branches of finance. In addition to the general degree requirements for the major, students wishing to major in finance must complete 18 hours in upper-level business administration courses with grades of C or better in each course:

Required courses: FNAN 311, 321, 401.

Electives: Three or more from DESC 353, FNAN 302, 351, 411, 412, 421, 423, 440, 451, 452, 453, 491.

**General Business Administration**

**Degree Requirements**

The faculty of the School of Business Administration, with the associate dean for undergraduate programs and student affairs, offers a major in general business administration. Students may not use the major in business administration if credit for more than one major is desired. In addition to the general requirements for the B.S. degree, students must complete 18 hours of upper-level business administration courses with grades of C or higher in each course:

Required: ACCT 311, DESC 352 or 354, FNAN 311 or 401, MGMT 312, MKTG 471.

Electives: One upper-level, noncore course offered by the School of Business Administration.

**Management**

**Faculty**

**Professors:** DeBoer (Chair), English, Griffeth, Kovach, Pearce (Eakin Endowed Chair in Strategic Management), Steinhauer (Emeritus)

**Associate Professors:** Sands (Emeritus), Zahra

**Assistant Professors:** Cohen, Fagenson, Fink, Hogan, Jackson, Robbins

**Instructor:** Schulte

**Degree Requirements**

The management major prepares students for managerial careers in the public and private sectors. In addition to the general requirements for the B.S. degree, students must complete 18 hours in upper-level management courses with grades of C or higher in each course. Beyond MGMT 302, students are required to take the following:

MGMT 312 Management of Organizations
MGMT 321 Personnel Administration
MGMT 491 Seminar in Management
Beyond these three required courses, students must choose three courses from the following:

- MGMT 331 Labor-Management Relations
- MGMT 341 Business Communication
- MGMT 381 Management Problem Solving and Decision Making
- MGMT 411 Organizational Theory
- MGMT 421 Advanced Personnel Administration
- MGMT 431 Labor Legislation and Collective Bargaining
- MGMT 451 Small Business Management
- MGMT 471 Organizational Management and Environmental Change
- MGMT 481 Business Interviewing
- MGMT 492 Field Experiences in Management

Students specializing in human resources/personnel should take MGMT 331, 421, and 431; those in entrepreneurship/small business management should take MGMT 381 or 411, 451, and 492.

Degree Requirements

The marketing major prepares students for a broad range of global and domestic career options. Opportunities are increasing in marketing as government agencies, the nonprofit sector, service industries, and small businesses adopt a marketing orientation that was traditionally perceived as a practice limited to large corporations.

A major in marketing provides students with a solid background in marketing concepts and practices with emphasis on market analysis and planning, research, consumer behavior, and advertising management. Since marketing draws on a variety of disciplines for its foundation and is practiced globally, marketing majors are encouraged to take electives in related fields such as psychology, sociology, economics, public policy, international studies, computer science, and foreign languages.

In addition to the required core courses for the B.S. degree, students must complete 18 hours of upper-level marketing courses with grades of C or better. Students are required to take:

- MKTG 312 Consumer Behavior
- MKTG 313 Advertising Management
- MKTG 351 Marketing Research Techniques and Applications
- MKTG 471 Marketing Management

The remaining 6 hours must be chosen from a variety of upper-level electives in marketing. Marketing majors are advised to work closely with their academic advisers to ensure that electives taken in related fields provide the opportunity to gain proficiency in specific marketing-related areas.

Marketing

Faculty

Professors: Kernan (George Mason University Foundation Professor of Behavioral Analysis), McCrohan, Tongren

Associate Professors: Entrikin, Domzal (Chair), Harvey

Assistant Professors: Cordell, Sisodia

Instructor: Rishell

Lecturers: Barnett, Jones
Graduate School of Education
Graduate School of Education

The Graduate School of Education prepares scholars and practitioners in fields of education through programs of study that have become increasingly multidisciplinary in response to the richness and complexity of a pluralistic society. In addition to providing the framework for the integration and application of knowledge from a variety of disciplines, the curricula of the school provide the opportunity for students to examine, evaluate, and practice professional knowledge, skills, and techniques. Since educational endeavors may respond to individual and group needs in many ways, the function of the faculty goes beyond imparting knowledge to include engaging students in critical thinking, research, analysis, and problem-solving activities.

Administration
Arthur W. Chickering, Interim Dean
James H. Finkelstein, Associate Dean
E. Clark Dobson, Assistant Dean
Mary Ann Lecos, Director of Teacher Education

Faculty
Professors: Beyer, Bowen, Chickering, Dede, Edgemon, Gilstrap, Martin, Montebello, Seligman, Sockett, Spikell, Williams
Associate Professors: Behrmann, Bonfadini, Carroll, Collier, Dobson, Duck, Dzama, Finkelstein, Given, Isenberg, Jacob, Jones, Lecos, Lepard, Levy, Raines, Sears, Smith, C. Thomas, W. Thomas, White
Assistant Professors: Dunklee, Thorp

Course Work
The Graduate School of Education enrolls students preparing for specific professions. The school offers all course work designated EDCI, EDRD, EDSE, EDAS, EDGC, EDRS, EDCC, DAED, and EDUC in the Course Descriptions section of this catalog and the Graduate Catalog.

PAGE and Core Curriculum
Students enrolled at George Mason University may fulfill their general education requirements through the Plan for Alternative General Education (PAGE) or by taking interdisciplinary courses in the core curriculum.

Professional Certification
The Graduate School of Education is responsible for professional courses, special standards, and certification recommendation for students desiring to complete requirements for certification in state-approved and NCATE-accredited programs preparing teachers, administrators, counselors, and related instructional personnel.

Teacher Education Programs
During 1991-92 the undergraduate teacher education programs in Early Childhood Education and Middle Education were phased out and replaced by graduate-level programs. These changes and other restructuring of teacher education programs were in accordance with the state-mandated elimination of undergraduate education degrees as a basis for certification in areas other than health education, physical education, and music education.

The following restructured undergraduate teacher education programs are available for students entering under the 1992-93 catalog:

- Music Education (Nursery, Kindergarten (NK)-Grade 12)
  - Instrumental
  - Vocal/Choral
  (Consult the Department of Music)
- Physical Education (with Health Education endorsement) NK-Grade 12
- Health Education (with Physical Education endorsement) NK-Grade 12
(Consult the Department of Human Services)
The following restructured, graduate-level teacher education programs are available for students entering under the 1992-93 catalog:

Early Childhood Education (Nursery, Kindergarten–Grade 3)

Middle Education (Grades 4–8)

Secondary Education (Grades 8–12)

- English
- Foreign Languages
  - French
  - German
  - Latin
  - Russian
  - Russian Studies
  - Spanish
- Mathematics
  - General Mathematics
  - Mathematics
- Sciences
  - Biology
  - Chemistry
  - Earth and Space Sciences
  - General Science
  - Physics
- Social Studies
  - Economics
  - Geography
  - Government
  - History
  - History/Social Studies
  - Psychology
  - Sociology
- Speech Communication

Special Education (NK-Grade 12)

- Early Childhood Handicapped (ECH)
- Emotional Disturbance (ED)
- Emotional Disturbance/Learning Disabilities (ED/LD)
- Learning Disabilities (LD)
- Severely and Profoundly Handicapped (SPH)

English as a Second Language (NK-Grade 12 or add-on endorsement)

Certain courses in the Early and Middle Education Programs may be taken by undergraduates. The graduate work for certification may be completed in a summer and an academic year of full-time study or two years of part-time study.

(Consult the Graduate School of Education for detailed descriptions of postbaccalaureate certification programs and additional requirements to earn the M.Ed. degree.)

Persons seeking initial teacher certification in Virginia must achieve specified scores on the National Teachers Examinations (NTE). Information on these tests can be obtained from the Office of Teacher Education.

**Academic Policies and Degree Requirements**

Graduate School of Education undergraduate degree prerequisites are described in detail below. Academic policies and degree requirements for graduate programs are described in the *Graduate Catalog*.

Note that in addition to the requirements described below, students should consult the *Baccalaureate Degree Requirements* section of *Academic Policies* for information concerning the literacy requirement, English composition requirement, catalog requirements, residence requirements, and academic requirements.

**Sample Schedules**

Sample schedules listed are illustrative only. Courses need not be taken in sequences or semesters indicated, except as prerequisites or other necessities prescribe.

**Certification for Early Childhood/Middle Education**

Students who wish to become certified teachers in early childhood (NK-3) or middle education (4-8) must first obtain a degree from the College of Arts and Sciences (CAS) and then apply during the senior year to be admitted to the Graduate School for a fifth year of professional study as a postbaccalaureate student. Early childhood education students may select any CAS major. Middle education majors are encouraged to major in a discipline that they could teach in a middle school (English, speech, history, mathematics, foreign language, or science).

**Undergraduate Requirements**

Students planning to apply to the postbaccalaureate certification program should take courses in the following areas as part of their undergraduate program:

<table>
<thead>
<tr>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>51</td>
</tr>
</tbody>
</table>

1. **General Education Requirements**

   Students are encouraged to participate in PAGE and the new CORE curriculum. Note that the listed examples that follow are not specific requirements.
A. English and Communications . . . 15
ENGL 101, 302; ENGL 205, 206, or 253; any
other 200-level literature course; COMM 100
or 120
B. Social Sciences . . . . . . . . . . . . . . . 12
HIST 121 and/or 122; GEOG 101 or 103;
ECON 103 or 104; ANTH 114; GOVT 103 or
132; PSYC 100; SOCI 101
C. Health (HEAL 110 recommended) . 3
D. Natural Sciences . . . . . . . . . . . . . . . 6-8
BIOL 103; CHEM 103; PHYS 141 and 142;
ASTR 105; GEOL 101; or UNIV 301 (Note:
Applicants to the Teacher Education Program
may present courses in either one or two natu-
ral science disciplines.)
E. Mathematics . . . . . . . . . . . . . 9
MATH 106, 371, and 372
F. Fine Arts/Philosophy . . . . . . . . . 6
ARTS 102 or ARTH 101; MUSI 101 or 100

2. Prerequisite Professional Courses . . . . . . 9
The following undergraduate courses must be
successfully completed prior to beginning the
certification program:
EDUC 300: Introduction to Teaching
EDUC 301: Educationally Diverse Popula-
tions: Handicapped, Gifted, Multicultural
EDUC 302: Human Growth and Development

Certification for Secondary Education
Consult the certification specialist in the Office of
Teacher Education for information about specific
areas of certification.
The Secondary Education Program has three
components:
1. Courses in the teaching discipline as
developed by the College of Arts and Sciences
(CAS) and the School of Education.

CAS majors for teacher certification include biol-
ology, chemistry, economics, English, French,
German, geography, geology, government, his-
tory, mathematics, music, physics, psychology,
Russian, sociology, Spanish, and speech com-
munication.

2. General Education Requirements

A. Humanities . . . . . . . . . . . . . . . 12
ENGL 101 and the balance from: English,
foreign language, literature, speech, fine arts,
music, and philosophy
B. Social Sciences . . . . . . . . . . . . . 12
HIST 121, social science non-Western culture,
and the balance from: history, anthropology, so-
ciology, economics, government, geography,
psychology
C. Health and Physical Education . . . . 3
One or more courses in either or both
D. Laboratory Science and
Mathematics/Analytical Reasoning . . . . 13
One course in each; balance from either or both
E. Electives . . . . . . . . . . . . . . . . . . . . 6
Taken from the humanities and/or social
sciences
Note: 12 semester hours in a foreign language
are recommended.

3. Professional Courses required by the
Graduate School of Education
Students who wish to be certified in a secondary
school discipline must complete a graduate-level
27-hour certification program in education. Stu-
dents must have an approved plan of study of
course work needed for certification and be fully
admitted to the Teacher Education Program in ac-
cordance with the regulations stated in the Gradu-
ate Catalog.

Prerequisite Education Courses
The following courses, which may be taken by un-
dergraduates, must be completed before full ad-
mission into the certification program:
EDUC 522: Introduction to Secondary
Education
EDUC 539: Psychological Foundations of
Adolescent Learning and Development
Students should consult with the secondary educa-
tion adviser in the department of their discipline
as well as the appropriate discipline adviser in the
Department of Curriculum and Instruction. All
students interested in certification should also
consult the information in the Graduate Catalog
that describes the additional courses needed to
earn an M.Ed.

For information on the following areas, please see
the Graduate Catalog: English as a Second Lan-
guage (ESL) Education, Bilingual/Multicultural
Education, Special Education, and Vocational Ed-
ucation.

Certification for Special Education
Consult the certification specialist in the Office of
Teacher Education for information about specific
areas of certification in the post-baccalaureate
special education programs. Also see the Gradu-
ate Catalog for information about each program
and the additional courses needed for an M.Ed. in
Special Education.
1. **General Education Requirements**
   Same as those listed above for Secondary Education.

2. **Prerequisite Professional Courses . . . . 9**
   EDUC 300: Introduction to Teaching
   EDUC 301: Educationally Diverse Populations: Handicapped, Gifted, Multicultural
   EDUC 302: Human Growth and Development

**Inservice Education**

The Graduate School of Education delivers innovative inservice education courses that provide professional development for the teaching and administrative staffs of Northern Virginia school divisions. Many of these courses involve innovative schedules and formats. They address specific needs in areas such as computers and technology, substance abuse, learning styles, and the teaching of writing.

Inservice courses, which are authorized and approved by university academic departments, may be applied to degree programs with adviser approval. Instructors are both adjunct and full-time university faculty members. For more information, contact the director of Office of Inservice Education in the Graduate School of Education.
School of Information Technology and Engineering
School of Information Technology and Engineering

Departments
- Computer Science
- Electrical and Computer Engineering
- Information and Software Systems Engineering
- Operations Research and Applied Statistics
- Systems Engineering

The School of Information Technology and Engineering (SITE) at George Mason University is primarily concerned with study areas that involve the integration of the information basis for modern engineering together with the more conventional physical and materials science basis. The careful integration of these areas results in a unique academic experience for highly motivated students.

SITE offers twelve programs that concentrate on important contemporary technological issues and needs. Four bachelor's degree programs are offered: computer science, electrical engineering, systems engineering, and urban systems engineering. Seven master's degree programs are available: computer science, electrical engineering, information systems, operations research and management science, software systems engineering, statistical sciences, systems engineering, and urban systems engineering. A single cross-disciplinary doctoral program is offered in information technology. See the Graduate Catalog for details about the master's and doctoral programs.

The undergraduate degree programs prepare graduates to enter directly into professional employment or to continue studies at the graduate level. The requirements for the bachelor's degrees include required and elective courses in mathematics, humanities, and general education, and specialty courses in computer science, electrical engineering, systems engineering, and urban systems engineering. Each program strongly emphasizes English composition and communication.

Students also have the opportunity to develop interest areas in other fields within SITE that offer undergraduate courses but do not now have undergraduate majors. The Bachelor of Individualized Study (B.I.S.) degree program may appeal to mature students who have completed a substantial portion of their studies at other institutions.

Administration
Andrew P. Sage, Dean
Peter J. Denning, Associate Dean
James D. Palmer, Associate Dean
George R. Umberger, Assistant Dean
E. Bernard White, Assistant Dean
John P. Wenzelberger, Director, Cooperative Graduate Engineering Program

Course Work
The School of Information Technology and Engineering is responsible for courses with the designator ENGR in the Course Descriptions section of this catalog.

Bachelor of Science Degree Requirements
The following general requirements for a bachelor of science degree must be completed by all undergraduate students who receive bachelor's degrees through majors in the School of Information Technology and Engineering:
1. Completion of at least 120 semester hours of academic work
2. Completion of at least 6 semester hours of English composition and 6 semester hours of literature
3. Completion of at least 12 additional semester hours in the humanities and social sciences; 6 of these hours must be chosen from the social science areas of anthropology, economics, geog-
raphy, government, history, linguistics, psychology, and sociology
4. Completion of the requirements for the major as listed under the curricula for computer science, electrical engineering, systems engineering, or urban systems engineering
5. Completion of an acceptable plan of study formulated by the student and his or her adviser. Sample schedules that fulfill degree requirements for individual programs within SITE departments are provided in the following pages. With prior approval of departmental advisers, some courses may be taken out of the indicated sequences, particularly in the case of English, literature, humanities, and social sciences courses.

Students should consult the Baccalaureate Degree Requirements section under Academic Policies in this catalog for detailed information concerning graduation requirements, curricula requirements, English composition and literature requirements, core requirements for the selected major, residence requirements, and academic quality requirements for graduation with a major in computer science, electrical engineering, systems engineering, or urban systems engineering. The portion of the catalog that concerns the Office of Academic Affairs discusses the requirements for the B.I.S. degree. The following sections provide a detailed description of the requirements for the computer science, electrical engineering, systems engineering, and urban systems engineering undergraduate degree programs.

Computer Science

Faculty
Professors: Denning (Chair), Michalski, Rine, Sood, Wechsler
Associate Professors: DeJong, Hamburger, Norris, Wang
Assistant Professors: Acquah, Carver, Frieder, Kjell, Littman, Pachowicz, Quammen, Tanner, Tecuci
Adjunct Professors: Bell, Cragg, Logan, Mathis, Patterson, Pierson, Singh

Course Work
Computer science is the discipline concerned with the design, implementation, and maintenance of the computer systems used in almost all other professions. Computer scientists must be well-grounded in the technologies needed for the acquisition, representation, storage, transmission, transformation, and use of information in digital form and must be capable of working closely with members of other professions associated with computing.

This department offers all course work designated CS in the Course Descriptions section of this catalog.

Admission to Computer Science

Transfer Students and Changes of Major. A student who requests to be a CS major or who transfers from another institution must present a GPA of 2.5 and grades of A or B in the following mathematics courses: one semester of analytic geometry and calculus (MATH 113 or equivalent) and either a semester of discrete mathematical structures (MATH 125 or equivalent) or a second semester of analytic geometry and calculus (MATH 114 or equivalent).

Advanced Placement. Credit for CS 112 and CS 211. The department grants credit in CS 112 or CS 211 if the student can demonstrate the skills required of students completing these courses. Students can receive credit for CS 112 by passing examinations given for this purpose, or by showing a grade of 3 or better on the Advanced Placement Computer Science Test; a grade of 4 or 5 results in credit for CS 211 as well.

Grades. A student must earn a C or better in any course intended to satisfy a prerequisite for a CS course.

Cooperative Education. As a computer science major, a student may participate in the GMU cooperative education program or in a work-study program in the Washington and Northern Virginia area.

B.S. Degree with a Major in Computer Science

In addition to the general SITE degree requirements for a B.S. degree, the following courses are required:

1. Computer Science: CS 112, 211, 265, 330, 365, 421, 440, 450, 471, 480, and 483 for a total of 34 hours.
2. Mathematics: MATH 113, 114, 125, 213, 303, and 446, plus MATH 351 or STAT 344, and ECE 301 for a total of 26 hours.
3. Computer science-related courses: 12 hours chosen from OR 435, 441, 442; ECE 285, 431, 442, 511, 512; PHIL 371, 376, 422; any MATH course numbered above 300 except MATH 371, 372; any CS course numbered above 300.
Students may need to choose electives to satisfy the prerequisites of these courses.

4. Natural Sciences: The student is required to elect two courses in the natural sciences from the following list: ASTR 105, 106; BIOL 103, 104; CHEM 251; GEOL 101, 102; PHYS 250, 350.

Courses for Nonmajors
CS 103, 161, and 262 are designed primarily for students in the social and behavioral sciences and business, and for others desiring an introduction to computer programming. These courses do not count toward satisfying the requirements for a major in computer science.

Sample Schedule for B.S. in Computer Science

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>MATH 113</td>
<td>CS 211</td>
</tr>
<tr>
<td>CS 112</td>
<td>Literature</td>
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<tr>
<td>ENGL 101</td>
<td>MATH 114</td>
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<td>Elective</td>
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<td>Third Semester</td>
<td>Fourth Semester</td>
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<td>CS 265</td>
<td>CS 330</td>
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<td>MATH 213</td>
<td>MATH 125</td>
</tr>
<tr>
<td>ECE 301</td>
<td>ENGL 302</td>
</tr>
<tr>
<td>Literature</td>
<td>Electives</td>
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<td>Humanities or social sciences</td>
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<tr>
<td>Fifth Semester</td>
<td>Sixth Semester</td>
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<tr>
<td>CS 365</td>
<td>CS 440</td>
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<tr>
<td>CS 471</td>
<td>CS 480</td>
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<td>MATH 303</td>
<td>STAT 344</td>
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<tr>
<td>Elective</td>
<td>CS-related elective</td>
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<tr>
<td></td>
<td>Humanities or social sciences</td>
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<td></td>
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<tr>
<td>Seventh Semester</td>
<td>Eighth Semester</td>
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<tr>
<td>CS 421</td>
<td>CS 450</td>
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<tr>
<td>CS 483</td>
<td>CS-related electives</td>
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<tr>
<td>MATH 446</td>
<td>Electives</td>
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<td>CS-related elective</td>
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Sample Schedule for PAGE Student, Computer Science Major

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<tbody>
<tr>
<td>PAGE 120</td>
<td>MATH 113</td>
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<tr>
<td>PAGE 122</td>
<td>PAGE 123</td>
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<tr>
<td>PAGE 130</td>
<td>PAGE 131</td>
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<tr>
<td>PAGE 150/151</td>
<td>PAGE 152/153</td>
</tr>
<tr>
<td>CS 112</td>
<td>CS 211</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Third Semester</td>
<td>Fourth Semester</td>
</tr>
<tr>
<td>PAGE 227</td>
<td>PAGE 228</td>
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<tr>
<td>PAGE 230</td>
<td>PAGE 232</td>
</tr>
<tr>
<td>PAGE250/251</td>
<td>PAGE 253</td>
</tr>
<tr>
<td>MATH 114</td>
<td>MATH 213</td>
</tr>
<tr>
<td>CS 265</td>
<td>CS 330</td>
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</table>

Electrical and Computer Engineering

Faculty
Professors: Cook (Chair), Gertler, Levis, Manitius, Tabak, Van Trees
Associate Professors: Athale, Baraniecki, Beale, Berry, Black, Ceperley, Chang, Hintz, Ioannou, Jabbari, Mulpuri, Schaefer, Stewart, Sutton
Assistant Professors: Auletta, Cole, Olurotimi, Orsak, Paris
Lecturers: Bronez, DuBose, Geesey, Gilmer, Gurfein, Hartman, Jordan, Koh, Marshall, Short, Small

Course Work
This department offers courses with the designation ECE in the Course Descriptions section of this catalog.

B.S. Degree in Electrical Engineering

This program prepares the graduate either for direct entry into a career in engineering or for graduate study. It is accredited by the Accreditation Board for Engineering and Technology.

Along with the general B.S. degree requirements, the electrical engineering course requirements are outlined in the sample schedule at the end of this section. Students may complete the requirements on a part-time or co-op basis. In either case, the program must be approved by an academic advisor. Sample schedules for PAGE students in electrical engineering are available in the ECE office or PAGE office.

The demanding electrical engineering curriculum requires 133 total credit hours. Students may wish to consider an extra semester or two for the purpose of lightening the course load (particularly for those with part-time employment); participating in cooperative education or work-study (with local industry); or achieving a double major (for example, with physics, math, computer science, or systems engineering).

The department also offers a master's degree in electrical engineering and participates in the Ph.D. program in information technology offered through the School of Information Technology and Engineering (see Graduate Catalog).
Advising
All electrical engineering students are required to see their major adviser prior to course registration each semester. Students interested in engineering who are not declared majors are also strongly urged to do this as well.

Change of Major
Students who want to change their major to electrical engineering must have at least a 2.75 GPA in all math, physics, and engineering courses, and should have successfully completed MATH 114.

Required Courses in a Sample Schedule for B.S. in Electrical Engineering

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<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>MATH 113</td>
<td>MATH 114</td>
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<tr>
<td>CHEM 251</td>
<td>CS 211</td>
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<td>CS 112</td>
<td>PHYS 250</td>
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<tr>
<td>ENGR 107</td>
<td>Literature</td>
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<tr>
<td>ENGL 101</td>
<td>Humanities or social science</td>
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<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
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<tbody>
<tr>
<td>PHYS 350</td>
<td>PHYS 352</td>
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<tr>
<td>PHYS 351</td>
<td>PHYS 353</td>
</tr>
<tr>
<td>MATH 213</td>
<td>MATH 304</td>
</tr>
<tr>
<td>ECE 285</td>
<td>ECE 286</td>
</tr>
<tr>
<td>ENGR 210</td>
<td>ENGR 206, 209, 307, 316</td>
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<td>Humanities or social science</td>
<td>Literature</td>
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<th>Fifth Semester</th>
<th>Sixth Semester</th>
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<tr>
<td>ECE 331</td>
<td>ECE 333</td>
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<td>ECE 332</td>
<td>ECE 334</td>
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<tr>
<td>ECE 305</td>
<td>ECE 360</td>
</tr>
<tr>
<td>MATH 305</td>
<td>ECE 445</td>
</tr>
<tr>
<td>MATH 303</td>
<td>STAT 344 or MATH 351</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>COMM 100</td>
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<th>Seventh Semester</th>
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<tr>
<td>ECE 421</td>
<td>ECE 491</td>
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<tr>
<td>ECE 433</td>
<td>ECE 429, 434, 435, 449, 461</td>
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<tr>
<td>ENGR 390</td>
<td>or 469</td>
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<tr>
<td>ECE 460</td>
<td>ECE technical electives</td>
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<tr>
<td>ECE 429, 434, 435, 449, 461</td>
<td>ECE 493</td>
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<tr>
<td>or 469</td>
<td>Humanities or social science</td>
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<td>ECE 431</td>
<td>2</td>
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<tr>
<td>ECE 492</td>
<td>17</td>
</tr>
</tbody>
</table>

1. Humanities, social science, and literature electives should be selected from the department's list of approved courses, and at least one of these electives must be at the 300 level or above.

2. The ECE technical electives should be selected from the department's list of approved courses. The required design content must be satisfied by these electives. Tracks in electronics, communications and signal processing, computer engineering, and controls systems and robotics are available. A non-track option is also available.

Information and Software Systems Engineering

Faculty
Professors: Gomaa, Jajodia, Kerschberg (Chair), Palmer, Sage, Sibley
Associate Professors: Baum, Motro, Sanden, Sandhu, Siff
Assistant Professors: Aiken, Ammann
Adjunct Professors: Davis, Carlson, Fletcher, Long, Napolillo, Nidiffer, Spear, Thompson, Wexelblat
Instructors: Brouse, Norris

Course Work
The Information and Software Systems Engineering Department offers courses with the designator INFS in the Course Descriptions section of this catalog. Although there is presently no degree program in information systems, courses are offered as electives in other programs. Students may also elect an information systems engineering option in the systems engineering degree program.

Operations Research and Applied Statistics

Faculty
Professors: Friesz, Greenberg, Harris, Hoffman, D. Miller, Schum, Wegman
Visiting Professor: Winters
Associate Professors: Bolstein, Carr, Gantz, Habib, J. Miller, Nash, Sofer
Assistant Professor: Sutton

Course Work
Operations research and applied statistics at George Mason University principally involve the theoretical and empirical sciences of managerial and operational processes, as well as those of data representation and analysis. Courses include the traditions of mathematical optimization, random processes, and applied statistical methods. Models are needed for a variety of purposes in business, industry, and government to describe different environments and to relate alternative courses of ac-
tion to performance. Thus, the courses in operations research and applied statistics focus on the modeling and analysis of systems.

Although the department does not offer an undergraduate degree in either operations research or statistics, a variety of courses are available for inclusion in other degree programs.

This department offers courses with the designators OR and STAT in the Course Descriptions section of this catalog.

Certificate Programs
The department offers two certificate programs in operations research and applied statistics. For more information, see the catalog section on Certificates, Interdisciplinary Minors, and University Courses.

Systems Engineering

Faculty
Professors: Friesz, Houck, Levis, Palmer, Sage, Van Trees (Chair)
Visiting Professor: Ryan
Associate Professors: Adelman, Buede, Laskey, Lehner, Rathbone, White
Visiting Associate Professor: Might
Adjunct Professors: Dea, Koh, O'Connell, Rao, Scanlon
Instructor: Ehrhart

Course Work
The Systems Engineering Department offers courses with the designators SYST and USE in the Course Descriptions section of this catalog.

Degrees
The Systems Engineering Department offers two bachelor of science degrees: a B.S. in Systems Engineering and a B.S. in Urban Systems Engineering.

B.S. Degree in Systems Engineering
The undergraduate program in systems engineering at George Mason University provides a strong foundation of basic and advanced knowledge in mathematics and science, engineering fundamentals, systems engineering, computer science, and social and behavioral sciences. Its core curriculum includes the technical and behavioral factors associated with requirements specification, systems development and evaluation, systems acquisition and procurement, human-machine interaction, and economic systems analysis. The latter, together with a senior design project, comprise the advanced portion of undergraduate study.

In addition, students select an area of concentration within the broad systems engineering discipline. Examples of these concentration areas are information systems engineering, decision support systems, control systems engineering, and digital systems engineering. Students following this program of study are prepared for careers in industry, government, or academia.

B.S. Degree in Urban Systems Engineering
Urban systems engineering is the study of land, transportation, water, energy, and telecommunications systems from an engineering perspective as well as from social, political, economic, and environmental perspectives. The focus is on how these systems are conceived, developed, designed, and built in a complex urban setting such as the Washington metropolitan area. Urban systems engineering is a four-year curriculum of basic math and science, engineering science, humanities, engineering design, systems engineering, and information technology leading to the B.S. degree.

Urban systems engineering students benefit from being exposed to practical engineering problems and their solutions in the classroom and in the field with the opportunity to work as junior engineers each summer. The urban systems engineer can look forward to a career with land development, architecture/engineering, and with construction firms or government organizations.

Degree Requirements
In addition to the general requirements for the B.S. degree, students must meet specific requirements for this degree outlined in the accompanying sample schedule.

Advising
All systems engineering students are required to see their advisers at least once each semester to plan for the following semester's registration. Each student in systems engineering is expected to complete an approved plan of study, which then constitutes a "learning plan" for the degree program. Sample schedules for PAGE students in systems engineering are available in Systems Engineering or PAGE offices.
### Sample Schedule for Undergraduate Systems Engineering Majors

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<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>MATH 113</td>
<td>MATH 114</td>
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<tr>
<td>CHEM 251</td>
<td>CS 211</td>
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<td>CS 112</td>
<td>PHYS 250</td>
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<th>Third Semester</th>
<th>Fourth Semester</th>
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<tbody>
<tr>
<td>PHYS 350</td>
<td>MATH 303</td>
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<tr>
<td>PHYS 351</td>
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<td>STAT 354</td>
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<td>CS 421</td>
<td>OR 442</td>
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<td>OR 441</td>
<td>SYST 302</td>
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<td>SYST 419</td>
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<td>ENGL 302</td>
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### Sample Schedule for Undergraduate Urban Systems Engineering Majors

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<tr>
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<th>Second Semester</th>
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<tbody>
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<td>ENGL 101</td>
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<tr>
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<tr>
<td>PHYS 350</td>
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<td>ENGR 390</td>
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<td>USE 340</td>
<td>USE 350</td>
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<tr>
<td>USE 465</td>
<td>ENGR 307</td>
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<td>ENGR 310</td>
<td>USE 467</td>
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<th>Seventh Semester</th>
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<td>USE 400</td>
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<td>USE 463</td>
<td>USE 416</td>
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<td>USE 451</td>
<td>Technical electives</td>
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<td>Humanities elective</td>
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<td><strong>15</strong></td>
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</tbody>
</table>

Urban systems engineering electives may be chosen from USE 453, USE 452, USE 466, USE 495, USE 498, USE 499, SYST 302, SYST 470, STAT 354, OR 441, FNAN 351, or others with the approval of the academic adviser. Interested urban systems engineering students may, with the approval of their adviser and the Department of Biology, study concurrently for the Environmental Management Certificate program.

The systems engineering program requires 18 semester hours of technical electives. Sequences of electives that constitute a concentration "track" may be selected from courses in systems engineering, computer science, electrical and computer engineering, information systems, or approved courses in operations research, applied statistics, psychology, and business administration. Suggested electives sequences include systems engineering, digital systems engineering, control systems engineering, information systems engineering, decision support systems, communications systems engineering, mathematical analysis, and engineering science; other elective sequences may be proposed, but they will require explicit approval by the student's adviser.
School of Nursing
School of Nursing

Nursing Program
The undergraduate nursing program at George Mason University prepares students to deliver superior nursing care and provide leadership in nursing in the increasingly complex and challenging field of modern health care. Graduates are in demand as professional nurses in hospitals, nursing homes, community health agencies, and other health care agencies. The program emphasizes early detection of potential health problems, health maintenance in ambulatory services, and preparation for the managerial responsibilities of nursing.

The program is accredited by the Virginia State Board of Nursing and the National League for Nursing.

Administration
Rita M. Carty, Dean
Myra H. Fisher, Assistant Dean
for Administration
Catherine Malloy, Associate Dean
for Academic Programs
Georgine M. Redmond, Assistant Dean
for Student Affairs

Faculty
Professors: Ailinger, Butler, Carty (Dean), Dear, Johnson-Brown, Liu, Malloy (Associate Dean), Silva, Walker
Adjunct Professor: Henry
Associate Professors: Connelly, Gaffney, Feeg, Hale, Harper, Jenkins, Kaseman, Moore, Noble, Redmond (Assistant Dean), Sorrell, Trainor, Vail
Adjunct Associate Professors: DeLeon, Johnson, Roche, Wakefield
Assistant Professors: Bailey, Boland, Boyd, Brenkus, Cianci, Conti, Fant, Fisher (Assistant Dean), Mill, Roberts, Rudowski, Williams, Wu
Adjunct Assistant Professor: Barry
Instructors: Rice, Rigney

Lecturers: Bentzen, Brown, Durham, Hall-Long, Hunt, Laird, Maddox, Mather, Neill, Podlesney, Quillin, Roth

PAGE Students
The general education requirements within the Bachelor of Science in Nursing (B.S.N.) program may be met through George Mason University's Plan for Alternative General Education (PAGE). The plan integrates the university's general education requirements in the form of a series of interdisciplinary courses that are completed during the first two years of a bachelor degree program. For nursing students, the PAGE option satisfies all requirements except the course work in nursing and biology.

Nursing Continuing Education
The School of Nursing offers opportunities for credit and noncredit courses of interest to nurses and health care providers. When planning and presenting continuing education programs, the School of Nursing uses the wealth of available resources in Northern Virginia and the Washington metropolitan area.

Comments and suggestions for programming from the health care community are welcomed. To obtain information about specific activities, call 993-1910.

Student Health Center
The George Mason University Student Health Center is operated through a partnership between the School of Nursing and the Office of Student Services.

Course Work
The School of Nursing offers all course work designated NURS in the Course Descriptions section of this catalog.
Bachelor of Science Degree

The B.S.N. degree prepares graduates to function as professional nurses in hospitals, nursing homes, and in the community. The program may be completed on a full- or part-time basis, and a special accelerated pathway for registered nurses takes into account the needs of the working R.N. Full-time accelerated pathways for students with baccalaureate degrees outside of nursing and licensed practical nurses are also offered. Students interested in these pathways must contact the School of Nursing prior to admission. All pathways lead to completion of the objectives of the undergraduate program.

Clinical nursing begins at the sophomore level. Students must complete a pre-nursing curriculum and be admitted to junior standing or to one of the accelerated pathways.

Candidates for the degree must present at least 120 semester hours of work. Specific requirements for the B.S.N. are as follows:

Degree Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Semester Hours</th>
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<tbody>
<tr>
<td><strong>Language Arts and Culture</strong></td>
<td>15</td>
</tr>
<tr>
<td>ENGL 101, 302 (3 hours humanity)</td>
<td>6</td>
</tr>
<tr>
<td>prerequisite to 302</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>3</td>
</tr>
<tr>
<td>Humanities</td>
<td>6</td>
</tr>
<tr>
<td>Art (appreciation, history, criticism, or theory)</td>
<td>3</td>
</tr>
<tr>
<td>Music (appreciation, history, criticism, or theory)</td>
<td></td>
</tr>
<tr>
<td>Literature (in addition to six hours of ENGL 101, 302)</td>
<td>6</td>
</tr>
<tr>
<td>Philosophy, language, religion, or humanities</td>
<td></td>
</tr>
<tr>
<td><strong>Social Behavior Sciences</strong></td>
<td>9</td>
</tr>
<tr>
<td>Sociology</td>
<td>3</td>
</tr>
<tr>
<td>Psychology</td>
<td>6</td>
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<tr>
<td><strong>Natural Sciences and Mathematics</strong></td>
<td>19-20</td>
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<tr>
<td>Science, Math, Computer Science</td>
<td>4</td>
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<tr>
<td>Biology (BIOL 124, 125)</td>
<td>8</td>
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<tr>
<td>Microbiology (BIOL 261)</td>
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<tr>
<td>Statistics (STAT 250, PSYC 300, or SOCI 221)</td>
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<td><strong>Nursing Major</strong></td>
<td>46-62</td>
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<tr>
<td><strong>Physical Education Activities</strong></td>
<td>2</td>
</tr>
<tr>
<td>elective hours</td>
<td></td>
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</tbody>
</table>

**Electives** 12-15

(No more than three hours of nursing electives may be used to satisfy this requirement.)

**Total** 120

The school provides opportunity for credit by examination in several courses for students presenting evidence of previous education. Programs of study are based on student needs.

Special Requirements

Nursing students are required to obtain annual health examinations and immunizations beginning with registration for their first clinical course. An in-progress Hepatitis B immunization series is required before enrollment in clinical courses. They are also responsible for their own uniforms and transportation. Student liability insurance is provided by the university. Students are strongly advised to maintain health insurance coverage at all times. Each student is responsible for his or her health care, including emergency care. The School of Nursing assumes no financial responsibility for the health care of students. An accident and health insurance plan is available through the university.

A sophomore student must have CPR certification before entering Nursing 262 and maintain it through the remainder of the program. Either the American Red Cross’s Professional Rescuer or the American Heart Association’s Basic Life Support is required.

The drop period for nursing courses offered for less than 14 weeks is three weeks.

Because knowledge, skills, and behavior patterns in the major field of this program are so vital to the health and perhaps even the survival of individuals or groups being served, failure or borderline achievement cannot be tolerated. Therefore, the faculty of the School of Nursing has established, with approval of university faculty and administration, the following special major field quality standards which go beyond the general university quality standards printed elsewhere in this catalog.

Acceptance Into Junior Standing in Nursing

Acceptance into junior standing in nursing is based on a cumulative average of 2.8 in courses prerequisite to junior-level nursing courses: anatomy and physiology; science or math from Area B in the Academic Policies section of this catalog (four hours); microbiology; psychology (three
hours); sociology; and NURS 250, 254, and 262. Students must achieve a C or better in prerequisite courses. Students not accepted for junior standing in nursing may re-petition and, if they meet the criteria, may be admitted on a space-available basis.

Students enrolled in the Program for Alternative General Education (PAGE) must earn a C or better in PAGE 130, 131, 227, and 228. In addition, PAGE students must earn a 2.8 prerequisite cumulative average in the following courses: BIOL 124, 125, and 261, and NURS 250, 254, and 262.

Permission to register for NURS 301, 302, 314, 315, 324, and 325 requires prior acceptance into junior standing in nursing. Application must be made during the semester in which the student is completing the prerequisites for the junior-level courses.

Application for acceptance into junior standing in nursing must be made prior to March 15 for the fall semester and prior to November 15 for the spring semester.

All prerequisite courses and credit by examination must be successfully completed before recommendations are made to accept the student into junior standing. These recommendations are made at the end of the semester when all courses are completed and grades have been reported. Students in the Accelerated Pathway for College Graduates must have a 3.0 GPA in their previous degree or a 2.5 in sciences and social and behavioral science prerequisites for junior-level nursing courses.

Full-time nursing requires carrying a heavy schedule; therefore, outside obligations should be limited to ensure success.

Additional Academic Grade Standards

**Progression**

A final nursing course grade of less than C prohibits further progress in the sequence of required nursing courses until that course is repeated and a satisfactory grade is earned.

A nursing course in which a grade of less than C is earned may be repeated once. Upon earning a grade of C or better the student may resume progress in the sequence of required courses.

Failure to earn a grade of C or better in a course being repeated, or earning a grade of less than C in a second nursing school course, results in suspension of eligibility to progress in the sequence of required nursing courses.

A student so suspended may, after the subsequent academic period (fall semester, spring semester, or summer session), petition the Associate Dean for Academic Programs for permission to repeat the nursing course or courses that resulted in the suspension.

No more than two nursing courses may be repeated. Failure to produce a satisfactory grade of C or better in the trial course(s) or in any later nursing course results in exclusion from the university's nursing program.

**Graduation**

Graduation depends upon earning a C or better in all courses prerequisite for junior standing and all required nursing courses.
Certificates, Interdisciplinary Minors, and University Courses
Certificates, Interdisciplinary Minors, and University Courses

Certificate Programs
The Faculty Senate, acting on advice from the Committee on University Curriculum Matters, has established guidelines for the offering of certificate programs by the various units of the university. These programs are special sequences of credit study for which participants receive certificates upon completion of the programs. Certificate programs are not meant as substitutes for degree programs. Rather, they are designed for individuals who already hold degrees and are greatly interested in the fields in which these certificates are offered.

Each of the colleges and schools of the university may devise certificate programs, following university guidelines.

The following certificate programs are open to undergraduate and postbaccalaureate students. Completion of these programs requires the possession of a bachelor's degree either previously or simultaneously awarded. Additional certificate programs at the graduate level are described in the Graduate Catalog.

Certificate Program in Applied Archaeology
The certificate program in applied archaeology provides basic knowledge, skills, and practical experience to students who want to learn more about archaeology as a public and business concern. The program is open to students from all disciplines but should be particularly useful to those majoring in history, geology, geography, American studies, and similar disciplines allied with anthropology, and those who may be seeking employment in the fields of cultural resource management, contract archaeology, public archaeology, and museums. Individuals who wish to enter the certificate program should contact Dr. Ann M. Palkovich, Anthropology Program.

Program Requirements
The certificate program in applied archaeology consists of 24 semester hours of anthropology courses beyond the introductory level (ANTH 120). Students receiving the certificate must hold a baccalaureate degree or be receiving a baccalaureate degree from George Mason University at the time they receive the certificate. Only those courses with grades of C or better will be counted toward the certificate program.

The 24 semester hours include:

1. 15 semester hours of core courses:
   ANTH 425 Public Archaeology, ANTH 430 Research Methods in Archaeology, SOCI 221 Statistics for the Behavioral Sciences or SOCI 305 Analysis of Social Data, ENGL 302 Advanced Composition or GEOL 108 Field Techniques I, and ANTH 220 Field School in Archaeology or ANTH 325 Field Methods in Archaeology.

2. 6 semester hours of electives selected from the following:
   ANTH 301 Native North Americans, ANTH 300 Civilizations, ANTH 305 Hunter-Gatherer Societies, ANTH 320 Lab Techniques in Archaeology, ANTH 322 Historical Archaeology, ANTH 370 Ecology and Culture, ANTH 375 Anthropological Perspectives on History, and ANTH 420 Interpretation in Archaeology. Selected courses in allied disciplines may also be applied as elective hours (e.g., AMST 320, BIOL 371, GEOG 310, GEOL 304, HIST 300) with the approval of the certificate program adviser.

3. ANTH 495 Internship.
   The internship is arranged by the student in consultation with the certificate program director. It offers the student an opportunity to gain practical experience in public/contract archaeology. A minimum of 10 hours per week for a semester (150 hours) are to be devoted to the internship project. Students must complete ANTH 425, ANTH 220 or ANTH 325, and ANTH 430 before enrolling in the internship.
Certificate Program in Canadian Studies

This certificate program is interdisciplinary and emphasizes the combined English and French cultures that give Canada its unique flavor and cause many of its most enduring social problems. Individuals going into careers in business, politics, or any of the public professions (law, public administration, communications, etc.) will benefit greatly from the knowledge gained in completing the program. In many cases it increases the individual's potential for employment and promotion within his or her chosen career.

Those interested in the program can obtain information from any of the faculty members involved in the program. The coordinator of the program is Harold F. Gortner (Department of Public Affairs).

Program Requirements

The certificate program in Canadian Studies consists of 24 semester hours of courses taken within a number of departments throughout the university. Students receiving the certificate must hold a baccalaureate degree or be receiving one from George Mason University at the time they receive the certificate. Only those courses with grades of C or better will be counted toward the certificate program. The requirements of the program are as follows:

1. CAST 300 Introduction to Canada
2. Three courses from among the five listed below:
   - ANTH 399 Issues in Anthropology: Native Canadian Ethnology and History
   - ENGL 360/FREN 480 Special Topics in Literature: Canadian/Quebec Literature
   - GEOG 335 Geography of Canada
   - GOVT 335 Government and Politics of Canada
   - HIST 379 History of Canada
3. Four elective courses chosen from an approved list, including any from the list above that are not counted toward the distributive core. Courses chosen must be approved by the coordinator of the Canadian Studies Program. No more than two courses may be chosen from any discipline. Current courses available to use as electives include:
   - AMST 401 Themes in American Civilization
   - ANTH 201 Native North America
   - ENGL 439 Special Topics: Non-British or American Literature
   - ENGL 449 Special Topics in Drama
   - ENGL 468 Special Topics in Poetry
   - ENGL 490 Special Topics in Film
   - FREN 202 Intermediate French (its equivalent, or any 300-level French language course)
   - FREN 452 French-Canadian Literature (taught in French)
   - ENGL 449
   - AMST 401
   - ANTH 201
   - ENGL 439
   - ENGL 449
   - FREN 202
   - FREN 452

Certificate Program in Cartography

The certificate program in cartography provides specialized training in technical skills needed for advanced map design and production. Students learn aerial photograph interpretation and photogrammetry in addition to both computer-aided and photomechanical methods of map making. Students also gain a thorough knowledge of cartographic theory. We welcome students from all disciplines who are interested in specializing in cartography. The program may be especially useful for those in the natural and social sciences who wish technical training before possible employment in the many private sector mapping firms and government mapping agencies in the Washington, D.C., metropolitan area.

Inquiries should be directed to Prof. J. Wood in the Department of Geography and Earth Systems Science.

Program Requirements

The certificate program in cartography requires completion of 26 semester hours. Students receiving the certificate must hold a baccalaureate degree or be receiving a baccalaureate degree from George Mason University at the time they receive the certificate. Only courses with grades of C or better are counted toward the certificate program. A maximum of six hours may be transferred from another institution, with the approval of the certificate program adviser.

The 26 hours required in the certificate program must include the following 20 hours of courses:

1. GEOG 300, 310, 311, 411, 412, and 416.
2. 6 hours of electives approved by the certificate program adviser prior to enrollment. An effort is made to tailor electives to individual needs.

Certificate Program in Environmental Management

The certificate program in environmental management is designed primarily for students who may be seeking employment in the field or intending to pursue graduate studies, and who wish to add an applied environmental component to their training. Inquiries should be made to the Environment
Management Certificate Coordinator, Department of Biology, 993-1050.

Program Requirements

The certificate program in environmental management consists of 27 semester hours of courses. Students receiving the certificate must hold a baccalaureate degree or be receiving a baccalaureate degree from the university at the time they receive the certificate. Students are required to complete a two-semester laboratory science sequence in biology, chemistry, or geology. Only courses with a grade of C or better are counted toward the certificate program.

Students select 27 hours of course work with the help of the certificate coordinator. The courses are divided into five categories. Courses listed in more than one category can only satisfy the requirements of one. Any substitution from the following list requires permission from the certificate coordinator.

1. Environmental Certificate Core (4 courses):
   - BIOL 377
   - One course from GEOG 303, GECA 503
   - One course from ECON 103, GOVT 241, GOVT 357
   - One course in statistics

2. Physical Perspective (1 or 2 courses):
   - BIOL 309, 535, 550, 577; CHEM 551; GEOG 102, 309, 430; GEOL 106, 313, 317, 403, 405; USE 350

3. Biological Perspective (1 or 2 courses):

4. Social Perspective (1 course):
   - ANTH 305, 365, 370, 440; COMM 399; CONF 501; ECON 350, 360; GEOG 301, 304, 305, 306, 307, 316, 325, 406; GOVT 318, 357, 364, 366, 537; INTL 501; MGMT 312; PHIL 555; PRLS 300, 402, 526; PUAD 502; SOCI 306, 541; USE 300, 350, 351, 352, 353, 400

5. Environmental Methods (1 course):
   - DESC 301, 352; GEOG 300, 310, 411, 412, 413, 416; GECA 553, 579, 580, 585, 590

Notes

1. Biology majors are required to complete 2 courses in Physical Perspective.
2. Geology and Geography majors are required to complete 2 courses in Biological Perspective.
3. All other majors may choose either Physical or Biological Perspective for 2 courses.
4. Development of proficiency in computer programming is highly recommended for certificate students.

Certificate Program in Gerontology

The undergraduate certificate program in gerontology trains students for work with older adults, as well as professionals who are already working with the elderly. The program provides a background of basic knowledge in gerontology and then permits the student to train in professional skill areas such as counseling, recreation, social work, nursing, and administration.

The certificate program in gerontology is administered by the Department of Human Services. Five academic units participate in the program: Graduate School of Education; School of Nursing; Department of Human Services; Department of Psychology; and Department of Sociology and Anthropology. A Gerontology Certificate Committee determines program policy and curriculum.

Counseling and an application form are available from the Department of Human Services.

Program Requirements

The certificate program in gerontology consists of 24 semester hours of courses. Students receiving the certificate must either hold a baccalaureate degree or have earned one from George Mason University by the time they receive the certificate.

The 24 semester hours are divided as follows:

1. A minimum of 12 semester hours selected from NURS 480, NURS 570, PRLS 415, PSYC 415, SOCI 441, and SOCW 483

2. 6 semester hours in a practicum in gerontology: PSYC 548, 549 (Students must have completed at least 9 credits of core courses before enrolling in the practicum.)

3. 6 hours of electives selected from HEAL 220; NURS 250; PRLS 210, 310, 320; PSYC 325, 326, 423; PUAD 502; SOCI 350, 390, 599; SOCW 300, 351, 352; Reading and Research in Gerontology from any department


The Department of Operations Research and Applied Statistics offers two certificate programs to students enrolled in the computer science and systems engineering undergraduate degree programs. The certificates augment the standard curricula with material on the computational aspects of operations research and statistics. Since the demand for people trained in the computational aspects of operations research and statistics is great in the Washington, D.C., area, these programs expand the career options available to students.
Inquiries should be directed to the Operations Research and Applied Statistics Department. Students who plan to work toward one of these certificates should seek advising from the department.

**Course Requirements**

**Core courses for both certificates:**

- STAT 344, STAT 362 or 381, OR 435, and OR 442

**Additional courses for operations research certificate:**

- OR 441 and three chosen from OR 451, OR 481, STAT 354, STAT 363, and STAT 382.

**Additional courses for statistics certificate:**

- STAT 354, and three chosen from OR 481, STAT 363, STAT 382, STAT 455, STAT 457, and STAT 463.

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**Certificate Program for Psychology Technicians**

The psychology technician program provides the theoretical background and behavioral skills necessary for successful performance at the paraprofessional or introductory level in many human service settings and agencies. Completion of this program increases the graduate’s ability to perform in settings such as group homes, sheltered workshops, and activity centers for emotionally disturbed children and adults; training centers for mentally retarded persons; adolescent treatment programs; and residential facilities for juvenile offenders and the aged. Inquiries should be directed to Carol Erdwins, Department of Psychology.

The psychology technician program is open to persons who are majoring in or have previously completed a B.A. or B.S. degree in psychology, sociology, social work, nursing or B.I.S. majors with a psychology-related focus. Application to the program may be made at any time during the academic year after the student’s completion of PSYC 325 and 326 and preferably prior to beginning the two-semester practicum (PSYC 421, 422). Students ready to begin the practicum should contact Carol Erdwins prior to registration so that their names may be included for evaluation by a clinical review committee. Admission to the practicum is based on the student’s demonstration of sound interpersonal skills as well as successful completion of prior course work.

**Program Requirements**

The program consists of 24 semester hours in psychology beyond the introductory-level course (PSYC 100, which is a prerequisite to all other courses), including:

1. PSYC 220, 325, 326, 322, 421, and 422
2. One of PSYC 211, 313, 314, or 415
3. One of PSYC 320, 321, 330, 414, or 423

Some courses are prerequisites to others and need to be taken in sequence. Specifically, PSYC 325 is a prerequisite to PSYC 326 and 414, and both PSYC 325 and 326 must be completed before beginning the practicum (PSYC 421, 422). This practicum is ordinarily taken during the student’s senior year; it offers the student an opportunity to gain work experience under supervision in a variety of human service agencies. The work placement is for approximately 8 to 10 hours per week with a minimum of 240 hours during the two semesters.

**Completion of the Program**

The psychology technician certificate is awarded upon completion of the 24 semester hours listed above with no more than two unsatisfactory grades (D) and a minimum grade of B in each semester of the practicum. The certificate is awarded after completion of and in conjunction with the baccalaureate degree unless the student has previously completed this degree with a major in one of the five specified disciplines.

**Course Work**

Descriptions of all courses indicated in the above requirements are listed in the *Course Descriptions* section of this catalog.

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**Graduate Certificate Program in Translation**

The certificate program in translation provides professional training for students who wish to acquire proficiency in a specific language combination, either English-French or English-Spanish. Because of the interdisciplinary nature of translation, the program combines theoretical and applied course work in the departments of Foreign Languages and Literatures, English, and Communication.

Students applying to the program must be admitted to a George Mason University degree program or already hold a bachelor’s degree and be admitted to the Graduate School in nondegree status. Acceptance into the program is based partly on a proficiency examination in English and one other language.

The certificate may be pursued concurrently with any of several degree programs offered through the Department of Foreign Languages and Literatures. Part of the work toward the certificate may
be applicable toward degrees in other departments.

Students enrolled in degree programs outside the Department of Foreign Languages and Literatures who wish to work toward the certificate in translation must apply to the Department of Foreign Languages and Literatures for admission into the certificate program.

Certificate Requirements

Required core courses (12 credits):

- ENGL 410 Technical and Report Writing (3)
- COMM 505 Intercultural Communication (3)
- FRLN 525 Literary Translation (3)
- FRLN 565 Theory of Translation (3)

Language courses (9 credits):

- FREN 357 Introduction to Translation (3)
- FREN 576 Advanced Translation (3)
- FREN 580 Contemporary French Culture and Society (3)
  or
- SPAN 359 Introduction to Translation (3)
- SPAN 576 Advanced Translation (3)
- SPAN 580 Contemporary Hispanic Institutions (3)

Required practical experience (3 credits):

- FRLN 590 Internship and Seminar (3)

A translation project is required for completion of the program.

Interdisciplinary Minors

African American Studies

Faculty

Brown, Carter, Dennis, Fuchs, Gillespie, Golden, Mack, McFerson, Miller, Mobley (Coordinator), Moylan, Paden, Stone, Stewart, Todd, Travis, Walker, Warner, Wilkins, Williams

Requirements for the Minor in African American Studies

The interdisciplinary minor in African American Studies requires a minimum of 21 hours of course work, including four required courses (12 hours) and any three additional courses (9 hours) from the list of approved elective courses. Prerequisites for each course are listed in parentheses.

Required Courses

- AFAM 100 Introduction to African American Studies
- AFAM 499 Minority Group Politics and Policies (AFAM 100, ENGL 368, HIST 336)
- ENGL 368 Literature of Black America
- HIST 336 The Afro-American Experience in the United States: Reconstruction to the Present

Elective Courses

- ANTH 308 People and Cultures of Africa
- ARTH 180 History of African Art
- ENGL 207 Introduction to African Literature
- ENGL 208 African Political Literature
- ENGL 360 Foundations of African American Literature
- ENGL 414 The Harlem Renaissance
- ENGL 439 African Women Writers
- ENGL 478 Toni Morrison in Context
- FREN 451 Writers of French-Speaking Africa and the Caribbean
- GEOG 325 Geography of North Africa and the Middle East
- HIST 130 Modern Global Systems
- HIST 261 Survey of African Civilization
- HIST 335 The Afro-American Experience in the United States: African Background to 1885
- HIST 340 History of American Racial Thought
- HIST 390 History of the Civil Rights Movement
- HIST 418 Ethnic Groups in American Cities
- HIST 466 Origins of Conflict in Southern Africa
- SOCI 413 Afro-American Social Thought
- SOCI 517 Racial and Ethnic Relations: American and Selected Global Perspectives
- UNIV 190 Echoes of Slavery
- UNIV 290 The Quest for Racial Justice

Other courses as approved by coordinator of the minor in African American Studies.

Contemporary Europe

Faculty

Brunette, Clark, Deshmukh, Dinan, Foster, Katz (Coordinator), Knutsen, Levine, Paden, Rutledge

Requirements for the Minor in Contemporary Europe

The interdisciplinary minor in Contemporary Europe requires a minimum of 18 hours of course work, including three required courses (9 hours) and any three additional courses (9 hours) from the list of approved elective courses. Prerequisites for each course are listed in parentheses.

Required Courses

- GOVT 334 Government and Politics of Western Europe (GOVT 133 or Permission of instructor)
- HIST 309 Contemporary Europe (6 hours of HIST or POI)
HIST 390/GOVT 490 Post War Europe: The European Community

Elective Courses

ECON 380 Comparative Economic Systems (ECON 103 and 104 or POI)
ENGL 437 Twentieth-Century Continental Fiction
EUST 450/ENGL 408 The Twentieth Century in Europe (EUST 300 or POI)
GEOG 320 Geography of Europe (6 hours GEOG and/or EUST or POI)
GERM 302 Germany Today (60 hours or POI)
GOVT 338 Government and Politics of the Former Soviet Union (GOVT 132 and 133 or POI)
GOVT 445 Soviet/Russian Foreign Policy (GOVT 132 and 133 or POI)
HIST 314 History of Germany (6 hours of HIST or POI)
HIST 322 Modern Britain (6 hours of HIST or POI)
HIST 436 European Society and Culture (6 hours of HIST or POI)
HIST 441 France since the Revolution (6 hours of HIST or POI)
HIST 443 History of Spain and Portugal (6 hours of HIST or POI)
RUSS 354 Contemporary Soviet Life (60 hours or POI)

Other courses as approved by the coordinator of the minor in Contemporary Europe.

Film and Media Studies

It is a truism that we are inundated on a daily basis with mass culture, especially as it is purveyed through the mass media. The effects of this inundation are enormous and often unconscious, and the film and media studies minor aims to develop in students a more informed awareness of the nature of this culture, its ideological tendencies, its relation to traditional "high" culture, and its effect on daily life in our society.

The status of film is somewhat more complicated. On the one hand, it is clearly a part of mass culture and demands critical investigation and interpretation on this level. On the other hand, it has often been regarded as the quintessential art form of the twentieth century, comprised as it is of a unique blend of older art forms such as theater, photography, and music, as well as a remarkable, previously unknown blending of aesthetics, technology, and economics. The film and media studies minor seeks to provide students with the tools for analyzing film both as an aesthetic and intellectual artifact and as entertainment "product" within the context of mass culture. Furthermore, the film and media studies faculty believes that such a juxtaposition of perspectives will be more productive than any single approach, and it is for this reason that we have, from the first, sought to make the minor interdisciplinary.

The requirements for the minor are structured in such a way as to give students a solid grounding in both film and media studies and to allow them to concentrate on the area that most appeals to them.

Faculty

Brunette, Comito, Foreman, Fuchs (Interim Coordinator), Lont, Schulman

Requirements for a Minor in Film and Media Studies

A minimum of 18 credit hours of related course work is required, taken from three different levels as follows:

The two required courses on the first level are meant to provide an introduction to the languages of film and popular media and to modes of analysis appropriate to each. This level is composed of two introductory required courses that are prerequisites for all advanced work in the minor:

- ENGL 332 Introduction to Film
- COMM 380 Media Criticism

The first course has been in existence for many years (its title will soon be changed to "Film Language"). The second course has only recently been developed and will be offered for the first time in the spring of 1992. Six credits are required on the first level.

On the second level, students will choose a minimum of two courses (6 credits) from the following four courses that will be offered regularly:

- ENGL 421 Film History
- ENGL 422 Film Theory
- COMM 302 Foundations of Mass Communication
- ENGL 493 Special Topics on Popular Culture

On this second level, students will be introduced to a more specialized level of study, and may decide to focus on film (in which case they may choose to take ENGL 421 and 422) or to emphasize the study of mass culture, taking for example, COMM 302 and ENGL 493. Finally, the student may choose some mixture of the above four courses that suits their own interests. Six credits are required on this second level, but up to 12 of these credits may be applied to the minor.

On the third level, the student will select courses from depending on their intellectual interests. Note that practical courses concentrating on production are also available at this level. From this
third group students will choose any two of the following courses (unless they have taken more courses on level two):

COMM 350 Mass Communication and Public Policy
COMM 355 Television Production
COMM 358 Electronic Field Production
COMM 365 Women and Media
COMM 456 Comparative Mass Media
COMM 502 Theories of Mass Communication
COMM 555 Theories of Telecommunication Production
ENGL 490 Special Topics in Film (Umbrella Course). Possible topics include: film genres, national cinemas, film authorship, film periods, and literature and film. (ENGL 490 may be taken for credit twice if the topic changes.)

Linguistics

Linguistics is defined as the scientific study of language. But language is studied in a variety of ways: descriptively, theoretically, computationally, psychologically, as a social phenomenon, and so on. The field of linguistics thus informs and is informed by many other areas of study, including philosophy, psychology, sociology, computer science, the study of individual languages and literatures, literary studies, and education.

The minor in linguistics may be combined with a major in one of the areas listed above or in any other field. This minor introduces the student, through the required courses, to the fundamental concepts of modern linguistic theory and allows the student to explore, in the electives, how these concepts relate to various other disciplines.

Faculty

Broome, Chamberlain, Chu, Collier, Goldin, Golomb, Hamburger, Holisky (Coordinator), Jacob, Jones, Levine, Rothbart, Sanford, Weinberger

Requirements for a Minor in Linguistics

The minor in linguistics consists of 15 credit hours, distributed as follows:

1. 3 hours in general linguistics
2. 6 hours from syntactic theory, phonological theory, or linguistic semantics
3. 6 hours of electives, chosen in consultation with a linguistics minor adviser. A list of approved electives is available from the coordinator.

Urban and Suburban Studies

Faculty

Clark, Diner, Dumont, Fonseca, Gifford, Hart-Nibbrig, Haynes, Horton, Hysom, Mattusch, Potter, Rosenzweig, Ryan, Stough, Travis, Verheyen, J. Wood (Coordinator)

Course Work

The Urban and Suburban Studies faculty offers all course work designated USST in the Course Descriptions section of this catalog.

Requirements for the Minor in Urban and Suburban Studies

The minor in urban and suburban studies requires a minimum of 18 hours of related course work, including two required courses, USST 301 and 401, and a selection of additional courses from the list below.

Approved Courses

(Students should consult the Course Descriptions in this catalog for course prerequisites.)

Department of Art and Art History: ARTH 315
Department of Economics: ECON 350
Department of History: HIST 416, 417, 418
Department of Public Affairs: GOVT 309, 357, 402
Department of Sociology and Anthropology: SOCI 332, 373
Department of Geography and Earth Systems Science: GEOG 306, 357, 406; USST 390, 490
School of Business Administration: BULE 304, FNAN 351
School of Information Technology and Engineering: USE 300

Additionally, departmental-directed reading courses may be approved for USST credit at the discretion of the USST Coordinating Committee.

For more information contact Joseph S. Wood, coordinator of Urban and Suburban Studies, Department of Geography and Earth Systems Science.

Women's Studies

Faculty

Bateson (Anthropology and English), Bergoffen (Philosophy and Religion), Brown (English), J. T. Censer (History), Copelman (History), Cordero (Foreign Languages and Literatures), Foreman (English), Francescato (Foreign Languages and Literatures), Fuchs (English), Gilbert (Foreign Languages and Literature), Hodges (English), Horton (Sociology and Anthropology), Irvine (English), Kaplan (English), Lont (Communication),
Looney (Communication), Melosh (English), Rader (Sociology and Anthropology), Raskin (Social Work), Ricouart (Foreign Languages and Literatures), Rosenblum (Sociology and Anthropology) (Coordinator), Rosenzweig (History), Mobley (English), Sypher (English), Todd (Art History), Travis (Public Affairs), Williams (Graduate School of Education), Yocom (English)

Course Work
The Women’s Studies faculty offers all coursework designated WMST in the Course Descriptions section of this catalog.

Requirements for the Minor in Women’s Studies
1. 9 hours in Women’s Studies seminars: WMST 200, WMST 300, and WMST 330.
2. 12 hours selected from Women’s Studies approved course offerings in other departments. No more than 6 of these hours may be taken in any one department.

University Courses
Faculty Senate Academic Policies Committee
Stephen J. Brown (Chair)

Courses
University Courses are special academic offerings that are interdisciplinary, in-depth presentations of broad interest. Proposals for university courses are developed by faculty members, usually by several acting together. After review and approval by the University Faculty Standing Committee on Curriculum Matters, these courses are administered by the Office of the Provost. University courses at the 400 level are usually offered only once and, unless specific prerequisites are indicated, are open to all students.

The following are regularly offered University Courses:
UNIV 190 Freshman Seminar (3)
UNIV 290 Sophomore Seminar (3)
UNIV 301 Great Ideas in Science (3)

Previously offered University Courses include:
UNIV 407 Introduction to Irish Studies (3)
UNIV 410 Assassination and Terrorism as Political Weapons (3)
UNIV 411 Electronic Communication (Television) and the Representation of Reality (3)
UNIV 412 Family Law (3)
UNIV 413 Life in the Universe (3)
UNIV 414 Feminist Perspectives on Sexual Liberation (3)
UNIV 415 The New Deal: Its Impact on American Society, 1933-1980 (3)
UNIV 416 Intelligence in the Universe (3)
UNIV 417 Energy Alternatives for the Eighties (3)
UNIV 418 Corporate-Government Relations in the International Environment (3)
UNIV 420 Nuclear War (3)
UNIV 421 Archaeoastronomy (3)
UNIV 422 Popular Movements and Active Nonviolence in the U.S. (3)
UNIV 423 Consciousness and Modern Physics (3)
UNIV 424 South Africa: Crisis and Conflict (3)
UNIV 425 Utopias and Utopian Thought in the Western World (3)
UNIV 426 Human Allegiances and Modernization (3)
UNIV 427 Understanding Modern Japan: Its Social, Economic, and Political Characteristics and Interactions (3)
UNIV 428 Understanding the Brain (3)
UNIV 429 Security in the Nuclear Age (3)
UNIV 430 Where Have the Heroes Gone? (3)
UNIV 431 Generic Design (3)
UNIV 432 Ideas that Shape American Lives (3)
UNIV 434 Interracial and Interethnic Conflict: World Perspectives (3)
UNIV 435 Business Law Technology: An Analysis of Modern Social Organization (3)
UNIV 436 The Development Process: Cities from Fields (3)
UNIV 437 Approaches to Problem Solving (3)
UNIV 438 Literature and Society: The Caribbean Archipelago (3)
UNIV 439 Tradeoffs (3)
UNIV 440 Cultural Tradition and Political Events in Latin America (3)
Course Descriptions
# Course Descriptions

## Glossary

This section lists undergraduate and graduate courses offered by the university and available for credit to undergraduates. Courses are listed in alphabetical order beginning with Accounting and ending with Women's Studies. The computer name for courses is included with each heading, and the department offering the course is listed below. The following computer names are used:

- Accounting: ACCT
- American Studies: AMST
- Anthropology: ANTH
- Art History: ARTH
- Art Studio: ARTS
- Asian Studies: ASST
- Astronomy: ASTR
- Bachelor of Individualized Study: BIS
- Biology: BIOL
- Business Legal Studies: BULE
- Canadian Studies: CAST
- Chemistry: CHEM
- Classical Studies: CLAS
- Communication: COMM
- Comparative Literature: CL
- Computer Science: CS
- Dance: DANC
- Decision Sciences: DESC
- Economics: ECON
- Education: EDUC
- Electrical and Computer Engineering: ECE
- Engineering: ENGR
- English: ENGL
- European Studies: EUST
- Finance: FNAN
- Foreign Language: FRLN
- French: FREN
- Geographic and Cartographic Sciences: GECA
- Geography: GEOG
- Geology: GEOL
- German: GERM
- Government and Politics: GOVT
- Health Education: HEAL
- History: HIST
- Information Systems: INFS
- Italian: ITAL
- Japanese: JAPA
- Latin: LATN
- Latin American Studies: LAS
- Management: MGMT
- Management Information Systems: MIS
- Marketing: MKTG
- Mathematics: MATH
- Medical Technology: MTCH
- Middle East Studies: MEST
- Music: MUSI
- Nursing: NURS
- Operations Research: OR
- Parks, Recreation, and Leisure Studies: PRLS
- Philosophy: PHIL
- Physical Education: PHED
- Physics: PHYS
- Plan for Alternative General Education: PAGE
- Psychology: PSYC
- Public Administration: PUAD
- Religious Studies: RELI
- Russian: RUSS
- Social Work: SOCW
- Sociology: SOCI
- Spanish: SPAN
- Statistics: STAT
- Systems Engineering: SYST
- Theater: THIR
- University: UNIV
- Urban and Suburban Studies: USST
- Urban Systems Engineering: USE
- Women's Studies: WMST
Course Numbering

General

1. Course titles are followed by numbers in parentheses (0:0:0), separated by colons. The numbers have the following significance:
   - First number: semester credit hours for the course
   - Second number: hours of lecture/seminar per week for the course
   - Third number: hours of laboratory/studio per week for the course

2. For independent study, reading, topics, or similar courses, individual instructors set hours.

Undergraduate

1. Courses numbered 499 and below are undergraduate courses. Course numbers in the 100 series are customarily taken by freshmen, the 200 series by sophomores, the 300 series by juniors, and the 400 series by seniors.

2. The number designations of the course descriptions below have the following significance:
   - a. A single number (as HIST 301) indicates that the course is complete within a single semester, and that the semester course may be taken separately with credit toward a degree.
   - b. A double number separated by a comma indicates that the subject matter or content of the course extends through two semesters but that either semester may be taken by itself. Unless otherwise specified, the first semester is not prerequisite to the second semester.

3. Advanced undergraduate students who have secured the permission of the department offering the course may select from courses numbered 500-599 to accumulate the hours necessary to complete an undergraduate degree.

   With the written permission of the dean of the Graduate School, they may take these courses for reserve graduate credit.

Courses

Accounting (ACCT)

School of Business Administration

If a student takes noncore, upper-level business administration courses prior to acceptance to the School of Business Administration, those courses will not count on an undergraduate degree application for any major in the school (except as general elective credit). A grade of C or higher must be presented on the graduation application for each upper-level course in the major.

Course prerequisites are strictly enforced.


202 Managerial Accounting (3:3:0). Prerequisite: Grade of C or better in ACCT 201. Survey of managerial accounting. Manufacturing, cost systems, budgets, and cost-volume-profit analysis are introduced. Special attention is directed to the use of accounting information in managerial decision making.

311 Cost Accounting (3:3:0). Prerequisite: ACCT 202. Topics include accumulation allocation, analysis, and reporting of internal financial data. Discussion of the use of cost information in inventory valuation, income determination, planning, controlling, and decision making.

312 Accounting Information Systems (3:3:0). Prerequisite: ACCT 311, MIS 201 and degree status. Examination of techniques for analysis and design of systems that provide accounting and financial data for both internal and external users. Emphasis is on the accountant's role in systems development and control.


332 Intermediate Accounting II (3:3:0). Prerequisite: ACCT 331 and degree status. Continuation of ACCT 331.

351 Federal Taxation (3:3:0). Prerequisite: ACCT 202. Introduction to federal income taxation of individuals. Examination of tax laws and procedures through the use of illustrative examples and problems.


461 Auditing (3:3:0). Prerequisite: ACCT 312, ACCT 332, DESC 202 and degree status. Introduction to the public accounting profession with emphasis on the attest function and auditor’s report. Includes an examination of auditing standards and procedures, the impact of internal controls, professional ethics and responsibilities, and an introduction to statistical auditing and the audit of computerized accounting systems.

471 Governmental and Nonprofit Accounting (3:3:0). Prerequisite: ACCT 332 and degree status. Introduction to the theory and practice of accounting and financial reporting for governmental and nonprofit
organizations, including federal, state, and local governments, colleges and universities, hospitals, voluntary health and welfare agencies, and other nonprofit entities.

491 Accounting Seminar (3:3:0). Prerequisite: 90 hours, ACCT 332, and degree status. Discussion of selected current topics in the theory and practice of accounting and auditing.

492 Field Experience in Accounting (3:3:0). Prerequisite: Senior standing and degree status. Faculty-governed field experience in a Northern Virginia business. Teams of students, matched with client firms through the Entrepreneurship Center, propose action plans relating to a major problem or opportunity faced by the company.

499 Independent Study (1-3:0:0). Prerequisite: 9 hours in upper-level accounting courses and degree status. Research and analysis of selected problems or topics in accounting. Must be arranged with an instructor and student must receive written approval of chair before registration. Written report required. May be repeated to a maximum of six hours if topics vary.

American Studies (AMST)

American Studies

101 Introduction to the American News Media (3:3:0). Examination of the rhetoric of print and broadcast news media, the process by which the news is gathered and produced, and the issue of whether and to what extent the content of the news is influenced by such economic and political factors as ownership, advertising, power of government.

201, 202 Studies in Popular Culture (3:3:0), (3:3:0). Aspects of popular culture and its significance in contemporary society. Topics include the social and intellectual background of American culture; themes and techniques of major forms of communication; and the conventions of such media as television, film, comics, advertising, and westerns. May be repeated for credit with permission of chair.

205 Introduction to American Culture (3:3:0). Introduction to American culture through the study of one or more issues, themes, or periods examined primarily but not exclusively from a literary perspective.

302 Introduction to American Studies (3:3:0). Prerequisite: 45 hours. Preference to American studies majors. Introduction to interdisciplinary methods and to the interdisciplinary concentrations offered by the American studies program.

310 Places and American Culture (3:3:0). Prerequisite: 45 hours. Examination of the relationship between the natural landscape and American culture. Particular subtitles will be announced and the courses may be repeated when the subtitle is different.

320 Peoples and American Culture (3:3:0). Prerequisite: 45 hours. Examination of the relationship between the various peoples of the American continent and American culture. Particular subtitles will be announced and the course may be repeated when the subtitle is different.

330 Eras and American Culture (3:3:0). Prerequisite: 45 hours. Examination of the relationship between specific historical eras and American culture. Particular subtitles will be announced and the course may be repeated when the subtitle is different.

340 Institutions and American Culture (3:3:0). Prerequisite: 45 hours. Examination of the relationship between American institutions and American culture. Particular subtitles will be announced and the course may be repeated when the subtitle is different.

401 Themes in American Civilization (3:3:0). Prerequisite: 60 hours. Preference to American studies majors. Intensive study of a significant theme, motif, or idea in American culture. Subject determined by instructor.


403 American Studies Independent Study (1-6:0:0). Prerequisite: 60 hours, permission of chair and permission of instructor. Intensive study of a period, problem, or project related to American culture proposed by an individual student to be conducted in close consultation with an American studies faculty member.

410 Senior Seminar in American Studies (3:3:0). Prerequisite: American studies majors with 90 hours. Senior majors in the program will complete significant projects in the interdisciplinary concentration they have chosen.

490 Internship (2-6:0:0). Prerequisite: 60 hours and permission of chair. Internships are nonpaying, work-study positions established by the American studies program with employers involved in interdisciplinary American studies issues. Qualified students are placed with area schools, interest groups, agencies, museums, parks, or corporations. Placement depends upon availability of positions.

502 Problems in American Culture (3:3:0). Prerequisite: Graduate standing. Interdisciplinary study of a particular aspect of American culture. Specific content varies and is announced before registration. May be repeated with permission of chair. Past offerings were The Hudson River, Early American Culture, The American Imagination and World War I, and The Enlightenment.

Anthropology (ANTH)

Sociology and Anthropology

114 Introduction to Cultural Anthropology (3:3:0). Introduction to the branch of anthropology that describes people living in societies today, and that seeks to explain human behavior and various aspects of primarily non-Western culture and society. For non-Western credit.

120 Introduction to Archaeology (3:3:0). Introduction to survey of anthropological archaeology. Development and use of contemporary theory and field and lab methods.

135 Human Evolution and Prehistory (3:3:0). Exploration of human origins and nature; of primate social groups and behavior; of fossil evidence for human evo-
ANTH 114, Emphasis on environmental, technological, and social aspects of hunting and gathering as a sociocultural system. For Western credit.

305 Hunter-Gatherer Societies (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of early human societies with emphasis on environmental, technological, and cultural aspects of hunting and gathering as a successful prehistoric and contemporary means of adaptation. For non-Western credit.

306 Peoples and Cultures of Island Asia (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of contemporary cultures of the Island Asia culture region; focus on native cultures of Indonesia, Borneo, and the Philippines. For non-Western credit.

307 Peoples and Cultures of the Middle East (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of contemporary cultures in the Middle East and North Africa; focus on articulation of societies in the interplay of ecological and historical factors. For non-Western credit.

308 Peoples and Cultures of Africa (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of contemporary cultures in sub-Saharan Africa. Several traditional societies are studied in depth, with attention to their emerging roles in modern African nation-states. For non-Western credit.

310 Social Organization and Kinship (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of social organization, kinship, descent, and kinship terminologies in mainly non-Western cultures, emphasizing both the meaning of specific cultural systems and cross-cultural similarities and differences.

311 Peoples and Cultures of Mainland Southeast Asia (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Survey of societies of mainland Southeast Asia, with emphasis on successive waves of outside cultural influences and relations between contrasting ethnic groups in modern states. Focus on Thailand and Malaysia. For non-Western credit.

312 Comparative Political Systems (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of cultural and ecological contexts of political structures and competition for power in selected societies; a cross-cultural and comparative approach to study of political conflict, leadership, values, and symbolism.

313 Anthropological Perspectives on Religion (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of religion as a cultural system. Topics include mythology, ritual, symbolism, and dogma. Cross-cultural and predominantly non-Western material are emphasized. For non-Western credit.

315 Socialization Processes (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of selected aspects of the cultural transmission process in specific local cultures, selected from various world culture regions, with emphasis on transmission of cultures.

320 Laboratory Techniques in Archaeology (4:3:2). Prerequisite: ANTH 120, 60 hours, or permission of instructor. Study of research techniques by directed group projects in analysis of materials such as ceramics, glass, and lithics through discussions, demonstrations, and participation.

322 Historical Archaeology (3:3:0). Prerequisite: ANTH 120, 60 hours, or permission of instructor. Examination of materials, theories and methods of archaeology derived from and applied to historical sites, as they complement archival records.

325 Field Techniques in Archaeology (3:6:0:0). Prerequisite: ANTH 120, 60 hours, or permission of instructor. Intensive study of archaeological field techniques by directed group projects in site survey, site testing, recording techniques, and stratigraphy through discussions, demonstrations, and hands-on experience. May be repeated for a maximum of 6 credits.

332 Cultures in Comparative Perspective (3:3:0). Prerequisite: ANTH 114 or permission of instructor. Historical and comparative examination of various theoretical orientations in cultural anthropology and analysis of contrasting explanations of cultural data. Several cultures are studied in depth. For non-Western credit and credit for the sociology and international studies majors.

340 Anthropological Theory (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Review of major theoretical traditions and schools of thought in anthropology. Required for anthropology majors.

360 Biological Aspects of Human Sociality (3:3:0). Prerequisite: ANTH 135, 60 hours, or permission of instructor. Inquiry into the biological dimensions of humans as culture-bearing animals. Topics include altruism, aggression, primate social organization, mor-
phology, comparative ethnology, and microevolutionary genetic differentiation.

365 Human Diversity and Adaptation (3:3:0). Prerequisite: ANTH 135, 60 hours, or permission of instructor. Variations in culturally distinct human groups due to environmental, physiological, genetic, nutritional disease, and spatial factors.

370 Ecology and Culture (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Examination of relationships between environment, culture, and human behavior with an emphasis on cultural ecological explanations in mainly non-Western contexts.

371 Psychological Anthropology (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Survey of issues in study of relationships between cultural and psychological variables. Major topics viewed cross-culturally include personality, mental illness, projective systems, cognition and learning.

375 Anthropological Perspectives on History (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Use of ethnographic, archaeological, linguistic, and documentary data, in light of anthropological theory, to interpret the past and processes of change among indigenous peoples throughout the world.

380 Anthropological Linguistics (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Anthropological analyses of language behavior, origins, and change, emphasizing interplay between language and culture and anthropology and linguistics.

381 Comparative Medical Systems (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Survey of the discipline of medical anthropology with focus on traditional medical beliefs and on the diverse responses to modern scientific medicine both in developing countries and among cultural minorities in the U.S.

399 Issues in Anthropology (3:3:0). Prerequisite: ANTH 114, 60 hours, and permission of instructor. A topic of contemporary interest in anthropology, changing from semester to semester, and focusing on topics such as sex roles, anthropology and ethics, and primate social organization. Repeatable for credit.

420 Interpretation in Archaeology (3:3:0). Prerequisite: 6 hours of anthropology including ANTH 120 or permission of instructor. Exploration of theoretical and methodological issues encountered in archaeology. Patterns and contexts of archaeological remains, analytic problems, and interpretation of material culture will be considered.

425 Public Archaeology (3:3:0). Prerequisite: 6 hours of anthropology including ANTH 120 or permission of instructor. Consideration of the public significance of archaeology and anthropological contributions to public concerns such as antiquities legislation and cultural resource management.

427 Historic Cemetery Survey (0:4:4). Prerequisite: ANTH 120 or permission of instructor. Exploration of demographic, stylistic, and religious aspects of historic cemeteries. Students learn to survey, record and analyze gravestone data through field projects.

428 Patterns in Prehistory (3:3:0). Prerequisite: 60 hours or permission of instructor. Exploration of the diversity at prehistoric cultures in light of major cultural developments (hunting-gathering, agriculture; pastoralism; complex societies).

430 Research Methods in Archaeology (3:3:0). Prerequisite: ANTH 120, 60 hours, or permission of instructor. The archaeological research process will be studied through discussions of current archaeological methodologies and through student participation in designing and critiquing research projects.

435, 436 Special Projects in Archaeology (1-3:0:0). Prerequisites: ANTH 320, 325, or 430 and permission of instructor. Lab or field project leading to a written report of the research. Research and paper are completed under the instructor's guidance.

440 Applied Anthropology (3:3:0). Prerequisite: ANTH 114, 60 hours, or permission of instructor. Focus on anthropologists' contributions to major policy issues in development agencies in the U.S. and abroad. Attention to techniques that lead to prevention or management of social and cultural conflict.

450 Qualitative Methods in Sociocultural Research (3:3:0). Prerequisites: 60 hours and 6 hours of anthropology including ANTH 114, or permission of instructor. Exploration of some of the most useful nonquantitative research techniques used in social sciences and practice in their application.

490 Classics in Anthropology (3:3:0). Prerequisites: 60 hours and 9 hours of anthropology including ANTH 340, or permission of instructor. Examination of some of the most important works in anthropological theory and explanation. Explores merits of works recognized as classics and assesses their impact on the field. Required for anthropology majors and usually taken as a senior-junior seminar.

492 Contemporary Anthropology (3:3:0). Prerequisite: 60 hours and nine hours of anthropology including ANTH 340 or permission of instructor. Examination of some important recent works in anthropology. Required for anthropology majors and usually taken as a senior seminar.

495 Internship (3-6:0:0). Prerequisite: ANTH 120, 60 hours, or permission of instructor. Supervised project in applying anthropology, i.e., public archaeology, development anthropology, museums. May be repeated for a maximum of 6 credits.

499 Independent Research (1-3:0:0). Prerequisite: 60 hours, 9 hours of anthropology, or permission of instructor. Individual research on a topic to be organized in advance by student and instructor.

**Art History (ARTH)**

**Art and Art History**

101 Introduction to the Visual Arts (3:3:0). Introduction to the content and principles of the visual arts. Approach varies with instructor.

102 Symbols and Stories in Western Art (3:3:0). Classical and Christian themes and imagery in Western art from early Greece to the modern era.

112 History of Urban Design in Early Modern Europe (3:3:0). Development of city planning from Middle Ages to the Renaissance, the scenographic effects of the Baroque city, and the rise of the new industrial city in the eighteenth century. Considers placement of buildings and public monuments in urban design.

180 History of African Art (3:3:0). Highlights the variety of artistic styles and symbolic traits of cultures in Africa producing artistic artifacts. Concentrates on the central and western sub-Saharan regions and proceeds geographically.

200, 201 Survey of Western Art (3:3:0) Western art as expressed through architecture, sculpture, and painting. The first semester covers prehistory to the Renaissance; the second covers the Renaissance to the present.

210 History of Design (3:3:0). Prerequisite: 100-level or above course in art history or studio art or permission of instructor. Role of design in arts from antiquity to the present.

280 Survey of Far Eastern Art (3:3:0). Art of India, China, Japan, Southeast Asia, Korea, and Indonesia from Bronze Age through the twentieth century, exploring role of Buddhism and Hinduism through visual representation.

301 Themes in Art History (3:3:0). Thematic approach to the content and principles of the visual arts for nonmajors and transfer students. Approach and topics vary with instructor.

315 History of Modern Architecture (3:3:0). Prerequisite: 100- or 200-level course in art history or studio art or permission of instructor. History and development of modernism in architecture from the Beaux Arts movement to the present, and an investigation of stylistic and structural innovations.


320 Art of the Islamic World (3:3:0). Prerequisite: 24 hours. Introduction to Islamic art, from the time of Muhammad to the present day. Cultural and regional approach, concentrating on Arabia, North Africa, Iraq, Iran, and Turkey.

321 Greek Art (3:3:0). Prerequisite: 24 hours. History of ancient Greek architecture, sculpture, and painting.

322 Roman Art (3:3:0). Prerequisite: 24 hours. History of Roman architecture, sculpture, and painting.

333 Early Christian and Byzantine Art (3:3:0). Prerequisite: 24 hours. Introduction to the art of the medieval Mediterranean world, concentrating on the Byzantine Empire, its neighbors and its legacy.

334 Western Medieval Art (3:3:0). Prerequisite: 24 hours. Introduction to the art of medieval western Europe, from the fall of the Roman Empire through the Romanesque and Gothic periods. Cultural approach, emphasizing the use of primary sources.

340 Early Renaissance Art in Italy (3:3:0). Prerequisite: 24 hours. Architecture, sculpture, and painting in Italy from circa 1300 to 1500.

341 Northern Renaissance Art (3:3:0). Prerequisite: 24 hours. Architecture, painting, and sculpture in France, Germany, and the Netherlands from circa 1300 to 1600.

342 High Renaissance Art in Italy, France, and Spain (3:3:0). Prerequisite: 24 hours. Development of the High Renaissance style in architecture, painting, and sculpture in Italy and its transformation through Mannerism.

344 Baroque Art in Italy, France, and Spain (3:3:0). Prerequisite: 24 hours. Architecture, sculpture, and painting in Southern Europe from circa 1600 to 1750.

345 Northern Baroque Art (3:3:0). Prerequisite: 24 hours. Architecture, painting, and sculpture in Belgium, England, Germany, and the Netherlands from circa 1600 to 1750.

350 History of Photography (3:3:0). Prerequisite: 24 hours. Development of photography from origins in France in the nineteenth century to the present.

360 Nineteenth Century European Art (3:3:0). Prerequisite: 24 hours. Movements from Neoclassicism to Symbolism will be discussed in relation to social, cultural, political, and technological changes in Europe.

362 Twentieth Century European Art (3:3:0). Prerequisite: 24 hours. Study of major movements (Fauvism, cubism, futurism, constructivism, surrealism, neoeexpressionism) and important artists in twentieth century painting and sculpture. Discussion will center on art, art theory, and the relation of both to European history.

371 American Architecture (3:3:0). Prerequisite: 24 hours. Study of the history and development of American architecture in its cultural context from its inception in the seventeenth century through the twentieth century.

372 Nineteenth Century American Art (3:3:0). Prerequisite: 24 hours. Artistic developments and the changing status of the artist in an historical context; the rise of American landscape and westward expansion; genre painting and Jacksonian America.

373 American Art, 1900-1945 (3:3:0). Prerequisite: 24 hours. Major developments in painting and sculpture from the turn of the century to World War II. Selected topics will include the emergence of an American avant-garde, the development of new subject matter with urbanization, regionalism, and art and politics in the 1930s.

374 American Art Since World War II (3:3:0). Prerequisite: 24 hours. Topics including abstract expressionism, pop art, minimalism, conceptual art, feminist art, environmental art, the new figuration, and photorealism will be discussed in a historical and critical context.

392 Exhibition Projects (3:3:0). Prerequisite: Permission. 6 hours in studio art or 3 hours in art history or permission of instructor. Planning, promotion, and production of visual art presentations and related events at the GMU campus. Exhibitions are produced by students who alternatively serve in all operational capacities from proposal research and budget planning to the graphic design of announcements and the installation of exhibitions.

393 Art Apprenticeships (3-6:0:0). Prerequisite: Art major with permission of instructor. Seminar followed by
an apprenticeship or internship project with a professional individual or organization in the field of visual arts in the D.C. area. An apprenticeship may provide an introductory work experience in the professional area in which the student is considering a career.

399 Special Topics in the History of Art (3:3:0). Topics vary and include women in art, art patronage, art criticism, and others.

400 Methods of Research in Art History (3:3:0). Prerequisite: Two courses in art history to the 300 level or permission of instructor. Investigation of different approaches involved in art historical research.

420 Advanced Studies in Ancient Art (3:3:0). Prerequisite: 300-level course in ancient art or permission of instructor. Study in a particular area of ancient art of the Mediterranean, the Near East, or the Middle East. Topics may be an art form or medium, a geographical area, an artist or group of artists, a theme, a function, or a context. May be repeated for credit.

430 Advanced Studies in Medieval Art (3:3:0). Prerequisite: 300-level course in medieval art or permission of instructor. Study of a single topic in medieval art. May focus on a particular period, region, or medium; or may explore cultural interconnections within the medieval world.

440 Advanced Studies in Renaissance and Baroque Art (3:3:0). Prerequisite: 300-level course in Renaissance or Baroque art or permission of instructor. Study in a particular aspect of Renaissance or Baroque art. Topics may be monographic, such as a study of Michelangelo or Rembrandt; thematic, such as a study of art theory or narrative art of a particular time; concentrated on the art of a smaller time period, e.g., 1500-1750; or concentrated on a particular area, such as Venetian art. May be repeated for credit.

450 Advanced Studies in European Art/Nineteenth-Twentieth Centuries (3:3:0). Prerequisite: 300-level course in modern art history. Study in a particular area of modern European art. Topic may focus on a movement or group of artists (i.e., realism, impressionism, or fauvism) or on a theme that includes several time periods.

471 Advanced Studies in American Art (3:3:0). Prerequisite: 300-level course in American art. Study in a particular area of American art, focusing on a form (landscape or genre painting), a theme (nationalism, regionalism, the iconography of the family), or a movement (American modernism).

490, 491 Independent Study in Art History (3:0,0), (3:3:0). Prerequisite: 60 hours, permission of instructor, permission of art faculty, and permission of chair, plus 9 hours in art history beyond ARTH 200, 201. Intensive study of a particular artist, period, or theoretical problem to be conducted by an individual student in consultation with instructor. Study proposal submitted prior to registration.

592 Exhibition Projects (3:3:0). Prerequisite: B.A. or equivalent or permission of instructor. Planning, promotion, and production of visual art presentations and related events on the GMU campus. Exhibitions are produced by students who alternatively serve in all operational capacities from proposal research and budget planning to the graphic design of announcements and the installation of exhibitions.

593 Art Apprenticeships (3:6:0:0). Prerequisite: B.A. or equivalent or permission of instructor. Seminar followed by an apprenticeship or internship project with a professional individual or organization in the field of visual arts in the D.C. area. An apprenticeship may provide an introductory work experience in the professional area in which the student is considering a career.

596 Independent Study (3:3:0). Prerequisite: B.A. or equivalent or permission of instructor. Independent reading and research on a specific project under the direction of a department member. A written report is required. May be repeated for credit.

599 Special Topics in the History of Art (3:3:0). Prerequisite: B.A. or equivalent or permission of instructor. Topics vary and include women in art, art patronage, art criticism and others.

Art Studio (ARTS)

Art and Art History

102 Visual Thinking (3:0:3). A combined lecture-studio course with introductory investigations in creative methods and visualization techniques in two, three, and four dimensions, using a variety of media. For non-art majors.

202 Studio Fundamentals I (4:2:4). The first half of a two-semester course concerning basic visual decision-making and the choices involved in ordering elements of a visual vocabulary into unified, coherent wholes. Focusing on two-dimensional design and color in a variety of media, the course establishes a basis for comprehension and use of the components of a visual language. Taught as a series of lectures with associated studio problems.

203 Studio Fundamentals II (4:2:4). Prerequisite: ARTS 202. The second half of a two-semester course concerning basic visual decision-making and the choices involved in ordering elements of a visual vocabulary into unified, coherent wholes. Continues the study of color and extends the study of methods and media into selected areas in two and three dimensions. Taught as a series of lectures with associated studio problems.

310 Graphic Design I (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. Introduction to the concepts of graphic design and its techniques. Creation of a visual vocabulary to apply in solutions to typical problems in graphic design, such as in newspaper and advertising layout. Taught as a series of lectures with associated studio problems, in which students develop layouts from concept through final product.

311 Graphic Design II (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. Graphic design concepts and techniques. Solutions to typical problems encountered by graphic designers in publication design and environmental design. Taught as a series of lectures and associated studio problems, in which students develop layouts from concept through final product. Every other spring semester.

313 Basic Typography (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. Introduction to elements of typographical composition.
Historical development of letterforms; recognition, use, and specification of existing typefaces; alphabet design. Taught as a series of lectures with associated studio problems. Every other fall semester.

322, 323 Drawing I, II (4:2:4), (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. Fundamentals of drawing with emphasis on perspective systems and skills in representing space, objects, and textures with a variety of methods. Taught as a series of lectures with associated studio problems.

332, 333 Painting I, II (4:2:4), (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. Painting taught as observation through techniques in oil or water-based media, varying with the instructor. Taught as a series of lectures with associated studio problems.

342 Printmaking I: Silkscreen (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. The process and history of basic silkscreen printmaking is practiced and studied: monotypes, paper stencil, liquid blockout, lacquer stencil film, and direct and indirect photographic stencils. Applied design and techniques for the production of posters will be emphasized. Taught as a series of lectures with associated studio problems.

343 Printmaking II: Relief (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. The process and history of basic relief methods of printmaking is practiced and studied: woodcut, linoleum cut, wood engraving, and relief collagraph. The application of relief printmaking to the design, illustration, and production of books and portfolios will be emphasized. Taught as a series of lectures with associated studio problems.

350 Pinhole Photography (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. An introduction to photography using student-built pinhole cameras. Course includes darkroom work in processing and printing paper negatives, an introduction to the use of a 4 x 5 studio camera, and film development.

351 Color Slide Photography (3:0:6). Prerequisite: Permission of instructor. A study of 35mm photography in terms of camera manipulation, basic optics and sensitometry, and aesthetics of the color slide medium. Students are required to provide a 35mm camera (preferably a single lens reflex camera), a light meter, and film.

362, 363 Sculpture I, II (4:2:4), (4:2:4). Prerequisite: ARTS 202 and 203, or equivalent, or permission of instructor. Fundamentals of sculptural design with emphasis on three-dimensional forming processes in a variety of media, both traditional and unconventional, that are available to the sculptor today. These courses combine historical, critical, and practical topics on sculpture in the form of lectures, critiques, discussions, demonstrations, and hands-on work.

380 Computer Graphics I (4:2:4) Prerequisites: ARTS 202 and 203, or permission of instructor. Emphasis on aesthetics and design, using the computer both as tool and medium. Elementary computer graphics techniques, programming concepts, and principles of design such as color, composition, and spatial relationships. Students construct a series of images to explore the creative process using elements of design. Through critiques, students discuss the conceptual and visual quality of their work.

381 Computer Graphics II (4:2:4). Prerequisites: ARTS 202, 203, 380, or permission of instructor. Emphasis on high-resolution electronic imaging using the computer both as tool and medium. Complex menu structures, rotations and scaling, color mapping and palette design, font generation, video digitizing techniques, composition studies, and aesthetic concerns. Students construct a series of images to explore the creative process using elements of design. Through critiques, students discuss the conceptual and visual quality of their work.

382 Computer Art and Animation (4:2:4). Prerequisites: ARTS 202, 203, 380, 381, or permission of instructor. Advanced computer graphics concepts as applied to computer animation. Lab assignments address the technical and aesthetic challenges of computer animation. Students learn to transfer computer-generated images to videotape format. Short animated sequences with accompanying audio are designed and executed.

392 Exhibition Projects (3:3:0). Prerequisite: 6 hours in ARTS, 3 hours in ARTI, or permission of instructor. Planning, promotion, and production of visual art presentations and related events on the GMU campus. Exhibitions are produced by students who alternatively serve in all operational capacities from proposal research and budget planning to the graphic design of announcements and the installation of exhibitions.

393 Art Apprenticeships (3-6:0:0). Prerequisite: Art major with permission of instructor. Introductory seminar followed by an apprenticeship or internship project with a professional individual or organization in the field of visual arts in the D.C. area. An apprenticeship may provide an introductory work experience in the professional area in which the student is considering a career.

422, 423 Drawing III, IV (4:2:4), (4:2:4). Prerequisite: ARTS 322 or 323 or permission of instructor. Advanced drawing skills and techniques with an emphasis upon individual exploration in a variety of media. Taught as a series of lectures with associated studio problems.

432, 433 Painting III, IV (4:2:4), (4:2:4). Prerequisite: ARTS 332 or 333 or permission of instructor. A more advanced painting course intended to develop individual control and direction of various media while exploring contemporary issues in painting. Taught as a series of lectures with associated studio problems.

442 Printmaking III: Intaglio (4:2:4). Prerequisite: ARTS 202 and 203, or permission of instructor. The process and history of basic intaglio methods of printmaking are practiced and studied: monotype, metal and plastic engraving, etching, aquatint, embossing, soft- and lift-ground techniques, and an introduction to color intaglio printing. Taught as a series of lectures with associated studio problems.

443 Printmaking IV: Color (4:2:4). Prerequisite: ARTS 342, 343, or 442, or permission of instructor. The process and history of color printmaking in the silkscreen, relief, and/or intaglio methods are practiced and studied. The expressive and formal use of color are explored via various printing processes and developed in a serial format. Taught as a series of lectures with associated studio problems.
452, 453 Advanced Photographic Design I, II (4:2:4), (4:2:4). Prerequisite: ARTS 350 or permission of instructor. Photography taught both as technical craft and as a way of seeing. Includes camera and darkroom operations and ideas relating to the photographic image.

462, 463 Sculpture III, IV (4:2:4), (4:2:4). Prerequisite: ARTS 362, 363, or permission of instructor. A combined lecture/studio course to develop individual ideas and solutions by promoting more advanced thinking toward sculpture. Through lectures, discussions, critiques, technical demonstrations and projects, this course broadens students' practical skills and aesthetic understanding.

491, 492 Advanced Studio Problems (2-4:0:0), (2-4:0:0). Prerequisite: 60 hours, permission of instructor, and permission of chair. Study proposal submitted prior to registration. Opportunity for development of advanced skills and concepts in drawing, painting, sculpture, and other media. May be repeated for credit.

499 Special Topics in Studio Art (4:2:4). Prerequisite: 24 hours and permission of instructor. Topics of special interest in the studio arts. Content varies. May be repeated with permission of the department.

532, 533 Painting V, VI (3:0:6), (3:0:6). Prerequisite: ARTS 432 or 433 or permission of instructor. Painting on the advanced level. Emphasis on individual decision making and personal initiative.

562, 563 Sculpture V, VI (3:0:6), (3:0:6). Prerequisite: ARTS 462 or 463 or permission of instructor. Studio course involving advanced thinking about sculptural design, materials, and processes. Prior experience in sculpture is necessary because individual decision making and personal initiative are emphasized.

592 Exhibition Projects (3:0:0). Prerequisite: B.A. in art or equivalent or permission of instructor. Planning, promotion, and production of visual art presentations and related events on the GMU campus. Exhibitions are produced by students who serve in all operational capacities from proposal research and budget planning to the graphic design of announcements and the installation of exhibitions.

593 Art Apprenticeships (3-6:0:0). Prerequisite: B.A. in art or equivalent or permission of instructor. Introductory seminar followed by an apprenticeship or internship project with a professional individual or organization in the field of visual arts in the D.C. area. An apprenticeship may provide an introductory work experience in the professional area in which the student is considering a career.

596 Independent Study (3:3:0). Prerequisite: B.A. in art or equivalent or permission of instructor. Independent reading and creative work on a specific project under the direction of a department member. A written report is required. May be repeated for credit.

Asian Studies (ASST)

Area Studies

450 Fundamental Themes and Issues of Asian Civilization (3:3:0). Prerequisite: Junior standing in the Asian studies major or permission of instructor. This seminar examines the religious and philosophical traditions of East and South Asia in their cultural and historical settings, with special emphasis on values, ethics, social organization, and political ideology.

460A Seminar in History, Society, and Literature with the Focus on Literature (3:3:0). Prerequisite: Junior standing in the Asian studies major or permission of instructor. Traces the development of Asian societies and cultures through time using major Asian literary works in English translation as source materials. Geographical foci depend on the instructor's expertise.

460B Seminar on Asian Society in Historical Perspective (3:3:0). Prerequisite: Junior standing in the Asian studies major or permission of instructor. Aims at understanding some of the common themes and historical forces that forged critical links between the civilizations of South Asia, Southeast Asia, and East Asia in both modern and premodern times.

470 Seminar in Major Issues in Contemporary Asia (3:3:0). Prerequisite: Junior standing in the Asian studies major or permission of instructor. Examination of the major problems currently facing individual Asian countries and the implications of these problems for the Asian and international communities.

Astronomy (ASTR)

Physics


105, 106 Introduction to Modern Astronomy (4:3:2), (4:3:2). Lab course in astronomy for nonscience majors. Topics include astronomical instruments, coordinates and time, celestial mechanics, astrophotography, planets, satellites, comets and meteorites, the sun, magnitudes and distances of the stars, and others. Can be used to fulfill the 8-hour lab science requirement; not for physics majors.

228 Foundations of Cosmological Thought (3:3:0). Examines the scientific, historical, and philosophical foundations and development of cosmological thought from antiquity to the present. Emphasizes a qualitative understanding of the development of cosmology concluding with the present concept of the origin and evolution of the universe. No advanced background in mathematics or the natural sciences is required.

328 Introduction to Astrophysics (3:3:0). Prerequisite: PHYS 345 or 351 and MATH 113 or 115. Topics include physical concepts, magnitudes of stars, Hertzsprung-Russell diagram, stellar radiation, interstellar matter, dust and molecules, and others.

428 Relativity and Cosmology (3:3:0). Prerequisite: MATH 304 or 306, PHYS 303, 305 and 352; or permission of instructor. Special relativity, four-dimensional space-time, general relativity, non-Euclidean geometries, geodesics, and field equations; tests of general theory of relativity, black holes, cosmology, models of the universe, remnant blackbody radiation, big bang cosmology, thermodynamics, and the universe.

505 Fundamentals of Astronomy (3:3:0). Prerequisite: Graduate standing or permission of instructor. Em-
phases of astronomy to other disciplines as well as the recent developments in astronomy. Planetary earth, its origin and past history, and the origin of life. Ancient, Renaissance, and modern astronomers. Basic physics. Tools of the astronomer. The solar system, the sun, stars, our galaxy, quasars, general relativity, and cosmology. Recommended for teachers of general science.

Bachelor of Individualized Study (BIS)

Academic Affairs

490 Bachelor of Individualized Study Project (3:0:0). Final course in the B.I.S. degree program.
Open only to students in the Bachelor of Individualized Study Program. Completion of an approved project in the student's area of concentration, to be evaluated by a three-member faculty committee. Credit earned for the project may not be part of the individualized study core. Individualized sections by arrangement.

Biology (BIOL)

Biology

103 Introductory Biology I (4:3:3). A survey course suitable for any major. Topics include the chemistry of life, cells, and a nimal systems. Emphasizes human structure, function and homeostatic mechanisms. Students who have already received 4 hours of biology credit are not eligible to take this course. Fall and summer terms.

104 Introductory Biology II (4:3:3). Prerequisite: BIOL 103. Topics include genetics, evolution, plants, major ecosystems and ecological problems. Students who have already received 8 hours of biology credit are not eligible to take this course. Spring and summer terms.

124, 125 Human Anatomy and Physiology (4:3:3), (4:3:3). Introduction to structure and function of major organ systems of the body. Open first to nursing and physical education majors. Must be taken in sequence. Does not satisfy the natural science requirement in the College of Arts and Sciences. Not available for biology major credit. Fall, spring, summer.

211 Heredity and Society (3:3:0). Basic principles of heredity, including elementary probability, nature of the gene, mutations and mutant genes in populations. Emphasis on human hereditary diseases, genetic counseling, and application of genetics to improving the quality of life. Not available for biology major credit. Fall, spring, summer.

213 Cell Structure and Function (4:3:3). For science majors and preprofessionals in the life sciences. An introduction to the chemistry, metabolism, genetics, and evolution of cells. Fall, spring, and summer terms.

225 Human Reproduction and Sexuality (3:3:0). Examination of the anatomy and physiology of human reproductive systems, physiology of sexual intercourse, normal pregnancy, birth, congenital conditions, sex determination and its expression, diseases of the reproductive organs, technical developments related to reproduction. Not available for biology major credit. Fall.

261 Introductory Microbiology (4:3:3). Prerequisite: BIOL 124, 125 or BIOL 103, 104; or permission of instructor. Introduction to bacteria, molds, and viruses with emphasis on disease-causing organisms. Lab includes sterile technique and culture methods for microorganisms. Students who have taken cell biology or biology of microorganisms may not enroll. Open first to health education and nursing majors. Not available for biology major credit.

302 Biology of Microorganisms (4:3:3). Prerequisite: BIOL 213, CHEM 211, 212; or permission of instructor. The morphology, physiology, and ecology of selected groups of bacteria, fungi, protozoa, and viruses. Applied topics, including host-parasite interactions, are stressed. Not available to students who have taken BIOL 261. Fall and spring.

303 Animal Biology (4:3:3). Prerequisite: C or better in BIOL 213 or permission of instructor. Emphasis on structure and function of vertebrates, adaptations to the environment, and evidence of evolution. Fall and spring.

304 Plant Biology (4:3:3). Prerequisite: C or better in BIOL 213 or permission of instructor. Introduction to the study of plants, their structure, development, nutrition, and ecology. Emphasizes flowering plants, but surveys all groups and their phylogenetic relationships. Fall and spring.

307 Ecology (4:3:3). Prerequisite: BIOL 303, 304, or permission of instructor. Physical environment, energy flow, structure and function of populations, the dynamics of communities, and succession. Fall, spring.

309/GEOL 309 Introduction to Oceanography (3:3:0). Prerequisite: GEOL 101 or 111 and BIOL 103 or 213, or permission of instructor. Introduction to chemical, biological, and geological aspects of the ocean environment. Fall.

311 General Genetics (4:3:3). Prerequisite: BIOL 303, 304, or permission of instructor. Basic principles of heredity and modern developments in the field. Fall, spring, summer.

312 Biostatistics (4:3:2). Prerequisite: BIOL 303, 304, or permission of instructor. Use of probability and descriptive and inferential statistical techniques in the interpretation of biological data. Fall.

320 Comparative Chordate Anatomy (4:2:6). Prerequisite: BIOL 303 or permission of instructor. Comparison of anatomy and morphology of major chordate groups. Lab emphasizes shark, mudpuppy, cat, and rabbit. Fall of even-numbered years.

322 Patterns of Animal Development (4:3:3). Prerequisite: BIOL 303 and 60 hours or permission of instructor. Concepts of vertebrate organization, reproduction, embryogenesis, and organ system development. Spring.

324 Introductory Animal Behavior (4:3:3). Prerequisite: BIOL 303 or permission of instructor. Study of the mechanisms, functions, and evolution of behavior. Fall.

326 Animal Physiology (4:3:3). Prerequisite: BIOL 303 and 60 hours. General consideration of invertebrate and vertebrate function emphasizing common life problems and a variety of methods for solving them. Topics include electrolyte balance, excretion, respiration, metabolism, thermoregulation, neuroendocrine control, and physiological rhythms.
331 Invertebrate Zoology (4:3:3). Prerequisite: BIOL 303 or permission of instructor. Survey of the invertebrate phyla, excluding insects, showing the morphology, phylogeny, and general biology of these groups. Fall.

332 Insect Biology (4:3:3). Prerequisite: BIOL 303 or permission of instructor. Survey of insects including taxonomy, morphology, physiology, behavior, ecology, and economic importance. Summer term A.

333 Vertebrate Zoology (4:2:6). Prerequisite: BIOL 303 or permission of instructor. Phylogeny and systems of major vertebrate groups. Emphasis on ecological adaptation. Lab includes field studies of local fauna. Spring.

341 Phycology (4:3:3). Prerequisite: BIOL 304 or permission of instructor. Study of the biology of algae including taxonomy, reproduction, physiology, ecology, evolution, and economic importance.

342 Plant Morphology (4:3:3). Prerequisite: BIOL 304 or permission of instructor. Origin and development of organs, tissue systems, and life cycles of green plants, with phylogenetic comparisons from algae to angiosperms. Fall.

343 Mycology (4:3:3). Prerequisite: BIOL 304 or permission of instructor. Introduction to biology of the fungi including morphology, taxonomy, growth and development, physiology, reproduction and ecology. Lab emphasizes representative organisms and isolation and cultivating techniques.

344 Taxonomy of Flowering Plants (4:3:3). Prerequisite: BIOL 304 or permission of instructor. Study of terminology and identification of flowering plants with emphasis on local flora. Spring.

345 Plant Communities (4:3:3). Prerequisite: BIOL 304 or permission of instructor. Plant associations and formations and their successions in North America. Three Saturday or Sunday field trips required. Fall.

371 Animal Distributions (3:3:0). Prerequisite: BIOL 303, 304, or permission of instructor. Relations of the North and South American faunas with other regions in the light of continental drift. Emphasis on vertebrates. Spring.

375 Population Biology (3:0:0). Prerequisites: BIOL 307 and 311. A study of organisms at the population level combining population genetics, population dynamics and demography. Relationships with evolution and systematics are also discussed. Spring even years.

377 Applied Ecology (3:3:0). Prerequisite: 8 hours of biology, geology, or chemistry; 60 hours; or permission of instructor. Introduction to ecosystem concepts and their applications to natural and managed ecosystems.

380 Bioinstrumentation (4:3:3). Prerequisite: CHEM 211, 212, BIOL 383, one semester college mathematics, or permission of instructor. Introduces modern instrumentation including basic electronics, data processing, principles of measurements, and sample handling. Presents theory necessary to understand bases of the instruments and principles involved in specific measurements. Spring.

383 Cell Biology (4:3:3). Prerequisites: BIOL 311, CHEM 211, 212, MATH 110 or 115, and 60 hours. Cellular structure and function. Topics include fine structure, chemistry, metabolism and regulatory mechanisms. Fall, spring.

425 Mammalian Physiology (4:3:3). Prerequisite: BIOL 383 or permission of instructor. An organ system approach to the study of mammalian homeostasis, including cardiovascular, respiratory, renal, digestive, endocrine, and nervous system functions. Spring.

440 Field Biology (4:2:6). Prerequisite: BIOL 303, 304, and 60 hours, or permission of instructor. Directed field studies emphasizing ecology and behavior. Topics vary, but include design of field manipulations, data collection and analysis, and an introduction to organisms of study site. Students bear the cost of required field trips(s).

446 Environmental Physiology (3:3:0). Prerequisite: BIOL 326 or permission of instructor. Physiological responses of animals to environmental factors and changes in the natural environment. Topics include bihythms and adaptation to temperature, high pressure, and altitude. Emphasis on vertebrates.

449 Marine Ecology (3:3:0). Prerequisite: BIOL 307 or permission of instructor. Plants and animals of marine environments and physical and chemical conditions that affect their existence. Spring of odd-numbered years.

452 Immunology (4:3:3). Prerequisite: BIOL 383 or permission of instructor. Topics include structure and function of immunoglobulins, role of cell-mediated immunity, protective role of the immune system, and disease and injury related to malfunctions of the immune system. Spring.

455 Histology (4:3:3). Prerequisite: BIOL 303 and 60 hours, or permission of instructor. Microscopic structure of animal tissues and organs with emphasis on vertebrates. Fall.

471 Evolution (3:3:0). Prerequisite: BIOL 311 or permission of instructor. Process of evolution with emphasis on the role of genetics, the properties of populations, and population differentiations. Spring.

474 Plant Structure and Function (4:3:3). Prerequisite: BIOL 383 or permission of instructor. Corequisite BIOL 475. Structural and functional aspects of transport phenomena, photosynthesis, growth differentiation, and reproductive processes in plants are discussed. Microtechnic techniques and experimental analysis of physiological processes are conducted in the laboratory. Spring.

482 Introduction to Molecular Genetics (3:3:0). Prerequisite: BIOL 311, CHEM 313, 314, 315, 318, and 54 hours, or permission of instructor. Basic concepts of the structure and function of genetic material at the molecular level.

495, 496 Directed Studies in Biology (1-3:0:0). (1-3:0:0). Prerequisite: Permission of both instructor and chair. Study of a topic not otherwise available to the student. May involve any combination of reading assignments, tutorials, lectures, papers, presentations, or field or lab study, determined in consultation with the instructor. Maximum of 3 credits.

497, 498 Special Problems in Biology (1-4:0:0). (1-4:0:0). Prerequisite: Permission of both instructor and chair, 90 hours. Lab or field project leading to a written report of research. The research and paper are completed under the instructor's guidance. Total credit limit for 495, 496, 497, and 498, in any combination, is 6 hours, not to exceed 4 credits in any one semester.
504 Virginia Natural History for Teachers (4:3:3). Interrelations of plants, wildlife, soil, and waters of local environments with emphasis on teaching their proper use and conservation. May be applied to the M.S. in biology in the interpretive track only and then within a six-hour maximum if combined with BIOL 605. Summer.

513 Food, Energy, and Insects (3:3:0). Prerequisite: BIOL 332 and permission of instructor. History and future of man's competition with insects in fields of agriculture and medicine.

514 Human Evolution and Ecology (3:3:0). Materialistic study of the evolution of humans and their prehistoric, historic, and contemporary relationship with the natural environment.

520 Systematics in Complex Angiosperm Families (3:1:6). Prerequisite: BIOL 344 or 534 or permission of instructor. Morphology and speciation of the more complex families such as Poaceae, Cyperaceae, and Asteraceae. Lab emphasizes identification of specimens and acquaintance with taxonomic literature. Fall of even-numbered years.

523 Reproductive Strategies (3:3:0). Prerequisite: permission of instructor. Evolution of reproductive tactics, including sexual and asexual reproduction, sex ratios, parental investment, propagule sizes and numbers, mating systems, and social structure. Animals and plants emphasized as appropriate.

526 Paleoecology (4:3:3). Prerequisite: Permission of instructor. Study of origin and evolution of interrelationships between components of the earth's major ecosystems.

527 Current Problems in Evolutionary Theory (1-4:1-3:0-6). Prerequisite: Course in evolution or permission of instructor. Contemporary evolutionary thought.

528 Selected Topics in Vertebrate Zoology (1-4:1-3:0-6). Prerequisite: Course in vertebrate zoology or permission of instructor. Different topics in different years. Topics might include an examination of the biology of a single phylum or strategies of larval survival.

529 Vertebrate Paleontology (4:2:6). Prerequisite: Course in vertebrate zoology, comparative anatomy, or invertebrate paleontology or permission of instructor. Study of evolutionary patterns of vertebrates. Emphasis on major adaptive radiations.

532 Animal Behavior (3:3:0). Prerequisite: BIOL 324 or permission of instructor. Ecological aspects of animal behavior.

533 Selected Topics in Plant Biology (1-4:1-3:0-6). Prerequisite: course in Plant Biology or permission of instructor. Topic depends on instructor's specialty. May be repeated only with permission of chair.

534 Speciation and Field Studies in Flowering Plants (3:1:6). Prerequisite: Course in plant taxonomy or permission of instructor. Modes of speciation in flowering plants. Lab emphasizes field trips, collection, preparation, and identification of plants. Fall of odd-numbered years.

535 Ancient Plants and Their Environment (3:3:0). Prerequisite: BIOL 304 or a course in paleontology or permission of instructor. Evolution of fossil plants, their origin, history, and extinction, including the physical and biological selective pressures responsible for these events.

536 Ichthyology (4:3:3). Prerequisite: Course in ecology or permission of instructor. Study of the systematics, evolution, physiology, ecology, and behavior of fishes.

537 Ornithology (4:2:6). Prerequisite: Course in ecology or permission of instructor. Study of the evolution, systematics, physiology, ecology, and behavior of birds, emphasizing field work. Spring of odd-numbered years.

538 Mammalogy (4:2:6). Prerequisite: Course in ecology or permission of instructor. Study of the evolution, systematics, physiology, ecology, and behavior of mammals, emphasizing field work. Fall of odd-numbered years.

539 Herpetology (4:2:6). Prerequisite: Course in ecology or permission of instructor. Study of the evolution, systematics, physiology, ecology, and behavior of amphibians and reptiles, emphasizing field work. Spring of even-numbered years.

542 Ecology of Animal Communities (3:3:0). Prerequisite: Course in ecology or permission of instructor. In-depth study of animal communities emphasizing community structures and functions, changes in composition over time and space, stability and equilibrium properties, disturbances, and insularization effects.

543 Tropical Ecosystems (4:2:3). Prerequisite: Course in ecology or permission of instructor. Terrestrial, aquatic, and marine ecosystems in the tropics emphasizing plant communities, plant-animal interactions, and the role of man in the tropics. Field trip to the tropics is required as part of lab.

546 Estuarine and Coastal Ecology (4:2:3). Prerequisite: Course in ecology and permission of instructor. Emphasizes marine biology of estuarine and coastal habitats of the Chesapeake Bay region and factors affecting distribution and abundance of organisms. Lab provides training in field measurement of physical and chemical parameters and collection and identification of local organisms. Extended field trips made to mid-Atlantic sites. Summer.

547 Terrestrial Plant Ecology (4:2:3). Prerequisite: Course in ecology. Consideration of community organization, development, productivity, and mineral cycling; interactions between plants and competitors, herbivores, and various environmental factors, especially light, water and soil. Fieldwork and lab emphasize data collection and statistical analysis.

550 Limnology (3:3:4) Prerequisite: General chemistry and a course in ecology. Study of the origin of freshwater ecosystems and the chemical, physical, and ecological processes occurring in them. The impact of human activities on freshwater ecosystems is also considered.

552 General Biochemistry (4:3:1). Prerequisite: BIOL 383, CHEM 313,314 or permission of instructor. Survey course in general biochemistry for advanced undergraduates and graduate students in biology and chemistry dealing with the chemical bases of biological systems emphasizing structure, regulation, and functions of cellular events.

553 Advanced Topics in Immunology (3:3:0). Prerequisite: BIOL 452 or permission of instructor. Com-
prehensive study of immunologic mechanisms as they pertain to immunologic diseases and transplantation.

556 Microbial Physiology and Metabolism (3:3:0). Prequisite: BIOL 383 or permission of instructor. Comprehensive study of microorganisms covering aspects of growth, nutrition, transport, autotrophic and heterotrophic metabolic regulation, and differentiation. Fall of odd-numbered years.

560 Biological Ultrastructure (4:2:8). Prequisite: BIOL 383, CHEM 313, 314, and permission of instructor. Introduction to techniques involved in electron microscopy and to the interpretation of electron micrographs of plants and animals. Fall.

561 Comparative Animal Physiology (3:3:0). Prequisite: BIOL 326 or permission of instructor. Detailed study of selected physiological systems of invertebrates and vertebrates, emphasizing current research.


564 Techniques in Virology (2:1:3). Co- or Prequisite: BIOL 563 or permission of instructor. Emphasis on propagation of animal viruses in embryonated eggs and cell culture, titration of animal viruses and bacteriophage, serological techniques used in virology, and biochemical and biophysical characterization of viruses.

568 Advanced Topics in Molecular Genetics (3:3:0). Prequisite: BIOL 482 or permission of instructor. Comprehensive study of regulatory mechanisms controlling gene expression in viruses, prokaryotes and eukaryotes, emphasizing current research.

572 Human Genetics (3:3:0). Prequisite: BIOL 311 or permission of instructor. The inheritance of humans, emphasizing current problems, including genetic control of metabolic diseases, effects of radiation and chemical agents in the environment, and directed genetic change. Fall, odd-numbered years.

573 Developmental Genetics (3:3:0). Prequisite: BIOL 311 or permission of instructor. Genetic approaches to the problem of eucaryotic development emphasizing current research on the regulation of gene enzyme systems.

574 Population Genetics (3:3:0). Prequisite: BIOL 307 and 311 or permission of instructor. The genetic structure and dynamics of populations, both real and ideal. Spring, even-numbered years.

575 Selected Topics in Genetics (3:3:0). Prequisite: BIOL 311 or permission of instructor. Different topics in different years. Topics include molecular, developmental, physiological, and classical genetics emphasizing current problems and research. May be repeated once with permission of chair.

577 Biogeochemistry: A Global Perspective (3:3:0). Prequisite: Introductory courses in ecology and chemistry or permission of instructor. Structure and function of ecosystems, their interactions as components of landscapes, and their contributions to the global environment. Course emphasizes biogeochemical cycles of natural, disturbed, and managed ecosystems, and their integration at the landscape and global level as related to current ecological problems such as transfer of non-point source pollutants, atmospheric deposition, stratospheric ozone depletion, and global change.

580 Computer Applications for the Life Sciences (3:3:0). Prequisite: 12 hours of biology and 1 year of college mathematics or permission of instructor. Study of the uses of computers in the biological sciences. Lectures will be combined with supervised exercises on mainframe and micro-computers. Each student will present a seminar on an advanced application and will do a project using a computer to fulfill a major assignment associated with another course or with employment.

Business Legal Studies (BULE)

School of Business Administration

If a student takes noncore, upper-level business administration courses prior to acceptance to the School of Business Administration, those courses will not count on an undergraduate degree application for any major in the school (except as general elective credit). A grade of C or higher must be presented on the graduation application for each upper-level course in the major. Course prerequisites are strictly enforced.

301 Commercial Law (3:3:0). Prequisite: Completion of at least 60 semester hours including ENGL 101 and 302 and ECON 103 and 104. Legal environment in which business transactions are conducted including the Uniform Commercial Code and selected government regulations.


304 Real Estate Law (3:3:0) Prequisite: BULE 301. Basic principles of modern real estate law including classifications of property, types of ownership, acquisition and disposition, leasing, government regulation, and taxation. Emphasis on the real estate sale including the contract of sale.

305 Government Contracting Law (3:3:0). Prequisite: BULE 301 and MGMT 331. A survey of the legal aspects of contracting with the government including formation, administration, modification, and termination of government contracts as well as the remedies available to the parties when a breach of contract occurs.

401 Law, Business, and Society (3:3:0). Prequisite: Completion of a 300-400 level BULE course and at least 75 semester hours. Interrelationships between profit and nonprofit organizations and their external political, social, economic, international, and ethical environments. Also considers the public policy process and issues that arise out of the business environments.

Canadian Studies (CAST)

Public Affairs

300 Introduction to Canada (3:3:0). Prequisite: 24 hours or permission of instructor. A survey of Canadian life from cultural, geographical, historical, political, social, and literary perspectives.
Chemistry (CHEM)

Chemistry

CHEM 211, 212 is prerequisite to all other undergraduate chemistry courses except those numbered below 200.

103, 104 Chemical Science in a Modern Society (4:3:3), (4:3:3). Terminal course in chemistry for non-science and nursing majors. Principles and application of chemistry. Topics include environmental pollution, medicine, synethetics, and earth and marine science. Credit will not be given for both this course and for CHEM 211, 212. Not open to students majoring in chemistry.

211, 212 General Chemistry (4:3:3), (4:3:3). Basic facts and principles of chemistry, including atomic and molecular structure, gas laws, kinetics, equilibrium, electrochemistry, nuclear chemistry, and the properties and uses of the more important elements and their compounds. Students majoring in science, engineering, or mathematics should choose this course. Credit will not be given for both this course and CHEM 103, 104.

251 General Chemistry for Engineers (4:3:3). Fundamental principles of chemical structure and reactivity, including atomic and molecular structure, chemical bonding, structures of ionic, covalent, and metallic lattices, oxidation-reduction, electrochemistry, chemistry of metals, and introduction to organic chemistry and polymers. Enrollment is restricted to students majoring in computer and electrical engineering.

313, 314 Organic Chemistry (3:3:0)-(3:3:0). Prerequisite: CHEM 211, 212; corequisite for 313 is CHEM 315; corequisite for 314 is CHEM 318 or 320. The theoretical, synthetic, industrial, and biological aspects of the chemistry of carbon compounds. In the first semester all students take concurrently CHEM 315.

315 Organic Chemistry Lab I (2:1:3). *Corequisite CHEM 313. Lab techniques and reactions arranged to accompany CHEM 313. One hour recitation.

318 Organic Chemistry Lab II (2:1:3). *Prerequisite: CHEM 315; corequisite CHEM 314. Continuation of CHEM 315, arranged to accompany CHEM 314. One hour recitation.


* Students planning to graduate under the requirements of a catalog prior to the 1980-81 catalog can apply only one hour of credit for this course toward graduation.

321 Elementary Quantitative Analysis (4:2:6). Prerequisite: CHEM 211, 212. Chemical principles with emphasis on ionic equilibria. Lab consists of gravimetric, volumetric, and instrumental methods illustrating the principal types of quantitative determinations.

322 General and Biochemical Equilibrium (2:2:0). Prerequisite: CHEM 211, 212 and CS 103, 161, or ENGR 110. Study of general and biochemical equilibria in gas-phase, ionic, and heterogeneous systems. Topics include gas reactions, polyfunctional acids and bases, complex-ion formation, solubility and free energy relationships, and the use of computer algorithms to solve equilibrium problems.

331, 332 Physical Chemistry I, II (3:3:0), (3:3:0). Prerequisite: CHEM 211, 212 and MATH 113, 114; prerequisite or corequisite: PHYS 341 or 250. CHEM 331 is prerequisite to 332. Year-long survey covering topics including thermodynamics, equilibria, kinetics, solution properties, elementary quantum theory, electrochemistry, atomic and molecular structure, and nuclear chemistry.

335 Physical Chemistry for the Life Sciences (3:3:0). Prerequisite: CHEM 211, 212. Classical topics with emphasis on application to biology and health sciences. Rigorous mathematical approaches to the theory of physicalchemical processes are avoided. Topics include gas laws and kinetic theory, structure of solids and liquids, applied thermodynamics, kinetics, and chemical equilibria. Not open to students who have passed CHEM 331. Credit is not allowed toward a major in chemistry.

336 Physical Chemistry Lab I (2:1:3). Prerequisite or corequisite: CHEM 331. Quantitative experimental study of physicalchemical principles. CHEM 336 and 337 constitute an introduction to the practice and theory of experimental physical chemistry. One hour recitation.

337 Physical Chemistry Lab II (2:1:3). Prerequisite or corequisite: CHEM 332. Continuation of CHEM 336. One hour recitation.

341 Fundamental Inorganic Chemistry (3:3:0). Prerequisite: CHEM 211, 212. Descriptive chemistry including chemical properties, reactions, and reaction mechanisms of inorganic elements and compounds. Topics include main group and transition elements, organometallic compounds, and bioinorganic chemistry.

422 Instrumental Analysis (4:2:6). Prerequisite: CHEM 314, 321, 331, or permission of instructor. Quantitative study of chemical reactions by the use of modern analytical instrumentation. Introduction to theory and practice of spectroscopy; ultraviolet, visible, and infrared absorption spectroscopy; electrical methods of analysis; gas chromatography; non-aqueous studies; and ion exchange.

441 Properties and Bonding of Inorganic Compounds (3:3:0). Prerequisite: CHEM 314, 332, or permission of instructor. Interpretation of physical and chemical properties of inorganic compounds in terms of currently used bonding concepts. Topics include structure and bonding of ionic compounds; covalent bonding including valence-bond, crystal-field, and molecular-orbital theories; and the stereochemical, electronic, and magnetic properties of elements.


451, 452 Special Projects in Chemistry (2:0:6), (2:0:6). Prerequisite: Chemistry major, 90 hours, and permission of department research committee. Introduction to chemical research or development. Includes literature search, conferences, and lab. Written and oral technical reports required.

500 Selected Topics in Modern Chemistry (3:3:0). Topics of interest in biochemistry and in physical, or-
501 Lab Demonstration Techniques in the Teaching of Chemistry (3:3:0). Lab for developing proficiency in conducting lab demonstrations. Recommended for teachers of chemistry and general science.

502 Survey of Biochemistry (3:3:0). Prerequisite: CHEM 313, 314, BIOL 383, or permission of instructor. Survey course in general biochemistry for advanced undergraders and graduate students in chemistry and biology dealing with the chemical bases of biological systems emphasizing structure, regulation, and functions of cellular events.

513 Special Topics in Organic Chemistry (3:3:0). Prerequisite: CHEM 313, 314. Synthetic and mechanistic organic chemistry with emphasis on topics such as heterocycles, natural products, and biologically active compounds. Relation of applied organic chemistry to consumer products including drugs and agricultural chemicals.

521 Theory of Analytical Processes (3:3:0). Prerequisite: CHEM 422 or permission of instructor. Physical-chemical principles and analytical techniques applicable to the analysis of solutions, including activity coefficients, solvation and ionic size, titration-curve theory, acidity functions and pH-scales, kinetic analysis, and modern techniques for designing experiments and interpreting data.

529 Instrumental Techniques Laboratory (2:0:6). Prerequisite: Permission of instructor. Equipment, experimental procedures, and data interpretation for one or two instrumental techniques of analysis and research selected by the student, such as gas chromatography/mass spectrometry, high-performance liquid chromatography, magnetic resonance spectroscopy, and polarography and other electroanalytical techniques. An individual project is carried out in close collaboration with an instructor. Enrollment may be repeated if different techniques are selected.

614 Physical Organic Chemistry (3:3:0). Prerequisite: CHEM 313, 314, or permission of instructor. The principles underlying molecular structures, reactivities, and reaction mechanisms. Topics include valence-bond and molecular-orbital theory, the electronic interpretation of organic reactions, stereochemistry, conformational analysis, the kinetics and thermodynamics of organic reactions, and photochemistry.


633 Chemical Thermodynamics and Kinetics (3:3:0). Prerequisite: CHEM 331 and 332. Advanced study of topics in physical chemistry, selected from among the areas of thermodynamics, atomic and molecular structure, spectroscopy, and chemical kinetics. Content varies and is announced before registration. May be retaken for credit with permission of department.

646 Bioinorganic Chemistry (3:3:0). Prerequisite: CHEM 563 or permission of instructor. Survey of the structures, functions, and properties of metal ions in biological systems. Modern inorganic coordination chemistry and the study of metal-ion sites in metalloenzymes and metalloproteins. Enzymatic catalysis, oxygen carriers, electron-transport phenomena, and inorganic model systems.

651 Environmental Chemistry (3:3:0). Prerequisite: CHEM 313 and 314 or permission of department. CHEM 331 or 335 is recommended. Chemical behavior of pollutants in air, water, and soil. Emphasis on thermodynamic principles and chemical transformation processes important in the fate, transport, and effects of natural and synthetic organic substances in the environment. Topics include partitioning, photolysis, biodegradation, aqueous geochemistry, and modeling. Chemical basis of prominent environmental problems such as ozone depletion and acid rain is presented.


656 Biochemistry Lab II (2:1:3). Prerequisite: CHEM 563 and 564. Continuation of CHEM 565. One-hour recitation.

665 Biochemistry Lab I (2:1:3). Prerequisite or corequisite: CHEM 563. Introduction to experimental methods used to study the chemical and physical properties of proteins, carbohydrates, lipids, and nucleic acids. Complements the corresponding lecture course. Designed for those who have had no previous exposure to the specialized techniques used in biochemical research. One-hour recitation.

723 Selected Topics in Analytical Chemistry (3:3:0). Prerequisite: CHEM 422. Principles and applications of currently used methods of analysis. Topics include differential pulse polarography, anodic stripping voltammetry, atomic absorption, fluorescence, emission spectrometry, neutron activation, spectroscopy, and spark source mass spectrometry. Advances and applications to trace metal determinations in environmental samples.

725 Electroanalytical Chemistry (3:3:0). Prerequisite: CHEM 422 or permission of instructor. Theory of polarography, stationary-electrode and hydrodynamic voltammetry, chronopotentiometry, chroamperometry, controlled-potential electrolysis and coulometry at controlled potential, coulometric titration, and a number of related techniques, with emphasis on their applications in analysis and research.


767 Protein Biochemistry (3:3:0). Prerequisite: CHEM 563, 564, or permission of instructor. Topics include the structural, transport, and immunological roles of proteins with emphasis on the role of proteins as biological catalysts. Current theories of enzyme catalysis as well as pertinent experimental techniques. Important
structural proteins from muscle and connective tissue and free and membrane-bound transport proteins.

Classical Studies (CLAS)

Foreign Languages and Literatures

150 The Legacy of Greece and Rome (3:3:0). Introduction to the history, culture, and literature of Greece and Rome through close readings of a number of central passages from classical literature dealing with some of the most important aspects of human existence (e.g., the individual and society, divine justice, war and peace). Illustrates the importance of classical antiquity for our Western tradition.

250 Classical Myths and Legends (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Myths and legends of Greece and Rome with illustration of their role in classical and modern literature and art. Course work in English. May be taken to fulfill general requirement in literature for baccalaureate degree.

301 Greek and Roman Tragedy (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Course follows the development of tragedy as a genre from its origins to its transformations in the works of Aeschylus, Sophocles, and Euripides and its reappearance in the Roman world in the Latin tragedies of Seneca. It considers the influence among the poets as well as the means by which Greek tragedy influenced Roman and later cultures. In addition to readings, a number of plays may be studied in visual form. Course work in English. May be taken to fulfill general requirement in literature for baccalaureate degree.

302 Greek and Roman Comedy (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Course studies the forms, contexts, and developments of comedy as a dramatic form in the Greco-Roman world. It also traces the development of New Comedy in the Hellenistic age and the translation and adaptation of New Comedy by the Roman dramatists Plautus and Terence. Course work in English. May be taken to fulfill general requirement in literature for baccalaureate degree.

310 Greek and Roman Epic (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Course explores the various developments of and within Greek epic as a genre, from its beginnings in the Greek archaic age in the works of Hesiod and Homer through the various transformations it underwent in the works of later Greek and Roman authors such as Apollonius of Rhodes, Lucretius, Virgil, Ovid, Lucan, and Statius. Course work in English. May be taken to fulfill general requirement in literature for baccalaureate degree.

390 Topics in Classical Literature (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Course studies the forms, contexts, and developments of a distinctive literary genre or cultural phenomenon in the Greco-Roman world, focusing on careful study of the most representative texts and authors. Course work in English. May be taken to fulfill general requirement in literature for baccalaureate degree.

499 Senior Seminar in Classical Studies (3:3:0). Prerequisite: Classical Studies majors with 90 hour and permission of the instructor. Research on a specialized interdisciplinary topic culminating in a seminar paper. Subject of seminar determined by instructor. Permission must be obtained in advance. A student may present no more than 3 hours for graduation credit. A grade of C or better is required to graduate with a B.A. in Classical Studies.

Communication (COMM)

Communication

100 Introduction to Oral Communication (3:3:0). Students will gain an understanding of the elements involved in the process of oral communication. Emphasis on the principles and types of public oral communication, especially on giving information and understanding the principles of persuasion. Practice in preparing and presenting materials in public settings as well as listening to such messages.

101 Introduction to Interpersonal Communication (3:3:0). Principles involved in communicating in interpersonal relationships with the primary focus upon dyadic and non-presentational group situations. Skill development appropriate to these settings is emphasized.

102 Introduction to Media Literacy (3:3:0). Principles and practices of media literacy. Emphasis on critical viewing/listening/reading media skills and media effects on the individual consumer.

140 Forensics Seminar in Creative Arts (1:0:6). Prerequisite: Audition. Intensive work in creative forensics events—rhetorical criticism, epidemic speaking, informative speaking, persuasive speaking, extemporaneous speaking, after-dinner speaking, and impromptu speaking. May be taken four times.

141 Forensics Seminar in Re-creative Arts (1:0:6). Prerequisite: Audition. Intensive work in re-creative forensic events—dramatic duo, mixed interpretation, poetry interpretation, dramatic pairs, original poetry, and prose interpretation. May be taken four times.

142 Forensics Seminar in Debate: Affirmative Strategies (1:0:6). Work in affirmative research, case construction, and oral presentation, directed toward affirmative analysis of the intercollegiate debate proposition. May be taken four times.

143 Forensics Seminar in Debate: Negative Strategies (1:0:6). Work in negative research, case attacks, and oral presentation directed toward negative analysis of the intercollegiate debate proposition. May be taken four times.

145 Newspaper Workshop I (1:1:2). Prerequisite: Broadsie staff position or permission of instructor. Practical experience in writing, editing, or business aspects of newspaper production at Broadsie or other papers. Coordinated by the newspaper faculty advisor. May be repeated for a total of three semester hours.

146 Yearbook Workshop I (1:1:2). Prerequisite: COMM 100 or equivalent and permission of instructor. Practical experience in promotion, marketing, and sales of a video yearbook or practical experience working layout and production of Senior Expressions magazine. May be taken three times.
148 Radio Workshop I (1:1:3). Prerequisite: 100-level COMM course or permission of instructor. Practical experience in production, newswriting, promotions, advertising, public relations, programming, or newscasting for the student radio station, WGGMU. May be repeated for a total of three credits.

150 Communication Skills for International Students (3:3:0). Prerequisite: International student in first year of study in the U.S. or permission of instructor. Development of communication skills required to cope effectively with life in American society. Introduction to speaking, listening and nonverbal skills required to communicate appropriately in university study. Students become acquainted with U.S. media and U.S. social, political, economic, and religious values and customs. Does not fulfill general education requirements met by COMM 100, 101, 110, 120 or 130.

157 Television Workshop I (1:1:2). Practical experience in learning the basics of television field production. Students work with "GMView," the video yearbook. May be taken three times.

202 Mass Media and Communication Systems (3:3:0). A study of the development of various telecommunications and media systems in the United States, including print media, motion pictures, the recording industry, telegraphy and telephony, broadcasting and cable, and the new communications technologies.

203 Introduction to Journalism (3:3:0). American journalism including components in journalism history and the First Amendment, the role of the professional journalist, print and broadcast news operations, the economics of newspaper publishing, and other topics. The course serves both as a starting point for those desiring to pursue journalism studies and an orientation for the news consumer interested in learning more about news business operations.


220 Public Speaking (3:3:0). Prerequisite: COMM 100, 101, or 102. Principles and types of public speaking; emphasis on informing and persuading. Intensive practice in preparing and presenting speeches.

230 Case Studies in Persuasion (3:3:0). Case study applications of common persuasive message strategies and approaches. Basic principles of the persuasive process. Case studies include advertisements, speeches, and persuasive activities from all segments of society.


261 Theories of Argumentation (3:3:0). Critical analysis of argument within communicative settings with emphasis upon deductive and inductive forms of reasoning, fallacies in reasoning, tests of evidence, and the models for such analysis.

300 Foundations of Public Communication (3:3:0). Prerequisite: 3 hours of 100- or 200-level COMM credit, or 60 hours. Theories and principles of public communication with emphasis upon methods of persuasion, propaganda, speaker/listener alignments in the public setting, and measurements of effective public communication.
332 Nonverbal Communication (3:3:0). Prerequisite: 3 hours of COMM credit. Theory, principles, and methods of analysis of nonverbal communication. Emphasis on physical behavior, facial expression, personal space and territoriality, physical appearance, vocal cues, and environment.

335 Organizational Communication (3:3:0). Prerequisite: COMM 100, 101, or 301, or permission of instructor. Theory, practice, and methods of analysis of communication within organizations. Emphasis on the process and structure, interaction formats, mechanisms for modification, and career paths in organizational communication.

340 Forensics Seminar in Creative Arts (1:0:6). Prerequisite: 4 credits of COMM 140 or 60 hours and audition. Intensive work in various types of creative forensics events—rhetorical criticism, epideictic, informative, persuasive, extemporaneous, after-dinner, and impromptu speaking. May be taken four times.

341 Forensics Seminar in Re-creative Arts (1:0:6). Prerequisite: 4 credits of COMM 140 or 60 hours and audition. Intensive work in various types of re-creative forensics events—dramatic duo, mixed interpretation, dramatic paired, original poetry. May be taken four times.

342 Forensics Seminar in Debate: Affirmative Strategies (1:0:6). Prerequisite: 4 hours of COMM 142 or 60 hours and audition. Work in affirmative research, case construction, and oral presentation directed toward affirmative analysis of the intercollegiate debate proposition. May be taken four times.

343 Forensics Seminar in Debate: Negative Strategies (1:0:6). Prerequisite: 4 credits of COMM 143 or 60 hours and audition. Work in negative research, case attacks, and oral presentation directed toward negative analysis of the intercollegiate debate proposition. May be taken four times.

344 Parliamentary Procedure (1:1:0). Prerequisite: 60 hours or permission of lecturer. Procedures of parliamentary law as practiced in voluntary organizations. Practice in chairing groups that conduct business according to Roberts Rules of Order Newly Revised. A brief review of other parliamentary systems.

345 Newspaper Workshop II (1:1:2). Prerequisite or corequisite: 3 hours of COMM 145, COMM 351, or permission of instructor. Practical experience in writing and editing for the student newspaper or other papers. Coordinated with the instruction in COMM 351. May be taken three times.

346 Yearbook Workshop II (1:1:2). Prerequisite: COMM 146 or permission of instructor. Practical experience in writing and editing for the student yearbook. Coordinated with the instruction in COMM 351. May be taken three times.

347 Literary Magazine Workshop (1:1:2) Practical experience in leadership roles in public relations, marketing, or sales of the video yearbook. May be taken three times.

348 Radio Workshop II (1:1:3). Prerequisite: COMM 148 or permission of instructor. Intense practical application of previously acquired skills in production, promotion, advertising, public relations, programming, or newswriting for the student radio station, WGMU.

349 Student Leadership Seminar (1:3:0). Prerequisite: 60 hours or permission of instructor. Introduction to leadership concepts. An experiential seminar focusing on practical application of leadership concepts in a student organization setting.

350 Mass Communication and Public Policy (3:3:0). Prerequisite: One of the following: COMM 102, 202, 302, or permission of instructor. Investigation of the manner in which matters of public importance are communicated via the various channels of mass communication. Emphasis on regulations designed to minimize the influence of mass media on public decision making, and manipulation of the media by pressure groups, politicians, and media gatekeepers.

351 Newswriting and Reporting (3:2:2). Prerequisite: ENGL 101 or COMM 203 and 40 wpm keyboard skill. Experience in actual newsgathering. In addition to the news reporting component, numerous in and out-of-class writing assignments train students in the unique writing style of the journalist.

352 News Editing (3:2:2). Prerequisite: COMM 351 and keyboard skills. Techniques of copy editing, including copy preparation, headline writing, news judging, and newspaper make-up. Introduction to working on newspaper copy desks. Applications for anyone preparing copy for publication.

353 Broadcast Journalism (3:3:0). Prerequisite: COMM 351 or permission of instructor, and keyboard skills. Investigation of the unique writing style of journalists in the electronic media. Emphasis on concise, conversational, and timely news writing. Techniques of mixing the words of the report with the sights and/or sounds of the news story.

354 Radio Production (3:1:4). Prerequisite: COMM 302 or permission of instructor. Theory and practice of operational radio broadcasting. Topics include the programming, production, and promotion aspects of commercial and noncommercial radio.

355 Television Production (3:1:6). Prerequisite: COMM 302 or permission of instructor. Theory and practice of television production. Includes work with video and audio equipment in a studio lab. Practice in all operational capacities in production of video programs.

356 Broadcast Performance (3:3:0). Prerequisite: COMM 100, 210, or permission of instructor. Development of radio and television announcing skills. Practice in news, entertainment, commercial, and sports announcing. Discussion of studio technology and voice and diction skills for broadcasting.

357 Television Workshop (1:1:3). Prerequisite: COMM 157 or permission of instructor. Practical experience in electronic field production while working for "GMView," the video yearbook. Video experience necessary.

358 Electronic Field Production (3:1:5). Prerequisite: COMM 302 or permission of instructor. Introduction to the techniques, theory, and practice of television field production, including preproduction, production, and postproduction.
361 Advanced Newswriting and Reporting (3:2:3). Prerequisite: COMM 351 or permission of instructor. Advanced reporting course where students engage in actual newsgathering outside the classroom and writing for publication in the university newspaper or other sources.

362 Argument and Public Policy (3:3:0). Provides students with an opportunity to develop argumentative skills while examining contemporary public policy. Several methods of argumentative analysis are applied to the design and implementation of public policy. Students learn by constructing, examining, and using public argument.

365 Women and Media (3:3:0). Prerequisite: COMM 302 or permission of instructor. Introduces students to the concepts of the power and influence of the mass media. Allows students to see themselves as products of media influence and gives them a sense of women's role as a force within the media as professionals, as well as consumers.

375 Mass Communication Advertising and Promotion (3:3:0). Prerequisite: COMM 302 or permission of instructor. Covers the history, regulation, and ratings of advertising as well as media buying, advertising campaigns, and the strengths and weaknesses of media vehicles used in advertising.

380 Media Criticism (3:3:0). Examines the practical criticism of a wide variety of media texts including television programs, newspapers, articles, films, photographs, and advertisements. Introduces students to the principles of major contemporary modes of analysis for systematically interpreting both visual and verbal forms of communication.

389 Internal and Public Relations Communication for Trade Associations (3:3:0). Prerequisite: 60 hours or 3 hours lower-division COMM credit. Principles of editing and journalism as applied to the publication, public relations, and advertising needs within a corporate environment. Job requirements of editorial positions in the fields of public relations, publications, and information as defined by trade associations, nonprofit organizations, and large corporations.

399 Special Topics in Speech Communication (3:3:0). Prerequisite: Permission of instructor. Study of speech communication through topics such as Afro-American rhetoric and communication refection. Topics vary and some topics require laboratories. May be repeated with permission of department.

400 Introduction to Research Methods in Communication (3:3:0). Prerequisite: 60 hours or permission of instructor. Primary research methodologies used in communication. Rhetorical and experimental-statistical methodologies.

401 Relational Communication (3:3:0). Prerequisite: COMM 301 or permission of instructor. Comprehensive study of the theories and research associated with the development and deterioration of interpersonal relationships. Emphasis on such dimensions as interpersonal needs, norms, rituals, attraction and attribution, intimacy, conflict and conflict resolution, roles, male-female communication, and rhetorical sensitivity.


411 Readers Theater II (3:3:0) Prerequisite: COMM 410. Intensive practice in directing and performing group communication of literature.

412 GOVT 412 Politics and the Mass Media (3:3:0). Prerequisite: GOVT 103 or permission of instructor. Responsibilities and freedoms of the mass media in a democracy. Influence of media on citizens' opinions, on elections, and on decisions of public officials.


430 Persuasion (3:3:0). Prerequisite: COMM 230 or permission of instructor. Theories of persuasive communication including traditional and contemporary attitudinal change theories; the relationship between speaker, message, and audience; and the relationship between attitudinal and behavioral change.

431 GOVT 431 Information Technology and the Political Process (3:3:0). Prerequisite: GOVT 103 or 133, or junior status as a major in communication, or permission of instructor. Study of the impact of the information network of wire and wireless communications and computers on the political process in advanced industrial countries.

434 Interviewing (3:3:0). Prerequisite: 60 hours or permission of instructor. Theory, principles, and practical skills essential to the interview process. Emphasis on situations such as the information-gathering interview, the journalistic interview, the employment interview, and the performance-appraisal interview.

450 Internship in Communication (3:1:10). Prerequisite: 75 hours, 15 hours in COMM, major in COMM, and permission of department. See department for application procedures. On-the-job training in communication through approved field-work study programs. Internships are arranged and supervised by the Department of Communication through an internship coordinator. May be repeated.

451 Facilitating Communication Education (3:1:5) Theory and practice in facilitating the learning of communication principles and skills. Students work as instructor aides in lower-division classes under the supervision of a faculty member. Activities include facilitation of small group activities and individual critiquing of oral performances. May be repeated once for credit.

454 Responsible Communication in a Free Society (3:3:0). Prerequisite: COMM 300, 302, or permission of instructor. Major issues surrounding the role of speech, press, and electronic media in society. Areas of study include the history of free speech/press issues in society, the role of the government in regulating the marketplace of ideas, and the responsibility of the individual in a free society.

455/HIST 455 History of Print Journalism (3:3:0). Prerequisite: 3 hours COMM or HIST credit. Development of print journalism from its inception to the present, with emphasis on the interaction of technology, audience, and government intervention. Topics include
birth of the press, development of the modern newspaper and American development including the Revolutionary and Civil Wars, the rise of the independent press, and the Yellow Journalism period.

456 Comparative Mass Media (3:3:0). Prerequisite: COMM 302 or permission of instructor. Major foreign mass media systems as they compare to the American mass media system. Emphasis on comparing the systems of America, England, France, Germany, and other countries.

460 American Public Address (3:3:0). Prerequisite: COMM 300 or permission of instructor. Analysis of religious, political, and social speaking from colonial times to the present. Such speakers as Susan B. Anthony, Jonathan Edwards, Daniel Webster, and others are considered.

465 Topics in Communication and Gender (3:3:0). In-depth exploration of selected topics involving gender and communication. Topics covered may include women in media, women as rhetors, male/female communication, and communication and sex roles. Specific interests are examined in a seminar setting. Course may be repeated with approval of department.

475 Journalism Law (3:3:0). Prerequisite: permission of instructor. Law as it relates to the working journalist. Topics include libel, invasion of privacy, free press/fair trial, First Amendment, broadcast regulation, access to media, and advertising. Extensive use of the "case approach" involving the study of leading court decisions in mass media law.

499 Independent Study in Communication (3:3:0). Prerequisite: 75 hours and permission of department. In-depth study of a selected area in public, interpersonal, or mass communication or journalism. The independent study application must be processed before the start of the semester in which the work is to take place. May be repeated.

Communication courses at the 500-level are open to postbaccalaureate students or advanced undergraduates with permission of department.

501 Communication in Professional Relationships (3:3:0). Theoretical perspectives and relevant research related to communication techniques useful in various professional roles and situations. Relates theoretical foundations to practice, allowing students to assess theories of communication and their applications in individual professional fields.

502 Theories of Mass Communication (3:3:0). Prerequisite: Admission to Graduate School or senior standing and permission of instructor. Theories of mass communication that have guided the development of mass media. Emphasis on the major scientific and humanistic approaches to the question of mass media effects.

504 Communication and Interpersonal Conflict (3:3:0). Prerequisite: Admission to Graduate School, or senior standing and permission of instructor. Theoretical introduction and experiential learning in the role of communication in conflict management. The focus is upon interpersonal interactions, including dyadic and small-group levels in various settings such as friendships, marriage, family, and the workplace. The course examines the factors that generate conflicts and the communication strategies and skills that help shape conflict interaction toward productive ends. Class activities include lectures, guided discussions, case analyses, exercises, and simulations.

505 Intercultural Communication (3:3:0). Analysis of communication variables as they relate to communication across cultures. Topics include nonverbal communication, time conceptualizations, perceptions and attitudes, values, social organization patterns, cultural norms, language, ethics, conflict across cultures, and research in intercultural communication.

506 Communication in International Organizations (3:3:0). Analysis of communication variables as they relate to organizational and managerial functions within international organizations. Includes developing an understanding of how cultural differences influence managerial activities and on learning to deal effectively with these differences.

510 Studies in Oral Interpretation (3:3:0). A comprehensive examination of the role of the oral communicator in the selection, adaptation, and performance of literature. Seminar course topics vary depending on genre being considered. May be repeated three times for credit if each course is devoted to a different genre.

530 Theories of Small Group Communication (3:3:0). Advanced-level theory and practice of small group interaction. Examination of current research. Focus on learning applications of theories to relevant settings.

531 Approaches to Group Facilitation (3:3:0). Introduces various theoretical and practical approaches to group facilitation with in-depth focus and practice in one approach. Students participate in group sessions, analyze videotapes of decision-making groups, and practice methodologies for facilitating group interaction.

534 Theories of Interpersonal Communication (3:3:0). Prerequisite: COMM 301 or permission of instructor. Analysis of contemporary theories, concepts, and approaches to the improvement of interpersonal communication. Includes extensive examination of interpersonal communication research.

535 Organizational Communication (3:3:0). Analysis of communication systems and processes within organizations, both public and private. Specific topics include conflict management, group decision making, interviewing, technical presentations, and using various channels for improving internal and external communication for the organization.

536 Communication Consulting (3:3:0). Prerequisite: COMM 335. Investigation of theories providing the foundation for communication consulting. Provides both the theoretical information and the mechanisms for application necessary to modify communicative behavior within organizations.

540 Directing Forensics Programs in Individual Events (3:3:0). Investigation of the role of the individual events forensics educator in developing a high school or college program, coaching and judging competitive original speaking and oral interpretation events, and managing tournaments.

542 Directing Debate Activities (3:3:0). Theory and practice of competitive debate. Emphasis on traditional and contemporary theories of debate, administrative ac-
tivities related to the direction of a debate program, and methods of instruction in debate, including analysis of current debate topic. Designed for both novice and experienced debate coaches.

543 Advanced Debate Theory (3:3:0). Prerequisite: Prior debate and/or debate coaching experience or permission of instructor. Theoretical issues involved in the practice of debate. Critical examination of new issues in theory and discussion of theory revisions designed to enhance academic debate.

550 Communication in the Classroom (3:3:0). Prerequisite: 90 hours. Communication theories and skills needed to manage the communicative environment in the classroom. Nonverbal aspects of space, time, action, and form are considered as they affect teaching choices. Verbal patterns for skills of classroom management: questioning skills, enhancing students' self-concept, systematic feedback, parental communication, and student development.

551 Developing Students' Speaking and Listening Skills (3:3:0). Prerequisite: 90 hours. Emphasis on development of assignments that both directly and indirectly develop communication competence in children and adolescents. Covers five functions of communication and their development in the context of integrating basic skills at the elementary level and direct teaching at the secondary level. Philosophies of communication education and curriculum development, as well as competency assessment, are covered.

554 Telecommunications Policy and Regulation (3:3:0). Prerequisite: COMM 302 and senior standing in communication or public affairs, or a baccalaureate degree. Review of the history and principles of telecommunications regulation. Study of relevant policymaking and regulatory institutions and their roles in charting the course of telecommunications in the United States. Examination of the role of citizens and lobby groups in the regulatory process.

555 Theories of Telecommunications Production (3:3:0). Prerequisite: A baccalaureate degree or senior standing in COMM and permission of instructor. Theories of telecommunications production involving computers, computer graphics, television cameras, computerized editing, audio mixing, and the panoply of other production tools available for electronic communication. Explores the problems of fitting messages to the various media including the aesthetic demands of products imposed by new technologies.

556 Global Communication (3:3:0). Prerequisite: COMM 302 and senior standing in communication or public affairs, or a baccalaureate degree. Study of global telecommunication channels and artifacts of international mass communication, with focus on discussion of problems of free flow of information, the roles of nations and international organizations in fostering global communication, and other technologies. Specific perspectives are developed as to worldwide social, political, educational, and economic development.

590 Seminar in Communication (3:3:0). Intensive study of specific topics in interpersonal, public, and mass communication. Specific content varies. May be repeated for credit with permission of department.

596 Directed Readings and Research (1-3:0:0). Prerequisite: Permission of department. Reading and research on a specific topic under the direction of a faculty member. A written report is required; an oral or written examination may be required. Course may be repeated for a maximum of six credits.

597 Independent Production (1-3:0:0). Prerequisite: Permission of department. Media or creative production activities under the direction of a faculty member. A completed production is required; a written report and an oral examination may be required. Course may be repeated for a maximum of six credits.

Comparative Literature (CL)

English/Foreign Languages and Literatures

300 Introduction to Comparative Literature (3:3:0). Prerequisite: 60 hours. Introduction to methods of comparative literature through study, in translation, of a selected theme or motif as it appears in various periods, genres, or national literatures. Readings drawn chiefly from English, American, or European literature; on occasion, non-Western literature is featured.

514 Theories of Comparative Literature (3:3:0). Prerequisite: CL 300 and 90 hours or permission of instructor. Intensive study of the major theories of comparative literature with special emphasis on international movements and their characteristic themes. Students work with texts in the foreign language of their concentration; other texts are studied in translation.

Computer Science (CS)

Computer Science

Knowledge of high school algebra is a prerequisite for all computer science courses.

103 Introduction to Computing (3:3:0). Prerequisite: Knowledge of high school algebra. Introduction to computers and computer programming, including the organization of a computer system, the design and use of computer software, and the types and organization of data. Topics include the use of a computing system and the study and use of a high-level programming language and applications development. This course is intended for noncomputer science majors; credit for this course does not count toward the requirements for a major in computer science. Students who have received credit for CS 112 may not receive credit for this course.

112 Computer Science I (4:3:1). Prerequisite: Second year of high school algebra. Introduction to computer science for majors and others with a serious interest in computer science. Topics include an overview of computer system hardware and organization, problem-solving methods and algorithm development, program structures, abstract data types, simple data and file structures, introduction to analysis of algorithmic complexity and program correctness, and applications development in a high-level programming language that supports modular design.

161 Introduction to a Programming Language (1:1:0). Introduction to basic concepts of a computer language and its applications (e.g., computer graphics, expert systems, data base management packages, business applications).
211 Computer Science II (3:3:0). Prerequisite: Grade of C or better in CS 112. Continuation of CS 112. Topics include abstract data types and data structures (sets, files, strings, linked lists, stacks, queues, trees, graphs) and examples of their applications. Emphasis on program development continues and is reinforced through several larger programming projects. Additional programming language instruction will supplement the major topics of this course.

265 (formerly 311) Assembly Language Programming (3:3:0). Prerequisite: Grade of C or better in CS 211. Symbolic assembly language and computer structures: arithmetic and logical operations; machine representations of numbers, characters, and instructions; input-output and data conversions; addressing techniques; assembler directives; subroutine linkage; and macroprocessing.

330 Formal Methods and Models (3:3:0). Prerequisite: CS 211 and MATH 125. Abstract concepts that underlie advanced work in computer science. Two crucial ideas of computer science—abstraction and language—play a central role. Major segments of the course are abstract data types, finite automata, context-free grammars, and Turing machines as models of computation. Students who have received credit for CS 331 may not receive credit for this course.

332 Object-Oriented Specification and Implementation (3:3:0). Prerequisite: CS 330. Concentrates on the transition from an abstract data type (ADT) specification to its implementation, using C++ as the implementation language. Symbolic logic for reasoning about programs; axiomatic and algebraic methods for ADT specification; introduction to goal-directed programming; term project involves the design and construction of a program incorporating several ADTs.

363 Comparative Programming Languages (3:3:0). Prerequisite: CS 265. Key programming mechanisms described independently of particular machines or languages, including control, binding, procedural abstraction, and types. Systematic survey of diverse high-level language capabilities.

365 Computer Systems Architecture (3:3:0). Prerequisite: CS 265 and ECE 301. Computer hardware organization, software structure, and data organization. Students complete a term project that simulates one computer system on another.

370 Introduction to File Processing (3:3:0). Prerequisite: CS 265. File organization methods and access methods for secondary storage. Examination of sequential and direct file structure on tapes and direct access devices.

421 Introduction to Software Engineering (3:3:0). Prerequisite: CS 265. Techniques in software design and development. Discussion of formal models of structured programming, software engineering methods and tools, functional or object-oriented design, and documentation. Working in teams, students organize, manage, and develop a software engineering project.


440 Language Processors and Programming Environments (3:3:0). Prerequisite: MATH 125, CS 265 and CS 312 or 330. Survey of basic programming language processors and software development tools: assemblers, interpreters, compilers, and CASE tools. Topics include design and construction of language processors, formal syntactic definition methods, parsing techniques, and code generation techniques.

450 Data Base and Object-Oriented Concepts (3:3:0). Prerequisite: CS 365. Data models and data sub-languages for the relational, hierarchical and network approaches to data base management systems. Normal forms. External models, implementation, data independence, alternative logical views of data and object-oriented design. Comparison of approaches in the context of applications.

451 Computer Graphics and Software Design (3:3:0). Prerequisite: CS 211 and MATH 125 or CS 265. Graphics devices and line generation, 2D computer graphics, graphics packages, raster graphics, and a programming project that includes designing a menu-driven system.

455 Computer Networking Systems (3:3:0). Prerequisite: CS 365. Data base systems, data communication systems. Topics include the role of exchanges, concentrators, multiplexers, buffering; network analysis, cost and design; software consideration.


480 Introduction to Artificial Intelligence (3:3:0). Prerequisite: CS 330 or both CS 312 and MATH 125 or 305. Principles of representation, heuristic search, and control in the context of specific intelligent systems in such areas as problem solving, vision, medical diagnosis, and natural language. Includes the LISP programming language as a means of representation.

483 (465) Data Structures and Analysis of Algorithms (3:3:0). Prerequisite: MATH 114; CS 330 or both CS 312 and MATH 125 or 305. Math necessary to properly analyze the computational effort of a given algorithm. Specific algorithms are analyzed and improved.

498 Independent Study in Computer Science (1-3:0:0). Prerequisite: 60 hours, major in computer science, and permission of instructor. Research and analysis of selected problems or topics in computer science. Must be arranged with an instructor and approved by the department chair before registering. May be repeated for a maximum of 6 credits if the topics are substantially different.

499 Special Topics in Computer Science (3:3:0). Prerequisite: 60 hours and permission of instructor; specific prerequisites vary with nature of topic. Topics of special interest to undergraduates. May be repeated for a maximum of 6 credits if the topics are substantially different.
Dance (DANC)

Dance and Theater

101 Dance Appreciation (3:3:0). Introduction to dance as a cultural art form. Elements of dance are examined separately and combined in various dance forms. A brief survey of the basic forms leads to a more intensive study of modern and the new dance. Criticism and evaluation are stressed.

125 Beginning Modern Dance (3:3:0). Develops knowledge, skills, and an appreciation of modern dance through the presentation of fundamental techniques and creative movement experiences.

126 Beginning Intermediate Modern Dance (3:3:0). Prerequisite: DANC 125 or permission of instructor. Designed to further develop the knowledge, skills, and appreciation of modern dance through the continued exploration of techniques, aesthetics, and creativity. May be repeated once for credit.

127 Contemporary Dance I (3:3:0). Prerequisite: Permission of instructor. Beginning technique course in modern dance designed specifically to meet the professional needs of students who have declared, or are seriously considering, a major in dance. May be repeated once for credit.

131 Beginning Jazz Technique (3:3:0). Students are advised to take DANC 125 concurrently. Mechanics of movement in the jazz style of dance. Emphasis on development of techniques for jazz training. May be repeated once for credit.

141 Beginning Ballet (3:3:0). Introduction to the elements of ballet technique and vocabulary. Stress on learning the elementary positions and movements characteristic of this highly stylized art form.

142 Beginning Intermediate Ballet (3:3:0). Prerequisite: DANC 141 or permission of instructor. Further development of knowledge, skills, and appreciation through the technique, vocabulary, and history of ballet. May be repeated for credit.


161 Beginning Tap Dance (3:3:0). Elementary exploration into the rhythms and steps basic to the art form of tap dancing.

224 Intermediate Modern Dance (3:3:0). Prerequisite: DANC 126 or permission of instructor. Continued exploration in movement and motion to further develop technical ability in dance. Emphasis on improvement of technical and performance skills. May be taken four times for credit.

231 Intermediate Jazz Technique (3:3:0). Prerequisite: DANC 131 or permission of instructor. Continued study of movement in the jazz style of dance. May be taken four times.

241 Intermediate Ballet (3:3:0). Prerequisite: DANC 141 or permission of instructor. Continued training at the intermediate level. Emphasis on increasing technical proficiency and aesthetic awareness. May be taken four times.

251 Dance Composition I (3:3:0). Prerequisite: DANC 125 or permission of instructor. Introduction to basic principles for composing movement for dance. Emphasis on simple compositional forms in dance as they apply to the solo performer.

252 Dance Composition II (3:3:0). Prerequisite: DANC 251 or permission of instructor. Exploration of the elements of compositional forms in dance as they apply to group forms. Experience in composing and performing duets, trios, quartets, and small pieces.

270 Dance Production (1-6:0:0). Practical experience in the areas of stage crew, sound, and/or lighting of dance productions through rehearsal to public performance for university dance concerts or guest artist programs. May be repeated for a maximum of 6 credits.

305 Dynamic Alignment (3:3:0). Prerequisite: 6 hours of dance courses; course work in anatomy and biology recommended. Aspects of anatomy and kinesiology that directly apply to the correct development of dance technique. Emphasis on the use of exercise correctives and imagery to correct insufficient muscle pattern and reduce stress upon the body.

313 Rhythmic Analysis and Music Resources for Dance (3:3:0). Prerequisite: MUSI 101, 6 hours prior work in dance, or permission of instructor. Examines the structural discipline of music for dance through example, analytical methods, and compositional procedures. Music resources include study of forms and styles from the medieval period through the twentieth century.

314 Music Accompaniment for Dance (3:3:0). Prerequisite: DANC 313 or permission of instructor. Lecture-practicum course that gives both dance and music students practical experience in dance accompaniment, primarily through the use of percussion instruments. Students use their knowledge of music and rhythmic technique as a complement to enhance a dance technique class.

327 Advanced Modern Dance (3:6:0). Prerequisite: DANC 224 or permission of instructor. Continued training for advanced students. Emphasis on attainment of high-quality technical and performance skills. May be taken eight times.

335 Lighting and Costuming for Dance (3:3:0). Prerequisite: Dance major or permission of instructor. Methodology and practice of lighting and costume design as dictated by the specific needs of the dance performance.

341 Advanced Ballet (3:3:0). Prerequisite: DANC 241 or permission of instructor. Performance lab dealing with ballet at the advanced level. Emphasis on attainment of high-quality technical and performance skills. May be taken eight times.

350 Advanced Dance Improvisation (3:3:0). Prerequisite: DANC 125, 126, and 150, or permission of instructor. Lecture/performance course for continued study of dance improvisation. Each student is responsible for creating and directing advanced problems in dance improvisation.

351 Dance Composition III (3:3:0) Prerequisite: DANC 251 or permission of instructor. A continued exploration and research of both classic and group dance forms. Students gain experience in working on collaborative projects that involve sharing creative responsibilities with other artistic forms (i.e., music, fine arts, visual arts, or theatrical arts).
360 Choreography (3:3:0). Prerequisite: DANC 252 or permission of instructor. Students learn to choreograph a dance work by auditioning dancers, costumeing, staging, lighting, selecting musical accompaniment, and composing original movement material.

370 Dance Performance (1-6:6:0). Prerequisite: Audition or permission of instructor. Practical experience in the areas of performance, repertoire, and choreography through rehearsal and public performance of university dance concerts or guest artist programs. May be repeated for a maximum of 12 credits.

390, 391 Dance History (3:3:0), (3:3:0). Prerequisite: DANC 101 or 6 hours of dance courses. History of dance chronicles its growth and development through the twentieth century. Emphasis on the social, cultural, and philosophical factors shaping the progress of dance in successive historical periods.

420 Special Topics in Dance (3:3:0). Prerequisite: 9 hours of dance courses or permission of instructor. In-depth presentation and exploration of topical studies in dance and/or related study areas, e.g., dance as therapy, avant-garde dance, philosophic approach to twentieth-century dance artists, cinedance. Topic depends on instructor. May be taken twice.

451 Dance Composition IV (3:3:0) Prerequisite: DANC 351 or permission of instructor. An examination of nontraditional and experimental dance forms in the areas of performance art, site specific works, and multimedia approaches.

454 Teaching Principles of Modern Dance (3:3:0). Prerequisite: 6 hours of dance technique and DANC 305. Provides advanced dance students with the methods, principles, and background knowledge for teaching modern dance. Students are expected to apply knowledge gained from previous courses in technique and alignment in the demonstration of their ability to teach a modern dance class.

455/555 Teaching Practicum (1-3:3:0) Prerequisites: DANC 454 and permission of instructor. A full semester of supervised teaching experience in an approved school or studio dance program. Credits are based on number of teaching contact hours per week. May be taken for a maximum of 12 credits.

510 Independent Study (3:0:0). Prerequisite: Dance major with 90 hours, graduate standing in dance or theater, or permission of instructor. Individual research or a creative project in close consultation with an instructor. Project selected from performance, choreography, technical theater as it applies to dance, management, dance history, or criticism.

Decision Sciences (DESC)

School of Business Administration

If a student takes noncore, upper-level business administration courses prior to acceptance to the School of Business Administration, those courses will not count on an undergraduate degree application for any major in the School of Business Administration (except as general elective credit). A grade of C or higher must be presented on the graduation application for each upper-level course in the major. Prerequisites are strictly enforced.

200 Statistical Analysis for Decision Making I (3:3:0) prerequisite: CS 161. Prerequisite: MATH 108 (or MATH 113) with a grade of C or better. Frequency distributions, probability, probability distributions, decision theory, sampling distributions, estimation. Students who have received credit for MATH 256 or 351 may not receive credit for this course.

202 Statistical Analysis for Decision Making II (3:3:0). Prerequisite: DESC 200 with a grade of C or better. Use of statistical methods as scientific tools in the analysis of practical problems in business and economics. Methods include estimation and hypothesis testing, Chi-square tests, analysis of variance, regression and correlation analysis, time series analysis, index numbers, nonparametric statistics.

301 Decision Models in Business and Operations Management (3:3:0). Prerequisite: Completion of at least 60 semester hours including MATH 108 and DESC 202. Examination of the principal functions of operations managers in various settings. Analytic models are used to describe key planning and control activities in both product and service industries. Linear programming, service systems, network analysis, simulation, inventory models, quality control, forecasting, software measurement, and layout models are introduced as tools for effective management. Extensive use of computers in problem solving.

320 Logistics Systems Management (3:3:0). Prerequisite: DES 301. Consideration of design, planning, and development of logistics systems with emphasis on the various logistics activities required throughout the system/product life cycle. Topics include development of concepts and factors in system design, test and evaluation, production/construction, operational support, and system retirement/disposal.

352 Methods and Models of Management Science (3:3:0). Prerequisite: DESC 301. Operation research for general management. Emphasis on effective application of mathematical programming and stochastic process analysis. Topics include linear programming, integer programming, goal programming, decision theory, networks, simulation, Markov processes, inventory theory, and queuing theory. Extensive use of microcomputer software in problem solving.

353 Intermediate Applied Statistics for Management (3:3:0). Prerequisite: DESC 302. Several of the more advanced statistical methodologies of importance in business application including survey sampling, experimental design, multiple regression, and correlation. Techniques are applied to areas such as marketing, personnel, accounting, auditing, and finance. Use of computer packages for analysis.

354 Decision Analysis (3:3:0). Prerequisite: DESC 301. Study of the organization and structure of static and dynamic decisions made under conditions of uncertainty, where there are multiple objectives, attributes, and alternatives. A variety of business applications are considered.

355 Cases in Management Science and Operations Management (3:3:0). DESC 352 and INF 311. Management science techniques and operations management concepts are applied to solve business problems. Case methodology requires identifying and structuring complex problems and performing appropri-
ate analyses. Emphasis will be on drawing useful conclusions and supporting recommendations made in report to management. Includes term project and microcomputer applications of cases.

415 Manufacturing Planning and Control. Prerequisite: DESC 301. Focus on production planning, master production scheduling, material requirements planning, shop floor control, and inventory control. Problems in these areas are examined from the viewpoint of modern computer systems (e.g., MRP II systems) currently used for the control of manufacturing operations.

416 Inventory and Distribution Systems Management. Prerequisite: DESC 352. Application of analytical techniques to problems in inventory management and distribution. Topics include basic and advanced models for managing individual-item inventories, multi-location and multi-echelon inventory management, purchasing, distribution requirements planning, warehousing, and just-in-time inventory management.

435 Computer Simulation (3:3:0). Prerequisite: DESC 202 and INF5 310. Introduction to the basic concepts of simulating complex systems by computer. Topics covered include Monte Carlo methods, discrete-event modeling, a specialized simulation language, and the statistics of input and output analysis.

450 Managerial Economics (3:3:0). Prerequisite: DESC 301. Application of economic reasoning and analysis to management of the firm's resources. Topics include demand theory and analysis, uncertainty and risk in decision making, optimal assignment of resources to production and distribution, measurement of productivity, estimation of cost functions, pricing decisions for joint products and multiple markets, transfer pricing, and related public policy issues.

451 Optimization Models (3:3:0). Prerequisite: DESC 352. Examination of optimization models as applied to business problems. Both linear and nonlinear models are considered including dynamic, integer, and goal programming. Applications to management, finance, and marketing.

452 Forecasting Methods for Management (3:3:0). Prerequisite: DESC 202. Introduction to forecasting, examining alternative models and their application to a variety of business applications. Topics include trend analysis, moving averages, exponential smoothing, adaptive models, multiple regression and correlation, time series analysis.

456 Quality Planning and Control (3:3:0). Prerequisite: DESC 301. Development of the basic concepts and procedures associated with a quality control system. Extensive use is made of modeling and statistical inference in monitoring and evaluating performance quality control functions. Emphasis is placed on the management aspect of the quality control system. Both microcomputers and cases are used.

461 Advanced Operations Management (3:3:0) (formerly MGMT 461). Prerequisite: DESC 352. Advanced study of selected topics in the management of operations in manufacturing and service industries. Examination of integrated systems of production and contemporary topics of automation, technological change, and group technology. Cases and a group project complement lectures.

462 Seminar in Operations Management (3:3:0). Prerequisite: DESC 352. Aspects of productivity, technology, new processes, materials, products, equipment, and facilities. Implications of new technology in managing the operation (production) function are treated. Lecture, discussion, cases, and problems.

491 Seminar in Decision Sciences (3:3:0). Prerequisite: DESC 352 and INF5 311. Topics include contemporary research findings and case studies of decision sciences in business and other organizations.

492 Field Experience in Decision Sciences (3:3:0). Prerequisite: DESC 352 and INF5 311. Faculty-governed field experience in a Northern Virginia business. Teams of students, matched with client firms through the Entrepreneurship Center, propose action plans relating to a major problem or opportunity faced by the company.

499 Independent Study in Decision Sciences (1-3:0:0). Prerequisite: DESC 352 and INF5 311. Investigation of a business problem according to individual interest, utilizing state-of-the-art decision science methodology.

Economics (ECON)

Economics

Individual courses taken for credit under their former numbers may not be repeated for credit under their present numbers. A grade of C or better in ECON 103 and 104 is a prerequisite for all other economics courses.

103 Contemporary Economic Principles and Issues I (3:3:0). (May be taken after ECON 104). Introduction to microeconomics in the context of current problems. Explores how the market mechanism allocates scarce resources among competing uses; uses basic tools of supply and demand and production and distribution theory to analyze diverse problems.


306 Intermediate Microeconomics (3:3:0). Prerequisite: ECON 103 and 104, and MATH 108 or 113. Basic factors of price and distribution theory, including analysis of demand, costs of production and supply relationships, and price and output determination under various market structures.

309 Economic Problems and Public Policies (3:3:0). Prerequisite: ECON 103 and 104 or permission of instructor. Important economic problems in light of current and proposed public policies.

310 Money and Banking (3:3:0). Prerequisite: ECON 103 and 104 or permission of instructor. Monetary, commercial, and central banking systems, with particular emphasis on relationship with American government programs, fiscal policies and controls.

311 Intermediate Macroeconomics (3:3:0). Prerequisite: ECON 103 and 104 or permission of instructor. Aggregate economic accounts, including the measurement of national income; determinants of levels of income
and output; and causes and solutions for problems of unemployment, inflation, and economic growth.

316 Economic Growth and Business Cycle (3:3:0). Prerequisite: ECON 310 or 311 or permission of instructor. Factors contributing to sustained economic growth with additional emphasis on business fluctuations and their measurement.

320 Labor Problems (3:3:0). Prerequisite: ECON 103 and 104 or permission of instructor. American labor unions and their effect on society. Causes of and proposed solutions to selected problems.

321 Economics of Labor (3:3:0). Prerequisite: ECON 306. Factors that determine levels of wages and employment and economic consequences. Attention is directed to recent developments in unionism, collective bargaining, and industrial technology.

322 Economics of Income Distribution (3:3:0). Prerequisite: ECON 103 and 104. Theoretical models of functional and personal distribution of income with emphasis upon human capital welfare considerations and screening.

330 Public Finance (3:3:0). Prerequisite: ECON 306 or permission of instructor. Intergovernmental financial relationships; types, incidences, and consequences of taxation; other sources of governmental income; governmental expenditures and their effect; public economic enterprises; public borrowing; debt management and its economic effect.

340 Introduction to Mathematical Economics (3:3:0). Prerequisite: ECON 306 and 311 and MATH 113 and 114, or permission of instructor. Mathematical treatment of the theory of firm and household behavior, stabilization policy, growth theory, input-output analysis, and linear programming.

345 Introduction to Econometrics (3:3:0). Prerequisite: ECON 306 and 311 and DESC 200 and 202. Modern statistical techniques in estimating economic relations.

350 Regional and Urban Economics (3:3:0). Prerequisite: ECON 306 or permission of instructor. Regional development and metropolitan growth, including locational decisions of households and firms and problems associated with high-density urban economic activity.

360 Economics of Developing Areas (3:3:0). Prerequisite: ECON 103 and 104 or permission of instructor. Economic growth characteristic of developing countries. Economic development, obstacles to development, policies, and planning.

361 Economic Development of Latin America (3:3:0). Prerequisite: ECON 103 and 104 or permission of instructor. Economic development, institutions, and problems of Latin America.

365 Topics in Economic History (3:3:0). Prerequisite: ECON 103 and 104. Subject matter varies. Possible topics include ancient, medieval, modern European, and American economic history, using econometric analysis as necessary. May be repeated once for credit with permission of instructor.

370 Economics of Industrial Organization (3:3:0). Prerequisite: ECON 306 or permission of instructor. Factors influencing industrial structure and industrial conduct and performance.

375 Economics of Transportation (3:3:0). Prerequisite: ECON 103 and 104. Transportation industry in the U.S. Structure modes and economic problems of the competing types of transportation.

380 Comparative Economic Systems (3:3:0). Prerequisite: ECON 103 and 104 or permission of instructor. Theory, programs, and practices of economic systems including capitalism, socialism, and fascism.

385 Soviet Economic System (3:3:0). Prerequisite: ECON 306, or ECON 103 and permission of instructor. General survey of the Soviet economic system and its institutions including historical and ideological background. Selected topics following the survey include analysis of Soviet agriculture, foreign economic relations, consumption, and defense expenditures.

390 International Economics (3:3:0). Prerequisite: ECON 306 and 311 or permission of instructor. Foreign exchange market, balance of payment, foreign trade policies, and theories of international trade.

403 Austrian Economics (3:3:0). Prerequisite: ECON 306 and 311. Microeconomic and macroeconomic models and the misallocation of resources. Alternative economic tools from the unique a priori and subjectivist approach of noted Austrian economists.

410 Public Choice (3:3:0). Prerequisite: ECON 306. Application of economic theory and methodology to the study of nonmarket decision making.

412 Game Theory and Economics of Institutions (3:3:0). Prerequisite: 306 or permission of instructor. Introduction to game theory and its relevance for the analysis of the framework of rules and institutions within which economic processes occur. Application of game theoretical concepts to a comparative analysis of the causes and effects of alternative institutional arrangements.

481 The Development of Economic Thought (3:3:0). Prerequisite: ECON 306 and 311 or permission of instructor. Development in economic thought from 1500 to the present. Emphasis on historical origins, impact on contemporary economics, and theoretical validity.

490 Senior Seminar on Problems in Economics (3:3:0). Prerequisite: ECON 306 and 311, DESC 200 and 202, and 90 hours; economics majors only. Application of economic tools to investigate problems in economics.

496 Special Topics in Economics (3:3:0). Prerequisite: ECON 306, 311, or permission of instructor. Subject matter varies. May be repeated once for credit with permission of the department.

497 Economic Research Workshop (3:3:0). Prerequisite: ECON 306 and 311 and DESC 200 and 202. Individual research project proposed by instructor or in conjunction with other departmental courses. Project includes research design, data collection, use of program packages, data processing, and analysis. Culminates in the preparation of a substantial paper.

498 Seminar in Economics (3:3:0). Prerequisite: ECON 306 and 311 and permission of instructor. Current economic problems studied and discussed in seminar format.
499 Independent Study (1-3:3:0). Prerequisite: Open only to economics majors with 90 hours and permission of both department and instructor. Individual study of a selected area of economics. Directed research paper required.

Education (EDUC)

See the catalog section on Graduate Course Enrollment by Undergraduates for university rules governing undergraduates enrolling in 500-level courses. For graduate level course descriptions, please see the Graduate Catalog.

300 Introduction to Teaching (3:3:0). Introduction to the teaching profession through examination of the roles of a teacher, the nature of American schools, and the students' potential contributions. Field experience required.

301 Educationally Diverse Populations: Handicapped, Gifted, Multicultural (3:3:0). Introduction to the psychological, sociological, educational, and physical aspects of diverse populations to today's schools for early and middle education. Litigation and legislation pertaining to the education of diverse populations are emphasized. Field experience required.

302 Human Growth and Development (3:3:0) Examines human development through the life span with special emphasis on the cognitive language, physical, social, and emotional development of children. Contemporary theories of human development and their relevance to educational practice will be emphasized. Field experience required.

418 Student Teaching in Music Education (9:9:0). Prerequisite: Completion of requirements for admission to the music education concentration and admission to and good standing in the teacher education program. Intensive, supervised clinical experience in approved Virginia schools, and supplemental course work appropriate for the student's area of concentration (vocal/choral or instrumental). Experiences in elementary and/or secondary school settings.

Electrical and Computer Engineering (ECE)

Electrical and Computer Engineering

240 Introduction to Microcomputer Applications (3:3:0). Introduction to hardware and software fundamentals of a typical microcomputer system. Topics include programming techniques, hardware considerations in various research applications, case study of microcomputer implementation, computer graphics, real-time man-machine interaction, word processors, and how to choose a microcomputer system. (Not intended for those majoring in computer and electrical engineering.)


286 Electric Circuit Analysis II (3:3:0). Prerequisite: Grade of C or better in ECE 285; corequisite: MATH 304. Principles of linear circuit analysis dealing with the frequency domain. Topics include sinusoidal excitation and phasors, AC steady-state analysis and power, complex frequency and network functions, frequency response, transformers, two-port networks, state variable analysis, Fourier methods, and Laplace transforms.

301 Digital Electronics (3:2:2). Introduction to digital systems, circuits, and computers. Topics include binary systems and codes, digital logic gates and circuits, microelectronics and integrated circuits, coding and multiplexing, multivibrators, shift registers, counters, A/D converters, and elementary computer architecture. (Not intended for those majoring in computer and electrical engineering.)

302 Electronics (4:3:3). Prerequisite: PHYS 346 or 351 or permission of instructor. Lecture and laboratory course in electronics, semiconductor physics, electronic devices and circuits, feedback, design and operational characteristics of power supplies, amplifiers, and oscillators. (Not intended for those majoring in computer and electrical engineering.)

305 Electromagnetic Theory (3:3:0). Prerequisite: PHYS 352 and a grade of C or better in MATH 304. Static and time varying electric and magnetic fields, di-electrics, magnetization, Maxwell's Equations, and introduction to transmission lines. This course uses vector calculus and complex algebra.

331 Digital System Design (3:3:0). Prerequisite: Grade of C or better in ECE 285. ECE 332 is normally taken concurrently with ECE 331. Credit may not be received for ECE 301 and 331. Principles of digital logic and system design. Topics include number systems; logic fundamentals; simplification of Boolean functions; combinational logic; synchronous and asynchronous sequential logic; flip-flops, registers, counters, memory and arithmetic circuits; digital system design case studies; and elementary computer architecture.

332 Digital Electronics and Logic Design Lab (1:0:3). Prerequisite: PHYS 351 or permission of instructor; corequisite: ECE 331. Lab associated with ECE 331.

333 Linear Electronics I (3:3:0). Prerequisite: Grade of C or better in ECE 286, PHYS 352 or equivalent. ECE 334 is normally taken concurrently with 333. Credit may not be received for ECE 302 and ECE 333. Principles of operation and application of electron devices and linear circuits. Topics include semiconductor properties, diodes, bipolar and field effect transistors, biasing, amplifiers, frequency response, operational amplifiers, and analog design.

334 Linear Electronics Lab I (1:0:3). Prerequisite: PHYS 351 or permission of instructor; corequisite: ECE 333. Lab associated with ECE 333.

360 Basic Signal and System Analysis (3:3:0). Prerequisite: Grade of C or better in ECE 286, MATH 303, and MATH 304. Mathematical modeling of signals and systems. Transform Techniques—Fourier, Laplace, and Z-transforms. State variable techniques. Design and analysis of digital and analog filters. Applications are drawn from communications, circuits, control, and signal processing.
410 Introduction to Signal Processing (3:3:0). Prerequisite: A grade of C or better in ECE 360 and MATH 351 or STAT 344. Introduction to statistical signal processing. Review of probability theory with emphasis on continuous random variables and transformations. Treatment of discrete-time signals with introduction to sampling and filtering of random signals. Spectral analysis of random signals, detection of signals in noise, and estimation of signal parameters.

421 Classical Systems and Control Theory (3:3:0). Prerequisite: A grade of C or better in ECE 360 or permission of instructor. Introduction to the analysis and synthesis of feedback systems. Functional description of linear and nonlinear systems. Block diagrams and signal flow graphs. State-space representation of dynamical systems. Frequency response methods. Root Locus, Nyquist, and other stability criteria. Performance indices and error criteria. Applications to mechanical and electromechanical control systems.


429 Control Systems Lab (1:0:3). Prerequisite: ECE 421; corequisite: ECE 422. Laboratory experiments for topics in control systems analysis, design, and implementation with an emphasis on the use of microcomputers.

430 Principles of Semiconductor Devices (3:3:0). Prerequisite: MATH 304, ECE 305, and a grade of C or better in ECE 333, or permission of instructor. Introduction to solid state physics and its application to semiconductors and semiconductor devices. Topics include band theory, doping, p-n junctions, diffusion theory, low frequency circuits, devices including bipolar transistor, MOSFET, CMOS, photo transistors.

431 Digital Circuit in Design (3:3:0). Prerequisite: A grade of C or better in ECE 331 and 333. Analysis and design of discrete and integrated switching circuits. Topics include the transient characteristics of diodes, bipolar, and field-effect transistors; MOS and bipolar inverters; nonregenerative and regenerative circuits; TTL, ECL, III, NMOS, and CMOS technologies; semiconductor memories; VLSI design principles; and SPICE circuit analysis.

433 Linear Electronics II (3:3:0). Prerequisite: A grade of C or better in ECE 333. A second course in linear electronics covering the following topics: differential amplifiers, feedback circuits, power amplifiers, feedback amplifier frequency response, analog integrated circuits, operational amplifier systems, oscillators, wide band and microwave amplifiers, and computer-aided design.

434 Linear Electronics II Laboratory (1:0:3). Prerequisite: ECE 334. Corequisite: ECE 433. A second lab course in linear electronics involving analysis and design of the topics listed in ECE 433.

435 Digital Circuit Design Laboratory (1:0:3). Corequisite: ECE 431. Lab experiments for topics covered in ECE 431.


445 Computer Organization (3:3:0). Prerequisite: Grade of C or better in ECE 331 or 301. General overview of the operation of a digital computer. Includes computer arithmetic, the Arithmetic Unit, instruction set and addressing modes, DEC PDP-11 and VAX 11/780 systems, hardware and microprogramming control, memory, and input/output. Examples of actual computers and microprocessors.

447 Single-Chip Microcomputers (4:3:3). Prerequisite: ECE 332 and 445, both with a grade of C or better, or permission of instructor. Designing with single-chip microcomputers and microcomputer interfacing. Topics include the role of microcomputers as compared to microprocessors and other computers, microcomputer architecture and organization, real-time control issues, assembly language programming for control, design of control software, input/output methods, design tools, and available single-chip microcomputers. Students select a project and design and construct a system including a single-chip microcomputer and the ancillary hardware to implement a control system.

449 Computer Design Lab (1:0:3). Prerequisite: ECE 445. Laboratory course providing experience in the design and fabrication of a digital computer. Includes the specification of a computer system and the fabrication of a multichip random access memory, an arithmetic and logic unit and associated registers, input/output circuitry, and a control unit. The above entities are then combined to form a simple computer. Medium-scale integrated circuitry is used.

450 Introduction to Robotics (3:3:0). Prerequisite: ECE 360. Introduction to robotic manipulator systems. Topics include an overview of manipulation tasks and automation requirements; actuators, sensors, and computer interfaces; arm and hand kinematics; path, velocity, and force control; elements of computer vision; and real-time programming languages. Design projects will be conceived, simulated, and tested by the students.

451, 452 Energy Conversion I, II (4:3:3). Prerequisite: ECE 305 or permission of instructor. Study of energy needs, sources, conversion, and use. Electric power generation, transmission, and use. Electromechanical, electromagnetic, nuclear, and nonconventional energy conversion and transmission methods. Synchronous machines and generators. Solar cells, thermionic converters, fuel cells, and batteries.

460 Communication and Information Theory (3:3:0). Prerequisite: A grade of C or better in ECE 333, MATH 351 or STAT 344, and ECE 360, or permission of instructor. Signal analysis, Fourier transform, power spectrum, and sampling. Concepts of information content and channel capacity. Principles of modulation: amplitude, frequency, and phase modulation. Frequency and time division multiplexing. Digital transmission. Pulse Code Modulation and Delta Modulation. Applications to radio, telephone, and satellite systems.

461 Communication Engineering Laboratory (1:0:3). Prerequisite: ECE 460. Lab experiments in the analog and digital communication areas covered in ECE 460.
462 Data and Computer Communications (3:3:0). Prerequisite: ECE 460. Introduction to modern data and computer communications system. Topics include transmission links, modem and codec designs, packet switching, computer networks and protocol satellite broadcasting, optical-fiber wideband local area networks, data link control, multiplexing concentrator design, error-control coding, and examples of computer networks.

463 Digital Communications Systems (3:3:0). Prerequisite: ECE 460. Introduction to digital transmission systems. Topics include quantization, digital coding of analog waveforms, PCM, DPCM, DM, broadband transmission, digital modulation schemes, ASK, FSK, PSK, MSK, QAM, pulse shaping, intersymbol interference, partial response, voice-band and wideband modems, digital cable systems, regenerative repeaters, clock recovery and jitter, multipath fading, digital radio design, optimal receiver design, MAP receiver, and probability of error.


469 Microwave Circuit Laboratory (1:1:2). Prerequisite: ECE 305 and 334, or permission of instructor. Introduction to microwave engineering laboratory techniques and measurements. Design, fabrication, and test of microwave microstrip circuits.

490 Advanced Design Project (3:3:0). Prerequisite: 100 hours in electrical engineering program. Students conceive, design, construct (as appropriate), and test a project. Final oral and written reports are required at project's completion.

491 Engineering Seminar (1:1:0). Prerequisite: 100 hours in electrical engineering program. Engineering ethics, professionalism, the role of the engineer in society, current topics, and employment opportunities.

492 Senior Advanced Design Project I (1:1:0). Prerequisite: Senior status in electrical engineering program. Senior design project is conceived and feasibility of the proposed project is determined. Work includes development of a preliminary design and plan of study.

493 Senior Advanced Design Project II (2:2:0). Prerequisite: ECE 492, preferably in the preceding semester. Project for which preliminary work was done in ECE 492 is implemented. Includes design, construction of hardware, writing required software, conducting experiments or studies, and testing the complete system. Final oral and written reports are required at project's completion.

498 Independent Study in Electrical and Computer Engineering (1-3:3:0). Directed self-study of special topics of current interest in ECE. Must be arranged with an instructor and approved by the department chair before registering. Can be taken for a maximum of three credit hours.

499 Special Topics in Electrical Engineering (1-3:3:0). Prerequisite: Permission of instructor. Specific prerequisites vary with the nature of the topic. Topics of special interest to undergraduates. May be repeated for a maximum of 6 credits if the topics are substantially different.

511 Microprocessors (3:3:0). Prerequisite: ECE 445 or equivalent. Introduction to microprocessor architecture and structure. Intel 8080/8085 and Z-80 architecture and programming microcomputer bus structure; microcomputer memory; microcomputer I/O, interrupt, DMA, and interface; microcomputer development systems; and applications examples. Introduction to 16-bit microprocessors. Includes a project involving hands-on experience with microcomputer systems.

512 Real-Time Microprocessor Systems (3:3:0). Prerequisite: ECE 421 and 511 or equivalent. Real-time microprocessor systems with emphasis on control, interfacing techniques, real-time operating systems, and related applications. Topics include basic input-output, interfacing the peripheral analog circuitry, operating systems, programming techniques, process control with microcomputers, and microprocessors for communications. Course includes a simulation and design project.

513 Applied Electromagnetic Theory (3:3:0). Prerequisite: ECE 305 or equivalent. Maxwell's Equations, electromagnetic wave propagation, wave guides, transmission lines, radiation, and antennas.

516 Advanced Microprocessors (3:3:0). Prerequisite: ECE 511 or equivalent. 16-bit and 32-bit microprocessors. Detailed study of the Intel 8086 and Motorola 68000 families (up to 80386 and MC68020). Auxiliary chips of the above families, microcomputers, and applications. Brief coverage of NS32000, Z8000, Z80000, AT&T WES32100, NEC V70, V71, DEC MicroVAX 78032. Course includes a lab project and demonstration involving the Intel 8086 and MC68000 systems.

520 Electronic Systems Analysis (3:3:0). Prerequisite: ECE 433 or equivalent. Study of electronic circuits from a systems viewpoint. Topics consist of the analog building block circuits used in linear design including operational amplifiers, voltage regulators, power amplifiers, video amplifiers, oscillators, modulators, phase detectors, phase-locked loops, multipliers, active filters, A/D and D/A converters, and optoelectronic circuits.


528 Random Processes in Electrical and Computer Engineering (3:3:0). Prerequisite: ECE 360 and MATH 351 or equivalent. Topics include random signals and noise in communications, stationary and ergodic random processes, spectral analysis, Gaussian processes, Brownian motions, mean square estimation, Kalman and adaptive filtering, Markov processes, and Poisson processes. Applications are drawn from computer, communication, control, and signal processing.

535 Digital Signal Processing (3:3:0). Prerequisite: ECE 360 and ECE 528 or permission of instructor. Repres-

546 Parallel Computer Architectures (3:3:0). Prerequisite: ECE 445. Study of computation schemata, Petri nets, parallel floating point operations, instruction handling techniques, pipeline systems, functional parallelism, memory organization, arbitration and deadlock, pipeline computer architecture, and massive parallelism.

548 Sequential Machine Theory (3:3:0). Prerequisite: ECE 331 and MATH 305, or permission of instructor. Theoretical study of sequential machines. Topics include sets, relations and lattices, switching algebra, functional decomposition, iterative networks, representation, minimization and transformation of sequential machines, state identification, state recognizers, and linear and stochastic sequential machines.

563 Microwave Engineering (3:3:0). Prerequisite: ECE 305 or permission of instructor. Study of the generation, control, and propagation of microwave signals. Transmission lines, waveguides, resonators, scattering parameters. Smith charts, measurement techniques, instrumentation, and microwave devices.

565 Introduction to Optical Electronics (3:3:0). Prerequisite: ECE 305 and 333 and PHYS 352. Introduction to optical systems for information gathering, transmission, storage, and processing. Topics include introduction to lasers, solid-state detectors, and optical fibers; variety of optical sensors, imaging and nonimaging; optical data storage techniques and optical signal processing; and optical communications.

567 Optical Fiber Communications (3:3:0). Prerequisite: ECE 565. Study of the components and integration of fiber optic transmission systems. Topics include optical fibers, signal degradation, optical sources, power launching and coupling, photo detectors, receiver circuits, link analysis, and optical measurements.

571 Network Analysis (3:3:0). Prerequisite: ECE 333 or permission of instructor. Study of linear active and passive networks. Topics include graph theory, network properties, scattering parameters, frequency and time domain representation, sensitivity measures, Tellegen’s theorem, and computer-aided design.

584 Solid-State Device Theory (3:3:0). Prerequisite: ECE 430 or permission of instructor. Study of the theory of semiconductor devices based on solid-state physics. Topics include physics and properties of semiconductors, p-n junction diode, metal-semiconductor contacts, MIS diode and CCD, and bipolar and field-effect transistors.

586 Digital Integrated Circuit Analysis and Design (3:3:0). Prerequisite: ECE 331, ECE 430, or permission of instructor. Study of the devices and circuit topologies used in digital integrated circuits. Topics include large signal active device models, MOS and BJT gates, regenerative logic circuits, semiconductor memories, and LSI and VLSI circuits.

587 Analog Integrated Circuit Analysis and Design (3:3:0). Prerequisite: ECE 333, ECE 430, or permission of instructor. Study of the devices and circuit topologies used in analog integrated circuits. Topics include active device models, differential amplifiers, current sources, output stages, operational amplifiers, comparators, frequency response, noise, and computer-aided design.

590 Selected Topics in Engineering (3:3:0). Prerequisite: Graduate standing or permission of department. Selected topics from recent developments and applications in various engineering disciplines. Designed to help the professional engineering community keep abreast of current developments.

Engineering (ENGR)

School of Information Technology and Engineering

107 Engineering Fundamentals (2:2:0). Introduction to engineering profession fundamentals and problem solving. Topics include description of engineering disciplines, awareness of the engineer, professionalism, ethics and registration, problem solving and representation of technical information, mechanical drawing, estimation and approximations, and analysis and design.


183 Engineering Computer Graphics (3:2:3). Prerequisite: ENGR 107 or permission of instructor. Fundamentals of engineering drawing, graphic communication, descriptive geometry, multiview projection, and graphical analysis. Introduction to computer-aided drafting, visualization, and pictorial views. Reading of engineering drawings.


209 Material Science (3:3:0). Introduction to microscopic structure of engineering materials and effects on macroscopic properties. Topics include crystalline and amorphous structures and defects, semiconductors, ceramics, metals, and polymers.

210 Engineering Mechanics (3:3:0). Prerequisite: PHYS 250, MATH 114, and CS 112. Resolution and composition of forces and torques by analytical methods and analysis of equilibrium and dynamics of rigid bodies. Topics include friction, stability, equations of
motion, and planar kinematics of rigid bodies including simple robotic applications.

260 Measurements and Surveying (3:3:0). Prerequisite: ENGR 107. An introduction to state-of-the-art equipment and software for digitizing and computer utilization of field data, satellite positioning, and other modern surveying procedures, with special emphasis on land measurements, mapping, and surveying. Inherent errors in these measurements and methods of diagnosis, detection, and correction of them. Laboratory exercises involving linear and angular measurements, open and closed traverses. Topographic mapping, video, remote sensing, and optical techniques in surveying.

307 Engineering Thermodynamics (3:3:0). Prerequisite: MATH 213 and PHYS 250. Classical concepts of energy and temperature, first and second laws and their application to closed and open thermodynamic systems. Properties of pure substances, equation of state, and analysis of thermodynamic processes and systems. Application to engineering systems.

310 Mechanics of Materials (Formerly 208) (3:3:0). Prerequisite: ENGR 205 or 210. Concepts of stress, strain, elasticity and plasticity, combined stress, torsion, stresses and deflection of beams, statically indeterminate members, unsymmetrical bending, and buckling of columns.

311, 312 Mathematical Methods in Physics and Engineering (3:3:0), (3:3:0). Prerequisite: PHYS 352 and MATH 304 or 306 for ENGR (PHYS) 311; ENGR (PHYS) 311 or MATH 313 for ENGR (PHYS) 312. Study of mathematical techniques as applied in physics and engineering. Ordinary and partial differential equations, special functions, Fourier series, Laplace transforms, integral equations, matrices and complex variables.

355 Computer-Aided Design (3:2:3). Prerequisite: ENGR 205 or 210 and CS 112. Introduction to computer-aided design. Mechanical, architectural, and electronic drafting by computer; graph plotting; 2D and 3D wire-frame drawings; programming of menus; isometric and perspective drawing; color shading; animation; and introduction to computer-integrated manufacturing (CIM). Students write an interactive, menu-driven program with graphical output for solution of an engineering design problem.

390 Engineering Economy (3:3:0). Prerequisite: ENGR 107 and 205 or 210. Introduction to economic decision process in engineering design and analysis. Topics include methodology for selection of alternatives, measures of investment worth, income and cost evaluation, depreciation methods, benefit-cost and cost-effectiveness techniques, and applications of decision trees to capital investment.

498 Independent Study in Engineering (1-3:3:0). Prerequisite: 60 hours; must be arranged with an instructor and approved by department chair before registering. Directed self-study of special topics of current interest in ENGR. May be repeated for a maximum of 6 credits if the topics are substantially different.

499 Special Topics in Engineering (3:3:0). Prerequisite: 60 hours and permission of instructor; specific prerequisites vary with the nature of the topic. Topics of special interest to undergraduates. May be repeated for a maximum of 6 credits if the topics are substantially different.

English (ENGL)

English

Three credit hours of a 100-level English course are prerequisite for all 200-level courses; 3 credit hours of a 100-level English course and 6 credit hours of 200-level English courses are prerequisite for all English courses numbered above 302. Any two English courses on the 200 level, taken in any order, may be used to fulfill the general education requirement in literature.

Nonnative speakers of English with limited proficiency in the language are encouraged to take ENGL 100 instead of ENGL 101. Students may not receive credit for both ENGL 100 and ENGL 101.

100 Composition for Nonnative Speakers of English (4:4:0). For nonnative speakers of English with limited proficiency in the language. Expository writing, ranging from paragraphs to essays of some length and complexity. Study of the logical, rhetorical, and linguistic structure of expository prose, with attention to particularly difficult aspects of the language for nonnative speakers. Methods and conventions of preparing research papers. Students must attain a minimum grade of C to fulfill degree requirements.

101 Composition (3:3:0). ENGL 101 (or ENGL 100) is prerequisite to all 200-level and above English courses. Expository writing, ranging from paragraphs to essays of some length and complexity. Study of the logical, rhetorical, and linguistic structure of expository prose. Methods and conventions of preparing research papers. Students must attain a minimum grade of C to fulfill degree requirements.

203, 204 Western Literary Masterworks (3:3:0), (3:3:0). Great works of Western civilization. 203: Writers such as Homer, Sophocles, Euripides, Dante, Cervantes, Machiavelli, and Montaigne. 204: Writers such as Racine, Moliere, Flaubert, Dostoyevsky, Tolstoy, Mann, Malraux, Ionesco, and Beckett. All readings in modern English.

205, 206 Readings in English and American Literature (3:3:0), (3:3:0). English and American literature by types. ENGL 205 focuses on selected English and American poetry and drama by such writers as Marlowe, Shakespeare, Shaw, O'Neill, Albee, Donne, Keats, Whitman, Frost, Eliot, and Auden. ENGL 206 focuses on selected English and American novels, short stories, and essays by such writers as Lawrence, Hainingway, Faulkner, Melville, Crane, E. Bronte, Fitzgerald, and Barth.

207, 208 Literature and Society I, II (3:3:0), (3:3:0). Study of the way in which literature has explored questions of continuing primary importance. Works are selected principally from English and American literature and a variety of genres is considered. ENGL 207 addresses a complex of related issues found in such topics as individuality, community, gender relationships, technology, social conflict, or war and considers how these issues are explored in the literature of at least two historical periods before the present. Each section of ENGL 208 deals intensively with a single topic as represented in the literature of a single historical moment.

251 Survey of English Literature I (3:3:0). Major movements and works of English literature focusing on
the writings of such authors as Chaucer, Spenser, Shakespeare, Donne, and others.

252 Survey of English Literature II (3:3:0). Major movements and works of English literature, focusing on the writings of such authors as Wordsworth, Tennyson, the Brownings, Dickens, Yeats, Woolf, and others.

253 Survey of American Literature I (3:3:0). Major movements and works of American literature to 1877, focusing on the writings of such authors as Franklin, Poe, Emerson, Whitman, Hawthorne, Melville, Dickinson, Stowe, and others.

254 Survey of American Literature II (3:3:0). Major movements and works of American literature after 1877, focusing on such writers as Twain, Chopin, O'Neill, Frost, Faulkner, Stevens, Miller, Olsen, and others.

302 Advanced Composition (3:3:0). Prerequisite: Completion of 45 credit hours, 3 credits of composition, and 3 hours of literature. Intensive practice in writing and analyzing such expository forms as the essay, article, proposal, and technical or scientific report. The Schedule of Classes designates particular sections of ENGL 302 in the following broad areas: business, humanities, natural sciences, social sciences.

309 Independent Writing (3:3:0). Practice in analyzing and writing such expository forms as the essay, memo, article, and technical and scientific reports, depending on the needs of the individual student. (Not a remedial course.)

325 Dimensions of Literature (3:3:0). Intensive study of the basic concepts, questions, and assumptions of the study of literature. All sections address the study of genre and of literary history. Other issues such as author, region; ethnic, racial and sexual groups; and oral and popular culture are addressed in various sections of the course. Open to all majors; required of all English majors. A minimum grade of C is required.


332 Introduction to Film (3:3:0). Introduction to film medium as an art form.

333 American Folklore (3:3:0). Topics include folktales, personal narratives, legends, proverbs, jokes, folktonges, folk art, folk craft, and folk architecture. Consideration of ethnicity, community, family, festival, folklore in literature, and oral history. Discussion of traditions in students' own lives.

334 Literary Approaches to Popular Culture (3:3:0). Emphasis on popular fiction and adaptation of popular prose genres to media that have strong verbal and visual elements. Relationship between verbal and nonverbal elements of such media as film, comics, and radio.

335, 336 Shakespeare (3:3:0), (3:3:0). Twenty selected plays: first semester emphasizes histories and comedies; second semester, tragedies and romances.

337 Myth and Literature (3:3:0). Study of the ways in which the traditional mythologies have been reflected in English and American literature as themes, motifs, and patterns.

340 American Visions (3:3:0). Survey of influential and representative American cultural texts that attempt to define the American community and the struggle of subordinate groups for fuller participation in the life of the nation. Emphasis on the close analysis of primary texts, especially literary works, and their relationship to the larger cultural context.

347, 348, 414, 415 Honors I, II, III, IV (3:3:0), (3:3:0), (3:3:0), (3:3:0). Prerequisite: Permission of department. Seminar sequence primarily, but not exclusively, for candidates for graduation with distinction and recognition in English, usually taken in order. A systematic consideration of the nature and implications of literary understanding. What is involved in "understanding" a text, an author's style, a genre? What do we mean by "literary history"? Specific texts and contexts from different periods of English and American literature are studied to consider the virtues and limitations of various perspectives on literary experience and their relation to other areas of humanistic learning.

Honors I: A single major work, studied systematically in several different ways. Emphasis on multiple critical perspectives, and what each reveals or fails to account for.

Honors II: The career of a major author: the gradual assumption of authority, development of themes and techniques, interaction of life and work, and adjustment of artistic vision to cultural change.

Honors III: An interdisciplinary cross-section of a particular historical moment: relations between literature and fine art, theology, philosophy, social and political history, and scientific thought.

Honors IV: A single theme or motif traced through many literary periods and in a variety of genres. Literary history as the evolution of the ways fundamental questions have been articulated.

360, 363 Special Topics in Literature (3:3:0), (3:3:0). Study of literature by topics, such as women in literature, science fiction, and literature of the avant garde. Topic changes each time the course is offered. May be repeated with permission of department.

364 Significant Authors (3:3:0). One or two major authors, such as Shakespeare, Dickens, and Hardy, or Tolkien and C. S. Lewis, as announced. May be repeated with permission of department.

366 Jewish American Writers (3:3:0). Major twentieth-century American Jewish writers, including works by such authors as Roth, Singer, Friedman, Malamud, and Bellow.

367 Literature of the Modern South: 1920 to the Present (3:3:0). Novels, short stories, drama, poetry, and essays of the American South from post-World War I to recent times. Southern writers include Faulkner, Warren, Tate, Wright, Porter, McCullers, Styron, and O'Connor.

368 Literature of Black America (3:3:0). Significant works of poetry, fiction, drama, and autobiography written by American black writers in the twentieth century and reflecting the black experience. Works by such authors as Toomer, Hughes, Wright, Brooks, Ellison, Braca, and Bullins.
369 Women and Literature (3:3:0). An exploration of the experience of women as both authors and subjects in imaginative literature. When subtitle is different, may be repeated once for credit when subtitle is different.

380 Recent American Fiction (3:3:0). American short story writers and novelists from World War II to the present, with emphasis on Mailer, Barth, Hawkes, Cheever, Oates, Gass, and Kosinski.

390 Recent American Poetry (3:3:0). Major American poets from World War II to the present, with emphasis on the work of such poets as Roethke, Wilbur, Dickey, Lowell, Merwin, Kinnell, and Ammons.

397 Introduction to Poetry Writing (3:3:0). Introduction to the theory and practice of poetry writing. Original student work is read and discussed in class and in conferences with the instructor. Includes technical exercises in the craft of poetry and may include reading assignments. Individual students may do some work in fiction or drama but the course concentrates on poetry.

398 Introduction to Fiction Writing (3:3:0). Introduction to theory and practice of fiction writing. Original student work is read and discussed in class and in conferences with the instructor. Includes technical exercises in the craft of fiction and may include reading assignments. Individual students may do some work in poetry or drama but the course concentrates on fiction.

400 Literature of the Middle Ages (3:3:0). Selected English narrative, dramatic, and homiletic literature written between 1300 and 1500, exclusive of Chaucer.


404 The Augustan Age (3:3:0). English literature from the late seventeenth century to the middle of the eighteenth century. Emphasis on works of Dryden, Swift, and Pope.

405 The Age of Sensibility (3:3:0). English literature of the later eighteenth century, the time of the American and French revolutions, including new developments in the novel, biography, and poetry. Emphasis on Johnson, Boswell, and Blake, with some attention to a number of following: Goldsmith, Steane, Gray, Cowper, Fanny Burney, Burke, William Godwin, and Mary Wollstonecraft.


407 Prose and Poetry of the Victorian Period (3:3:0). Poetry and nonfiction prose by such authors as Carlyle, Arnold, Tennyson, Browning, Ruskin, and Mill.

408 Special Topics: British Literary Periods (3:3:0). An in-depth study of a selected period of British literature. In addition to literary examples, materials may be chosen from the art, philosophy, or popular culture of the time. When subtitle is different, may be repeated once for credit with permission of department.

410 Technical and Report Writing (3:3:0). Prerequisite: 6 credits of composition, including ENGL 302, and 6 credits in literature; or permission of the extended studies program. Intensive study and practice in various forms of technical writing, including formal and informal reports, proposals, and technical correspondence. Emphasis on writing for a variety of audiences, both lay and informed, and on writing within various professional and organizational contexts.

421 Topics in Film History (3:3:0). Advanced studies of the development of film language, both as a cultural practice and as a medium for formal innovation. Topics might include studies of national cinemas, historical periods, genres, or individual directors. May be repeated once for credit when topic is distinctly different.

422 Topics in Film Theory (3:3:0). Advanced studies of theories about various aspects of the production, distribution, and reception of film-mediated experiences. May include theories of the spectator, semiotics, feminism, film theory, theories of narrativity, structuralist film theory, and/or deconstruction. May be repeated once for credit when topic is distinctly different.

423 Colonial and Federalist American Literature (3:3:0). The works of the first 200 years of American literature, including Edwards, Franklin, Irving, Cooper, and Bryant.

425 Literature of the American Renaissance (3:3:0). Major writers of the American Renaissance (1830-1865), with emphasis on the works of Emerson, Thoreau, Hawthorne, Melville, Whitman, and Poe.

429 Special Topics: American Literary Periods (3:3:0). In-depth study of a selected period of American literature. In addition to literary examples, materials may be chosen from the art, philosophy, or popular culture of the time. May be repeated once for credit when subtitle is different, with permission of department.

431/HIST 431/FRIN 431 Medieval Intellectual Topics (3:3:0). May be taken for credit by English or history or area studies majors. Examination of a selected topic in the intellectual history of the Middle Ages. Specific topic may vary. The primary emphasis is literary or historical, depending on the discipline of the instructor. Relevant material drawn from philosophy, theology, and art may be considered.

433 Japanese Literature in Translation (3:3:0). Selected literary masterpieces in translation from ancient and modern Japan, including a court romance (The Tale of Genji), essays (The Pillow Book), classical poetry, and Bunraku plays, haiku poetry, and modern fiction. Review of the genres and traditions represented by those masterpieces.

434 Chinese Literature in Translation (3:3:0). Selected masterpieces of Chinese literature in translation, including the Confucian classics, ancient songs and poems, Tang and Sung poetry and prose, Yuan and Ming plays, novels and short stories.

436 Selected Continental Novels in Translation (3:3:0). Selected European novels in translation. Course focus is the continental novel from the eighteenth century to the end of the nineteenth century, and includes works of such writers as Balzac, Gogol,
437 *Selected Continental Novels in Translation* (3:3:0). Course focus is the continental novel from the beginning of the twentieth century to the present and includes such writers as Proust, Mann, Gide, Silone, Kafka, Sartre, Cela, Moravia, and Grass. Attention to the influence of this literature on the novel in English. (Offered in cooperation with the Department of Foreign Languages and Literatures.)

439 *Special Topics: Non-British or American Literature* (3:3:0). Study of selected topics, periods, genres, or authors in Commonwealth or in Oriental literatures. May be repeated once for credit when subtitle is different, with permission of department.


443 *Restoration and Eighteenth-Century Drama* (3:3:0). Restoration comedy of manners, sentimental comedy, neoclassical and bourgeois tragedy. Theories of drama and staging and parallel developments in opera. Such writers as Wycherly, Farquhar, Etheredge, Congreve, and others.

445 *English and Irish Drama of the Twentieth Century* (3:3:0). English and Irish drama from Yeats to Pinter. Plays by such authors as O'Casey, Synge, Eliot, Frye, Osborne, Wesker, Behan, Delaney, and Pinter.

447 *American Drama of the Twentieth Century* (3:3:0). American drama of the twentieth century, with special attention to the plays of O'Neill, Wilde, Miller, Williams, and Albee.

448 *Modern Drama* (3:3:0). Representative plays of contemporary dramatists of Europe and America, with emphasis on dramatic styles such as realism, expressionism, and existentialism. In alternate semesters, authors such as Ibsen, Strindberg, Hauptmann, Shaw, O'Neill, O'Casey, and others will be studied.

449 *Special Topics in Drama* (3:3:0). Study in depth of selected topics, periods, or playwrights. May be repeated once for credit when subtitle is different, with permission of department.

450 *English Novel of the Eighteenth Century* (3:3:0). The English novel from its beginnings through the turn of the nineteenth century. Works by such authors as Defoe, Richardson, Fielding, Sterne, Smollett, Scott, and Austen.

452 *Development of the American Novel to 1914* (3:3:0). Major American novels of the pre-World War I period with emphasis on the work of Brown, Cooper, Hawthorne, Melville, Twain, Howells, James, Crane, Dreiser, Norris, and others.

453 *English Novel of the Nineteenth Century* (3:3:0). The English novel of the nineteenth century. Works by such authors as Dickens, Thackeray, E. Bronte, Eliot, Trollope, Meredith, and Hardy.

454 *Development of the American Novel Since 1914* (3:3:0). The American novel from the end of World War I to the present, including works by such authors as Fitzgerald, Hemingway, Faulkner, Dos Passos, Wolfe, Bellow, and Nabokov.

456 *English Novel of the Twentieth Century* (3:3:0). The English novel from the beginning of the twentieth century to the present. Works by such authors as Conrad, Ford, Bennett, Forster, Lawrence, Joyce, Woolf, Huxley, Greene, and others.

458 *Fiction Writing Workshop* (3:3:0). Prerequisite: ENGL 397 or 398 or equivalent and permission of instructor. Students must submit a typed manuscript at least one week before they intend to register. For specific guidelines, consult the department's *Course Description Booklet*, the instructor, or the department secretaries. A workshop course: intensive practice in creative writing and study of the creative process. The course concentrates on a specialized literary type other than the short story or poetry (for example, play writing, screen writing, children's literature, travel literature, autobiography, the gothic novel, translation) and the concentration is announced in the department's *Course Description Booklet* before preregistration. Intended for students already writing original creative work. (By permission of instructor, may be taken a second time for credit; the additional 3 hours, however, may not be counted toward the requirement for the English major. No more than a combined total of 9 hours may be taken in ENGL 458, 464, 497.)

459 *Special Topics in Fiction* (3:3:0). Study in depth of selected topics, periods, or authors. May be repeated once for credit when subtitle is different, with permission of department.

462 *English Poetry of the Twentieth Century* (3:3:0). English poetry from 1900 to present; emphasis on work of Hardy, Yeats, Lawrence, Graves, Auden, Thomas, and Hughes. A work of fiction which employs poetic techniques, such as Joyce's *Ulysses*, may also be studied.

463 *American Poetry of the Twentieth Century* (3:3:0). Emphasis on the work of Robinson, Frost, Stevens, Williams, Pound, Crane, Eliot, and Lowell. A work of fiction employing poetic techniques, such as Faulkner's *The Sound and the Fury*, may also be studied.

464 *Poetry Workshop* (3:3:0). Prerequisite: ENGL 397 or equivalent and permission of instructor. Students must submit a typed manuscript at least one week before they intend to register. For specific guidelines, consult the department's *Course Description Booklet*, the instructor, or the department secretaries. Intensive practice in the craft of poetry and study of the imagination in the creative process. Intended for students already writing original poetry. At the discretion of the instructor, technical exercises and assigned reading may be required. (By permission of instructor, may be taken a second time for credit; the additional 3 hours, however, may not be counted toward the requirement for the English major. No more than a combined total of 9 hours may be taken in ENGL 458, 464, 497.)

468 *Special Topics in Poetry* (3:3:0). Study in depth of selected topics, periods, or poets. May be repeated once for credit when subtitle is different, with permission of department.

471 *Chaucer* (3:3:0). The major works of Chaucer, with emphasis on *The Canterbury Tales*.

472 *Spenser* (3:3:0). Poetry of Edmund Spenser, with central emphasis on *The Faerie Queene*.
473 Special Studies in Shakespeare (3:3:0). Study in depth of one aspect of Shakespeare’s art or critical issues surrounding his work. May be repeated once for credit when subtitle is different, with permission of department.

474 Milton (3:3:0). Milton’s major poetic works, with emphasis on Paradise Lost.

477 Special Topics: British Authors (3:3:0). Study of one or two major figures in British literature. May be repeated once for credit when subtitle is different, with permission of department.

478 Special Topics: American Authors (3:3:0). Study of one or two major figures in American literature. May be repeated once for credit when subtitle is different, with permission of department.

485 Structure of Contemporary American English (3:3:0). Phonology, morphology and syntax of contemporary American English. Accepted norms are discussed in detail, but dialect variation due to region or social class is also covered.

489 Advanced Expository Writing (3:3:0). Theory and practice of advanced expository writing; practice in analyzing and writing essays, articles and other expository forms.

490 Special Topics in Film (3:3:0). American and foreign films selected by type, period, or director with the emphasis varying from year to year. Required viewings, student discussion, and written critiques. May be repeated with permission of department.

491 Special Topics in Folklore (3:3:0). An exploration of various aspects of folklore and folk life such as folklore and literature, folk arts, folk song, material culture. May be repeated once for credit when subtitle is different, with permission of department.

492 Science Fiction (3:3:0). Major works of science fiction in terms of mode, themes, and narrative techniques, especially the role of hypothesis in science fiction. Focus on novels and short stories from the early nineteenth century to the present.

493 Special Topics in Popular Literature (3:3:0). Study of a specific topic or theme in popular literature. May be repeated once for credit when subtitle is different, with permission of department.

494 Special Topics in Criticism (3:3:0). Study in depth of a selected approach to literary criticism, as announced, with exercises in critical analysis. Examples: new criticism, structuralism, psychoanalysis, Marxism. May be repeated with permission of department.

495 Literary Modes (3:3:0). Theory and practice of such modes as tragedy, comedy, tragicomedy, romance and satire, considered in separate semesters and drawn from a variety of periods ranging from biblical times to the present, with examples from drama, poetry, and fiction. May be repeated with permission of department.

496 Special Topics: British or American Literature (3:3:0). Study in depth of a selected literary topic, period or genre, as announced. May be repeated with permission of department.

497 Special Topics in Creative Writing (3:3:0). Prerequisite: ENGL 397 or 398 or equivalent and permission of instructor. Students must submit a typed manuscript at least one week before they intend to register. For specific guidelines, consult the department’s Course Description Booklet, the instructor, or the department secretaries. A workshop course: intensive practice in creative writing and study of the creative process. The course concentrates on a specialized literary type other than the short story or poetry (for example, play writing, screen writing, children’s literature, travel literature, autobiography, the gothic novel, translation) and the concentration is announced in the department’s Course Description Booklet before preregistration. Intended for students already writing original creative work. (By permission of instructor, may be taken a second time for credit; the additional 3 hours, however, may not be counted toward requirements for the English major. No more than a combined total of 9 hours may be taken in ENGL 464, 458, 497.)

499 Independent Study (1-3:0:0). Prerequisite: Permission of department and permission of instructor. Open only to English majors with 90 hours and 15 hours in 300- and 400-level courses. Intensive study of a particular author, genre, period, or critical or theoretical problem in literature or linguistics, to be conducted by an individual student in close consultation with an instructor. The student produces at least one substantial piece of written work during the semester on the findings of his or her research. (By permission of department, the course may be taken twice for a maximum of 6 hours of credit.)

503 Theory and Practice of Editing (3:3:0). Prerequisite: 6 hours of English courses numbered above 300, including one advanced writing course—309, 310, 397, 398, 458, 464, 489, 497—or permission of department. Instruction in revising, editing, and preparing specialized writing for printing. Emphasis on methods of achieving clarity, accuracy, and completeness. Lecture and discussion on editing and printing techniques; practical exercise in revision, layout, and production.

504 Internship in Writing and Editing (3:0:0). Prerequisite: Open to senior English majors and graduate students pursuing the M.A. in English or the M.F.A. Contact the English Department one semester prior to enrollment. Internships are approved work-study positions in writing or editing established by the English Department with specific employers. Variable credit. Variable prerequisites.

507 Internship in Applied Linguistics (3:0:0). Prerequisite: ENGL 521 or EDCI 519 and ENGL 582. Contact the English Department one semester prior to enrollment. Internships provide experience working in a language teaching program or an educational research organization.

511 Styles and Modes in Literary History (3:3:0). Historical consideration (not a survey) of some of the principal styles, in prose and poetry, of English and American Literature.

512 Issues in Literature and Philosophy (3:3:0). Prerequisite: 90 hours. 6 hours of 300-level English, and 6 hours of 300-level philosophy, or permission of instructor. Topics vary: may include structuralism, technology, form and matter, conceptions of the future. Course is cross-listed with philosophy and sometimes team-taught.

513 Advanced Special Topics in English (3:3:0). Prerequisite: 15 hours of advanced undergraduate English courses and permission of department or possession of the
baccaulareate degree. Intensive study of selected topics in English and American literature.

514 Theories of Comparative Literature (3:3:0). Prerequisite: CL 300 and senior standing, or baccalaureate degree or permission of instructor. Intensive study of the major theories of comparative literature with special emphasis on international movements and their characteristic themes. Students will work with texts in the foreign language of their competence; other texts are studied in translation.

520 Descriptive Linguistics (3:3:0). Introduction to the terminology and methodology of modern linguistics and a detailed analysis of English phonology, morphology, and syntax.

521 Applied Linguistics: Teaching English as a Second Language (3:3:0). Prerequisite: ENGL 481 or 520. Theories and basic principles of the acquisition of a second language, especially as they relate to the English language, supplying students with methods of teaching English to speakers of other languages.

522 Modern English Grammar (3:3:0). Prerequisite: ENGL 481 or 520. Overview of the structure of modern English beginning with word classes and ending with analyses of complex sentences. Most topics are introduced as problems of language description; in solving them, principles of syntactic argumentation are demonstrated as well. Students learn to tap their own intuitions about English to analyze grammatical structure.

551 Literary Criticism (3:3:0). Studies of major critical theories and techniques with emphasis on the twentieth century.

556 Literary Style (3:3:0). Theory and practical analysis of English literary style. Several methodologies, including impressionistic, rhetorical, and linguistic, are examined and applied to the language of various literary texts, including essays, poems, and novels.

557 Old English (3:3:0). Study of Old English language, including its phonology, morphology, syntax, and lexis, aimed at preparing students to read Anglo-Saxon literature in its original form. Accompanied by reading from Anglo-Saxon prose and poetry of the seventh through the eleventh centuries. Selections from The Anglo-Saxon Chronicle, Aelfric’s Homilies, The Legend of St. Andrew; and other prose works, as well as such verse as The Dream of the Rood, The Seafarer, and Judith, are read and translated.

564 Form of Poetry (3:3:0). Prerequisite: ENGL 464 or equivalent and permission of instructor. Students must submit a typed manuscript of original poetry at least one week before they intend to register. For specific guidelines, consult the department’s Course Description Booklet, the instructor, or the department secretaries. Intensive study and practice in the formal elements of poetry through the analysis of models and weekly or biweekly writing assignments. Intended for students already writing original fiction. Students study description, narration, plot, dialogue, voice, point of view, style, epiphany, and antistrophe techniques.

581/PSYC 521 Psycholinguistics (3:3:0). Prerequisite: ENGL 481 or 520. Study of mental and psychological aspects of human language, including aphasia, association, autism, language acquisition, verbal concept formation, and perception.

582 Second Language Acquisition (3:3:0). Prerequisite: ENGL 481 or 520. Study of the applications of linguistic science to the teaching of English language and literature. Attention is given to linguistic foundations of teaching English as a second language, findings of linguistics with regard to composition instruction, and ways in which linguistics can support the teaching of literature and literary style.

592 History of the English Language (3:3:0). Introduction to the history and development of the English language, including study of the Indo-European language family and various stages of the English language from Old and Middle English to Early and Recent Modern English and American English; emphasis on historical principles and theory of language change as it affects phonology, morphology, syntax, and semantics.

European Studies (EUST)

Area Studies

300 Foundations of European Civilization (3:3:0). Prerequisite: 24 hours or permission of instructor. Examination of Greek, Roman, and Judeo-Christian origins of Europe’s intellectual and cultural traditions, concentrating on the political ideas, philosophical precepts, and cultural values basic to European thought.

350 Classicism and Romanticism (3:3:0). Prerequisite: EUST 350 or permission of instructor. Examination of Classicism and Romanticism through literary and other cultural forms of expression in seventeenth-, eighteenth-, and nineteenth-century Europe.

400 The Arts in Modern European Culture (3:3:0). Prerequisite: EUST 350 or permission of instructor. Examination of how the arts interact to reflect historical, intellectual, and aesthetic aspects of nineteenth- and early twentieth-century European culture. Representative examples from music, theater, dance, architecture, and the visual arts.

450 The Twentieth Century in Europe (3:3:0). Prerequisite: EUST 350 or permission of instructor. Examination of the main currents of European life and thought in the twentieth century. Study of the principal influences and events of the period, culminating in an assessment of contemporary European problems and values.
Finance (FNAN)

School of Business Administration

If a student takes noncore, upper-level business administration courses prior to acceptance to the School of Business Administration, those courses will not count on an undergraduate degree application for any major in the School of Business Administration (except as general elective credit). A grade of C or higher must be presented on the graduation application for each upper-level course in the major. Prerequisites are strictly enforced.

300 Personal Financial Management (3:3:0). Consideration of spending, saving, investing, and borrowing decisions within the household life cycle framework. Examination of choices among investment alternatives, including assessment of risk exposure and suitability. (Course may not be taken for credit by business majors.)

301 Financial Management (3:3:0). Prerequisite: Completion of at least 60 hours including ECON 103 and 104, ACCT 202, and DESC 202. Introduction to the management of a firm's financial resources given a wealth maximization decision criteria. Includes working capital management, fixed-asset investment, cost of capital, capital structure, and dividend decision analysis. Lecture, problems, and discussion.

302 Financial Analysis and Forecasting (3:3:0). Prerequisite: FNAN 301. Examination of techniques for analyzing, understanding, and applying financial information in decision situations. Topics include financial statement analysis, development of financial models, and financial planning and forecasting.

311 Principles of Investment (3:3:0). Prerequisite: FNAN 301 and ECON 310. Introduction to the analysis of the valuation of equity and debt securities given modern capital market theory. Also includes a discussion of portfolio analysis as related to the valuation of securities. Lecture, discussion, and computer-assisted research.

321 Financial Institutions (3:3:0). Prerequisite: FNAN 301 and ECON 310. Discussion of the basic objectives of financial institutions in light of industry structure and regulatory environment, and the decision variables which management should concentrate on in achieving its objectives. Includes the role that financial institutions play in the allocation of funds within the financial markets. Lecture, discussion, and computer-assisted research.

351 Principles of Real Estate (3:3:0). Prerequisite: FNAN 301. Dimensions and specialties involved in the public control and private development, sale, finance, and management of real estate. Subject areas include land planning, land use control, appraisal, finance, brokerage, property management, and investment. Lecture, discussion, and computer-assisted research.

401 Advanced Financial Management (3:3:0). Prerequisite: FNAN 301. Analysis of decision making within the firm emphasizing the conceptual structure of problems and the use of advanced analytic techniques. Specific topics covered include current asset management, capital budgeting, capital structure, dividend policy, long-term financing, mergers, and corporate planning models. Lecture, discussion, case analysis.

411 Investment Analysis and Portfolio Management (3:3:0). Prerequisite: FNAN 311. Analysis of the modern techniques of portfolio management including the evaluation of standards for the selection of individual securities for inclusion in or deletion from portfolios. Risk-return analysis for portfolios and portfolio performance measures are presented. Lecture, discussion, computer-assisted research.

412 Futures Markets (3:3:0). Prerequisite: FNAN 311. Introduction to options markets, commodity markets, and financial futures markets as they function to provide pricing mechanisms and alternative investment vehicles. Lecture, discussion, computer-based research.

421 Money and Capital Markets (3:3:0). Prerequisite: FNAN 321. Discussion of how financial markets are organized, their role in the allocation of funds to various market segments, and the interaction between markets. Topics covered include aggregate flow of funds analysis as well as money markets, government markets, corporate markets, and mortgage markets. Lecture, discussion, computer-assisted research.

423 Commercial Bank Management (3:3:0). Prerequisite: FNAN 321. Introduction to the management of commercial banks. Emphasis is placed on the management of deposits, cash and liquidity, lending, investing, trust services, capital structure and adequacy, international operations, current banking laws and regulations. Includes a discussion of bank holding companies, interstate banking proposals, and regulatory agency proposals for expanding banking powers.

440 International Financial Management (3:3:0). Prerequisite: FNAN 301. Introduction to the management of the contemporary firm's international financial operations. Topics include foreign exchange risk, political risk, returns and risks of international projects, international money and capital markets, financial accounting, capital structure, and the cost of capital. Lecture, discussion, readings, and problems.

451 Real Estate Finance (3:3:0). Prerequisite: FNAN 301 and 351. Mechanisms of estate finance, sources of funds, loan contracts, principles of mortgage risk analysis, and secondary mortgage markets. Students develop analytical skills including use of the microcomputer and appropriate software.

452 Real Estate Appraisal (3:3:0). Prerequisite: FNAN 301 and 351. Economic theories of value applied to real estate; estimation of value through the cost, income, and market data approaches; valuation of a guide to business decisions; market analysis techniques for the major types of real estate; development of analytical skills including use of the microcomputer and appropriate software.

453 Real Estate Investment (3:3:0). Prerequisite: FNAN 301 and 351. Introduction to the fundamentals of real estate investment, including an overall investment strategy, analytical skills, feasibility studies, and characteristics of various types of properties. Students learn to use microcomputers and appropriate software.

491 Seminar in Finance (3:3:0). Prerequisite: FNAN 311, 321, and 401. Seminar in contemporary developments in finance, including financial management, financial institutions, financial markets, and investment management. Lecture, discussion, simulation, computer-assisted research.
French (FREN) 197

French (FREN)

Foreign Languages and Literatures

Placement: See Admission Procedures.

101 Elementary French I (3:3:1). Designed for students with no knowledge of French. Introduction to French, including elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Lab work required.

102 Elementary French II (3:3:1). Prerequisite: FREN 101 or permission of instructor. Continuation of FREN 101. Lab work required.

105 Review of Elementary French (3:3:1). Prerequisite: Appropriate placement score or permission of department. Review for students who have studied French previously. May not be taken for credit in combination with 101, 102, or 105. Lab work required.

109 Intensive Elementary French (6:6:2). Equivalent to FREN 101, 102 taught in a single semester. Recommended for students who desire an intensive introduction to French. May not be taken for credit in combination with 101, 102, or 105. Lab work required.

201 Intermediate French I (3:3:1). Prerequisite: FREN 102, 105 or 109, or appropriate placement score, or permission of department. Further development of skills in listening, speaking, reading, and writing. FREN 201 and 202 must be taken in sequence. Lab work required.

202 Intermediate French II (3:3:1). Prerequisite: FREN 201, or appropriate placement score, or permission of department. Application of language skills to reading, composition, and class discussion. Lab work required.

209 Intensive Intermediate French (6:6:2). Prerequisite: FREN 102 or 105 or 109, or appropriate placement score, or permission of department. Equivalent to FREN 201 and 202 taught in a single semester. May not be taken for credit in combination with FREN 201 or 202. Lab work required.


300 Study Tour in France (1-6:0:0). Prerequisite: FREN 202 or permission of instructor. Directed study tour of cultural and literary points of interest in France. Briefing sessions and a reading selection are given before the trip. All papers and examinations required for credit are due by the end of the summer session.

325 Major French Writers (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Study of the works of major French writers. Writers to be studied vary. Course work in English. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees. May be repeated for credit with permission of department.

329 Problems of Western Civilization in French Literature (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Basic philosophical, moral, social, and political dilemmas reflected in the literature of major French writers. Course work in English. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees. May be repeated for credit with permission of department.

350 French Conversation (3:3:0). Prerequisite: FREN 202 or equivalent. Development of conversational proficiency in French. Specifically designed for French ma-
jors who need practice in the spoken language beyond the intermediate level.

351 Advanced French Grammar (3:3:0). Prerequisite: FREN 202 or equivalent. Systematic review of French grammar with emphasis on syntax, idiomatic construction, vocabulary building, and literary style. Written and oral exercises.

352 French Composition (3:3:0). Prerequisite: FREN 202 or equivalent. Development of writing skills through written reports on current events and on literary topics. Specifically designed for French majors who need practice in the written language beyond the intermediate level.

355 Phonetics and Oral Expression (3:3:2). Prerequisite: FREN 202 or permission of instructor. Intensive study of French pronunciation and diction. Practice in discriminating French phonemes and allophones and in transcribing in phonetic symbols. Recitation of poems and rhythmic prose. Enrollment limited to 15.

356 Interpretation (3:3:0). Prerequisite: FREN 202 or permission of instructor. Initial orientation and practice in the techniques of simultaneous, consecutive, and contract interpretation. Recommended for students who wish to improve language skills or intend to use them professionally.

357 Introduction to Translation (3:3:0). Prerequisite: FREN 202 or permission of instructor. Translations from French to English, English to French, of texts selected from current periodicals and newspapers in various fields. Recommended for students who wish to improve language skills.

375 French Civilization: From Ancient Gaul to the French Revolution (3:3:0). Prerequisite: 15 semester hours of French or permission of instructor. Study of contributions of France to world civilization; emphasis on development of ideas, arts, sciences, and institutions. Offered in alternate years.

376 French Civilization: From the Revolution to Contemporary France (3:3:0). Prerequisite: 15 semester hours of French or permission of instructor. See FREN 375.

377 Survey of French Literature: Middle Ages to 1800 (3:3:0). Prerequisite: 15 semester hours of French or permission of instructor. French literature through the centuries, with reading and analysis of representative texts of the major authors. Offered in alternate years. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

378 Survey of French Literature: 1800 to Present (3:3:0). Prerequisite: 15 semester hours of French or permission of instructor. See FREN 377.

381 Introduction to Literary Analysis (3:3:0). Prerequisite: 15 semester hours of French. A structured approach to the reading and analysis of French literary texts.

391 French for the Business World I (3:3:0). Prerequisite: 15 hours of French or permission of instructor. Introduction to study of styles used in commercial, private, and official formats for correspondence and various common business documents. Emphasis on written exercises. Designed to satisfy the needs of students equipping themselves for multinational business and foreign service.

392 French for the Business World II (3:3:0). Prerequisite: FREN 391 or permission of instructor. Continuing study of terminology used in business affairs, with attention to form and style of business documents. Oral and written practice of French used in everyday work situations. Students may use this course in preparation for the Paris Chamber of Commerce certificate in Business French.

405 French Literature of the Renaissance (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Development of the humanistic tradition in France during the sixteenth century, especially as reflected in the works of Rabelais and Montaigne. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

413 French Literature of the Seventeenth Century: Classical Drama (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Study of the dramatic literature of the seventeenth century. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

414 French Literature of the Seventeenth Century: Prose and Poetry (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Reading and analysis of representative texts of the major authors. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

421 French Literature of the Eighteenth Century: Montesquieu and Voltaire (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Study of Montesquieu, Voltaire, and other writers of the first half of the century. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

422 French Literature of the Eighteenth Century: Diderot and Rousseau (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Study of Diderot, Rousseau, and other writers of the second half of the century. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

431 French Literature: 1800-1850 (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Poetry, theater, and novel of the Romantic and Parnassian movements. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

432 French Literature: 1850-1900 (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Poetry, theater, and novel of the Realist, Naturalist, and Symbolist movements. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

441 Twentieth-Century Prose Fiction (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Principal literary trends in contemporary French literature; emphasis on evolution of the novel from Proust and Gide to Beckett and the "Nouveau Roman." May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.
442 Twentieth-Century Drama and Poetry (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. French drama from Surrealism to the “Nouveau Théâtre.” French poetry from Symbolism to contemporary poets. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

451 Writers of French-Speaking Africa and the Caribbean (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Study of selected poems, plays, tales, and novels expressing the culture and aspirations of the peoples of Africa and the Caribbean. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees. May also be taken to meet the non-Western requirement.

452 French-Canadian Literature (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Study of the Francophone literature of Canada with emphasis on contemporary works. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

460 Advanced Oral and Written Expression (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Intensive course designed to help students obtain fluency in oral and written French. Development of conversational skills and mastery of vocabulary. Class discussions, oral and written reports on current topics.

461 Linguistic Structure of Modern French (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Descriptive analysis of the phonology, morphology, and syntax of modern standard French. Optional lab work.

462 Stylistics (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Analysis of the more complex aspects of the French language and of various stylistic processes. Development of writing skills through readings, discussion, and composition.

480, 481 Special Topics (3:0:0), (3:3:0). Prerequisite: 18 semester hours of French or permission of instructor. Study in depth of a selected literary theme, topic, period, or genre. May be repeated for credit with permission of instructor.

490, 491 Independent Study (1-3:0:0), (1-3:0:0). Prerequisite: 90 hours as a major in French and permission of chair. Research and analysis of a selected problem in literature or linguistics in consultation with a member of the department. Only 6 hours of independent study may be applied to fulfillment of requirement in the major.

497, 498 Senior Honors Tutorial (3:0:0), (3:0:0). Prerequisite: 90 hours as a major in French, with GPA of 3.00 and 3.00 in the major field. Students who meet these requirements are admitted to candidacy upon submission of a letter of application to the departmental Honors Committee in the second half of the junior year. Supported by a faculty recommendation and an interview by and with the approval of the Honors Committee. In the first semester, weekly meetings with a faculty member to discuss readings from a comprehensive list prepared by the French faculty. In the second semester, independent research and completion of an honors essay under the supervision of a member of the French faculty.


518 Studies in Eighteenth-Century Literature (3:3:0). Selected writers, works, themes, or trends of French literature in the eighteenth century. Content varies. Course work in French. May be repeated for credit with permission of department.

519 Studies in Nineteenth-Century Literature (3:3:0). Selected works, themes, genres, and authors of nineteenth-century French literature. Content varies. Course work in French. May be repeated for credit with permission of department.

525 Studies in Modern French Literature (3:3:0). Selected works, themes, or trends of French literature in the modern era. Content varies. May be repeated for credit with permission of department. A maximum of 6 hours of credit may be earned. Course work in French.

550, 551 Special Topics (3:3:0), (3:3:0). Specialized topics relating to French culture and literature. Content varies. Course work in French.


561 Old French (3:3:0). Study of Old French phonology, morphology, syntax, and lexicon, aimed at preparing students to read medieval French literature in original versions. Linguistic study complemented by reading of Old French verse and prose texts from the ninth through the thirteenth centuries.


576 Advanced Translation (3:3:0). Advanced work in translation of topics selected from the humanities, the social and political sciences. Comparative terminology, sight translation, and précis writing. The importance, function, and techniques of documentation in translation. Translations from French to English and English to French.


Also see FRLN listing.

Geographic and Cartographic Sciences (GECA)

Geography and Earth Systems Science

503 Problems in Environmental Management (3:3:0). Prerequisite: 6 hours of geography, including GEOG 102. Case studies of the impacts of human activities on atmospheric, hydrologic, geomorphic, and biotic processes.

505 Transportation Geography (3:3:0). Prerequisite: 6 hours of geography. Structure, principles, location, and development of world transportation. Critical role of
transportation in moving people, goods, and ideas at the international, national, regional, and urban levels.

520 Geography for Teachers (3:3:0). Prerequisite: Graduate standing or permission of instructor. Emphasis on problems and techniques in teaching geography and current developments in research, methodology, and philosophy in the discipline.

540 Medical Geography (3:3:0). Prerequisite: Graduate standing or permission of department and a course in statistics. Spatial approaches to the study of health and disease. Topics include disease ecology, disease diffusion, and geographic perspectives on improving health care delivery.

550 Mapping Foundations (3:3:0). Basic principles of mapping human and physical spatial patterns and using maps. Includes sources of spatial information such as existing maps, field work, and aerial photographs; techniques of cartographic compilation; map construction and design; and the analysis of spatial data. For students without previous course work in cartographic science.

551 Thematic Cartography (3:3:0). Prerequisite: GECA 550 or permission of instructor. Analysis of the nature of perceptual organization and visual systems in thematic map communication portrayal, graphic handling, and data analysis.

553 Geographic Information Systems (3:3:0). Prerequisite: GECA 550 or permission of instructor, and permission of department. Sources of digital geographic information, methods of storage and processing for cartographic display, and geographical analysis.

554 History of Cartography (3:3:0). Prerequisite: Graduate standing or permission of department. History of cartographic portrayal of the earth from ancient times through the nineteenth century, with emphasis on the interrelation of human culture, technological development, and geographical knowledge as reflected in maps.

562 Analytic Photogrammetry (3:3:0). Prerequisite: GECA 550 or permission of instructor, a course in matrix algebra, and permission of department. Analytic treatment of photogrammetric problems, including least squares adjustments, image coordination refinements, colinearity equation, resection, relative orientation, and analytic aero triangulation.

579 Remote Sensing (3:3:0). Prerequisite: GECA 550 or permission of instructor and permission of department. Analysis of the nature of electromagnetic radiation, principles and operations of sensors, techniques and systems of correction, enhancement, and production of imagery. Interpretation and applications in geomorphic, atmospheric, hydrologic, vegetation, land use, and regional analysis.

580 Digital Remote Sensing (3:3:0). Prerequisite: GEOG 416 or GECA 579 or permission of instructor, and permission of department. Examination of the theory and techniques of using digital remotely sensed data for obtaining geographic information of the earth's surface, including both image enhancement methods and classification strategies for a variety of physical and cultural features.

581 World Food and Population (3:3:0). Prerequisite: Graduate standing or permission of instructor. Topics include maldistribution of population, regional disparities in growth rates and income distribution, food production and world hunger. Discussion of population policies with emphasis on Third World countries.

583 Spatial Dynamics of Political Systems (3:3:0). Prerequisite: Graduate standing or permission of instructor. Topics include territoriality, reapportionment, spatial allocation of public facilities, perception of boundaries. Emphasis on the spatial impact of political process upon land use.

585 Quantitative Methods (3:3:0). Prerequisite: GECA 550 or permission of instructor and permission of department. Survey of quantitative methods commonly used in geographic research. Emphasis on spatial analysis techniques.

590 Selected Topics in Geography and Cartography (3:3:0). Prerequisite: Graduate standing or permission of department. Students analyze topics of immediate interest. Content varies.

Geography (GEOG)

Geography and Earth Systems Science


102 Physical Geography (3:3:0). Interrelated processes affecting the global distribution and character of climate, soils, vegetation, hydrology, and landforms; elements of mapping.

103 Cultural Geography (3:3:0). Study of relationships between geography and human population distribution, cultural patterns, and economic development.

110 Maps and Map Reading (3:3:0). Reading, interpretation, and analysis of broad variety of maps.

300 Statistical Methods for Spatial Analysis (3:3:0). Prerequisite: 30 hours, including 6 hours of geography. A comprehensive introduction to statistical methods employed in spatial analysis. Topics include descriptive spatial statistics; areal sampling theory and methods; probability theory and distributions; hypothesis testing; analysis of variance; correlation and regression; temporal and spatial autocorrelation; areal and point pattern spatial statistics.

301 Political Geography (3:3:0). Prerequisite: 30 hours. Structures and processes involved in the creation of political space at all levels—city, county, state, national, and international.

303 Conservation of Resources and Environment (3:3:0). Prerequisite: 30 hours. Analysis of spatial aspects of world resources and problems resulting from their unequal distribution or unwise use. Population growth, its implications for resource use, and pollution problems are stressed.

304 Geography of Population (3:3:0). Prerequisite: 30 hours. Spatial distribution of population, its causes and effects, and the changing patterns resulting from population mobility. Emphasis on spatial characteristics of variables such as age, sex, race, education, and income.
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<tr>
<th>Course Code</th>
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<th>Prerequisite</th>
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<tbody>
<tr>
<td>GEOG 201</td>
<td>Introduction to Meteorology and Climate</td>
<td></td>
<td>Study of the atmosphere and world weather patterns. Analyzes atmospheric processes and their effects on climate and weather.</td>
</tr>
<tr>
<td>GEOG 202</td>
<td>Cartography I (4:3:2)</td>
<td>GEOG 300</td>
<td>Study of maps and their uses. Focuses on the principles and methods of map making, including map projection, scale, and cartographic design.</td>
</tr>
<tr>
<td>GEOG 203</td>
<td>Cartography II (4:3:2)</td>
<td>GEOG 310</td>
<td>Study of cartographic techniques, including computer cartography and its applications.</td>
</tr>
<tr>
<td>GEOG 300</td>
<td>Geography of the United States (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of the United States.</td>
</tr>
<tr>
<td>GEOG 301</td>
<td>Geography of Latin America (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of Latin America.</td>
</tr>
<tr>
<td>GEOG 302</td>
<td>Geography of Europe (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of Europe.</td>
</tr>
<tr>
<td>GEOG 303</td>
<td>Geography of North Africa and the Middle East</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of North Africa and the Middle East.</td>
</tr>
<tr>
<td>GEOG 304</td>
<td>Geography of the Soviet Succession States (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of the Soviet Succession States.</td>
</tr>
<tr>
<td>GEOG 305</td>
<td>Geography of Canada (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of Canada.</td>
</tr>
<tr>
<td>GEOG 306</td>
<td>Structures in Urban Governance and Planning</td>
<td>GEOG 102</td>
<td>Study of urban and regional planning.</td>
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The practice of urban and regional policy analysis. Provides an orientation to the public sector economy in general and to urban administration, planning, and policy in particular.

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<td>GEOG 307</td>
<td>Urban Geography (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of urban and regional planning.</td>
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<tr>
<td>GEOG 308</td>
<td>Geography of Virginia (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of Virginia.</td>
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<tr>
<td>GEOG 309</td>
<td>Selected Topics in Geography (3:0:0)</td>
<td>GEOG 102</td>
<td>Study of specific topics in geography.</td>
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<tr>
<td>GEOG 400</td>
<td>Seminar in Geography (3:0:0)</td>
<td>GEOG 102</td>
<td>Seminar for geography majors with 90 hours.</td>
</tr>
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<tr>
<td>GEOG 401</td>
<td>Aerial Photography Interpretation (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of Aerial Photography.</td>
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<tr>
<td>GEOG 402</td>
<td>Satellite Image Analysis (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of Satellite Image Analysis.</td>
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<tr>
<td>GEOG 403</td>
<td>Physiography of North America (3:3:0)</td>
<td>GEOG 102</td>
<td>Study of the physical and cultural geography of Physiography of North America.</td>
</tr>
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<tr>
<td>GEOG 404</td>
<td>Internship (3:0:0)</td>
<td>GEOG 102</td>
<td>Internship for geography majors with 90 hours.</td>
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<tr>
<td>GEOG 405</td>
<td>Independent Study in Geography (1:3:0:0)</td>
<td>GEOG 102</td>
<td>Independent Study for geography majors with 90 hours and permission of department and instructor. Individual study of a selected area of geography.</td>
</tr>
</tbody>
</table>

The practice of urban and regional policy analysis. Provides an orientation to the public sector economy in general and to urban administration, planning, and policy in particular.
Geology (GEOL)

Geography and Earth Systems Science

101 Introductory Geology I (4:3:3). The earth, processes that operate within the earth and on its surface, and human interaction with the earth. Topics include minerals, earthquakes and seismology, isostasy, igneous processes and rocks, paleomagnetism and plate tectonics, weathering, mass movements, rivers and streams, groundwater, glaciers, marine processes. May include field trips. (Course recommended as partial fulfillment of the general studies lab science requirement.)

102 Introductory Geology II (4:3:3). Prerequisite: GEOL 101. Earth processes in a historical context. Topics include sedimentary rocks and principles, deformation and metamorphism, mountain building and plate tectonics, geologic time, fossils, historical development of continents. May include field trips. (Course recommended as partial fulfillment of the general studies lab science requirement.)

105 Geology of Virginia (2:2:0). Geology, geomorphology, physiography, geological history, and natural resources of Virginia. May include field trips.

202 Invertebrate Paleontology (3:2:3). Classification, evolutionary trends, and distribution of the common invertebrate fossils. Labs include field collection of fossils, their preparation and identification. For geology and biology majors.

203 Field Techniques I (2:0:4). Basic use of Brunton compass and topographic maps for the purpose of location and making geologic measurements.

205 Environmental Geology (3:3:0). Investigation of geological principles directly related to environmental problems and geological causes and effects of natural disasters, geology of natural resources, geology of land use planning, and geology as related to health problems.

206 Topics in Geology I (1-3:1-3:0). Discussion of research programs in geology, presented by staff and visiting geologists. Each scientist discusses an unsolved problem, methods now being used to solve the problem, and possible solutions that are being evaluated.

301 Structural Geology (4:3:3). Prerequisite: GEOL 101, 102, and 302 and knowledge of high school algebra, plane geometry, and trigonometry. Igneous and sedimentary rocks in folded, faulted, and metamorphosed terrains. Lab may include field trips to structurally deformed parts of the Appalachian Mountains.

302 Mineralogy (4:3:3). Prerequisite: GEOL 101 and basic knowledge of chemistry, or permission of instructor. Crystallographic, optical, chemical, and physical properties of minerals. Lab may include field trips. For geology and chemistry majors.


304 Sedimentary Geology (4:3:3). Prerequisite: GEOL 101, 102, 302. Introduction to sedimentation, sedimentary petrology, facies analysis, and stratigraphy. Lab may include field trips.

305 Optical Mineralogy (3:2:3). Prerequisite: GEOL 101, 102, 302 and 308. Optical properties of minerals as a means of identification. Minerals are studied as crushed fragments, oriented mineral sections, and rock thin sections with the polarizing microscope.

306 Soil Mechanics for Geologists (3:3:0). Prerequisite: GEOL 101, 102, and 302. Physical and engineering properties of soil, including its origin, structure, mineralogy, strength, compressibility, and permeability. Applications to construction problems.

GEOL 308 Igneous and Metamorphic Petrology (3:2:3). Prerequisite: GEOL 101, 102, 302. The genesis, classification, and recognition of igneous and metamorphic rocks. Lab may include field trips.

309/BIOL 309 Introduction to Oceanography (3:3:0). Prerequisite: GEOL 101, BIOL 103 or 113, or permission of instructor. Introduction to physical, chemical, biological, and geological aspects of the oceanic environment. May include field trips to the Atlantic Coast.

310, 311 Geological Field Studies (2:0:0), (2:0:0). Prerequisite: GEOL 101, 102, 302. One or more field trips totaling 15 to 20 days in an area to be specified in the class schedule. Involves camping out (weather permitting). Students must pay costs (including transportation fee).

313 Hydrogeology (3:3:0). Prerequisite: GEOL 101 or GEOG 102, MATH 113, CHEM 211. Geological and hydrologic factors controlling the occurrence, distribution, movement, quality, and development of groundwater. Environmental considerations.

315 Topics in Geology II (1-3:1-3:0). Prerequisite: GEOL 101, 102. Discussions of a particular research program in geology, presented mostly by the teacher. Topic is designated in the class schedule. May include field trips.

316 Computers in Geology (3:3:0). Prerequisite: GEOL 101, 102, 302, one semester of mathematics, or permission of instructor. Uses of mainframe and microcomputers, with emphasis on geologic applications. No previous computer experience is assumed.

317 Geomorphology (3:2:3). Prerequisite: GEOL 101 or GEOG 102, or permission of instructor. Analysis of processes that occur at the earth's surface and the resulting landforms. Labs stress the recognition and evaluation of landforms using maps and aerial photos and the methods of data collection used in the study of surficial geology. Lab includes field trips.


403 Geochemistry (3:3:0). Prerequisite: GEOL 101; CHEM 211, 212. Stable isotope geochemistry, crystal geochemistry, geochronology, water geochemistry, organic geochemistry, and the geochemistry of rocks.

404 Analytical Techniques in Geochemistry (3:1:5). Prerequisite: GEOL 101, 102, 302, 308, CHEM 211, 212. Geochemical methods of water, mineral, and rock analysis by use of modern instrumentation.

405 Geology of Mineral and Energy Resources (3:3:0). Prerequisite: GEOL 101, 102, 301, 302, 304, and 308. Topics include metallic and nonmetallic ore
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deposits, fossil fuels, alternate energy resources, and methods by which each is used. May include field trips.

406 Topics in Geology III (1-3:1-3:0). Prerequisite: Geology major with 80 credit hours and permission of chair. Discussions of a particular research program in geology, presented mostly by the students. Topic is designated in the class schedule. May include field trips.

407 Field Techniques III (2:0:4). Prerequisite: GEOL 101, 102, 203, 301, 302, 303, 304, and 308. Interpretive geologic mapping in igneous, sedimentary, and metamorphic terrains.

408, 409 Practicum for Geology Laboratories (1:1:3), (1:1:3). Prerequisite: Geology major with 80 credit hours and permission of chair. Study of the techniques used to make the geology lab an effective component in geological education. Discussions of the development of testing materials, supplemented by experience in the operation of a lab section of a geology course.

410, 411 Special Projects in Geology (2:0:5), (2:0:5). Prerequisite: Geology major with 80 credit hours and permission of chair. Geologic research conducted by the student. Includes a literature search, conferences, and field and/or lab work. Written and oral reports required.

417 Geophysics (3:3:0). Prerequisite: GEOL 101, MATH 113, one year of physics, or permission of instructor. Geology and physics are combined to understand the dynamic systems of the earth.

500, 501 Selected Topics in Modern Geology (1-3:1-3:0), (1-3:1-3:0). Prerequisite: Baccalaureate degree in geology or permission of instructor. Lecture/lab/field trip. Topic designated in the class schedule.

503 Special Topics in Earth Science (1:6:1-6:0). Prerequisite: Employment or anticipation of employment as an Earth Science teacher. An inservice course designed to strengthen and update a teacher’s knowledge of Earth Science.

504 Geochemistry of Environmental Hazards (1-3:1-3:0). Prerequisite: CHEM 131 or permission of instructor. Introduction to the origins and reactions of hazardous substances in air, water, and soil environments. Movement of trace organic and inorganic substances in the geochemical cycle with particular reference to transport processes that influence air and water quality.

102 Elementary German II (3:3:1). Prerequisite: GERM 101 or permission of department. Continuation of GERM 101. Lab work required.

105 Review of Elementary German (3:3:1). Prerequisite: Appropriate placement score or permission of department. Review of elements of German for students who have studied German previously. May not be taken for credit in combination with GERM 101, 102, or 109. Lab work required.

109 Intensive Elementary German (6:6:2). Equivalent to GERM 101 and 102 taught in a single semester. Recommended for students who desire an intensive introduction to German. May not be taken for credit in combination with GERM 101, 102, or 105. Lab work required.

201 Intermediate German I (3:3:1). Prerequisite: GERM 102, 105, or 109, appropriate placement score, or permission of department. Further development of skills in listening, speaking, and writing. GERM 201 and 202 must be taken in sequence. Lab work required.

202 Intermediate German II (3:3:1). Prerequisite: GERM 201, appropriate placement score, or permission of department. Application of skills to reading, composition, and discussion. Lab work required.

209 Intensive Intermediate German (6:6:2). Prerequisite: GERM 102, 105, 109, or appropriate placement score or permission of department. Equivalent to GERM 201 and 202, taught in a single semester. May not be taken for credit in combination with GERM 201 or 202. Lab work required.

301 Culture and Civilization (3:3:0). Prerequisite: 60 hours or permission of instructor. Development of German civilization from the eighteenth century to the present. German cultural contributions to world civilization. Taught in English.

302 Germany Today (3:3:0). Prerequisite: 60 hours or permission of instructor. Contemporary German life: its major aspects, problems, and goals, seen from the West German perspective. Taught in English.

310 Conversation and Composition (3:3:0). Prerequisite: GERM 202 or equivalent or permission of instructor. Development of fluency in speaking and proficiency in writing German through discussion, reports, and compositions based on texts dealing with contemporary issues and events. Not for native speakers.

316 German for the Business World (3:3:0). Prerequisite: GERM 202 or equivalent or permission of instructor. Introduction to the terminology and structural features of business German. Emphasis on acquiring vocabulary and on developing facility in reading German business articles and correspondence.

318 Translation of Texts (3:3:0). Prerequisite: 12 hours of German or permission of instructor. Translation of texts from the natural and social sciences, current events, and contemporary culture. Translations mainly from German into English. Introduction to principles and techniques of translation.

325 Major Writers (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Works of major German, Austrian, and Swiss writers in translation. Writers to be studied vary. Course work in English. May be repeated for credit with permission of department.
340 Survey of German Literature (3:3:0). Prerequisite: GERM 202 or equivalent or permission of instructor. Required for German majors. Overview of the history of German literature from its beginnings to 1880.

355 Readings in Poetry (3:3:0). Prerequisite: GERM 202 or equivalent or permission of instructor. Intensive reading of German poetry in its historical context. Study of genre characteristics and development. Types of poetry studied varies. May be repeated for credit with permission of department when subtitle is different.

365 Readings in Narrative Prose (3:3:0). Prerequisite: GERM 202 or equivalent or permission of instructor. Intensive reading of German narrative prose, such as autobiographical fiction, fairy tales, and film. Study of genre characteristics and development. Topics vary. May be repeated for credit with permission of department when subtitle is different.

375 Readings in Drama (3:3:0). Prerequisite: GERM 202 or equivalent or permission of instructor. Intensive reading of German dramas in their historical context. Study of genre characteristics and development, including performance aspects. Type studied (e.g., historical drama, radio play, epic theater) varies. May be repeated for credit with permission of department when subtitle is different.

415 Advanced Grammar and Style (3:3:0). Prerequisite: 15 hours of German or permission of instructor. Study of syntax, idiomatic features, and levels of style. Extensive practice in different types of written expression.

418 Advanced Composition (3:3:0). Prerequisite: 15 hours of German or permission of instructor. Development of proficiency in writing German through intensive practice in preparing guided and original compositions.

442 The Age of Goethe (3:3:0). Prerequisite: 15 hours of German or permission of instructor. Major works of Enlightenment, Sturm und Drang, Classicism, and early Romanticism. Emphasis on drama and poetry by Goethe and Schiller; some Lessing and Kleist. This course may not be taken by anyone who has previously taken and satisfactorily completed GERM 440 or 441.

444 The Literature of Romanticism (3:3:0). Prerequisite: 15 hours of German or permission of instructor. German Romantic poetry and prose; background and some theory.

448 German Literature: 1830-1880 (3:3:0). Prerequisite: 15 hours of German or permission of instructor. Study of the literature of Young Germany, Biedermeier and Poetic Realism: prose, drama, and lyric poetry.

450 Modern Literature: 1880-1925 (3:3:0). Prerequisite: 15 hours of German or permission of instructor. The literature of Naturalism, Impressionism, and Expressionism in Germany, Austria, and Switzerland.

451 Modern Literature: 1925 to the Present (3:3:0). Prerequisite: 15 hours of German or permission of instructor. Literary trends since 1925 in Germany, Austria, and Switzerland.

480 Special Topics (3:3:0). Prerequisite: 15 hours of German or permission of instructor. Special topics in language, literature, or culture by theme, approach, or era. May be repeated for credit with permission of department.

490, 491 Independent Study (1-3:0:0), (1-3:0:0). Prerequisite: German majors with 90 hours and permission of chair. Research and analysis of a selected problem in literature or linguistics in consultation with a department member. Maximum of six hours of independent study may be applied to fulfillment of requirements in the major.

497, 498 Senior Honors Tutorial (3:3:0), (3:3:0). Prerequisite: German majors with 90 hours, a cumulative GPA of 3.00, and 3.00 in the major field. Students who meet these requirements are admitted to candidacy upon submission of a letter of application to the departmental Honors Committee in the second half of the junior year, supported by a faculty recommendation and an interview by and with the approval of the Honors Committee. In the first semester, students meet weekly with a faculty member to discuss readings from a comprehensive list. The second semester, students do independent research and complete an honors essay under the supervision of a member of the German faculty.

518 Studies in Eighteenth- and Early Nineteenth-Century Literature (3:3:0). Major authors, movements, and themes in eighteenth- and early nineteenth-century German literature. Literary theory and practice, historical background, and critical reception. May be repeated for credit with permission of department.

525 Studies in Modern Literature (3:3:0). Writers, themes, or genres of modern German literature. May be repeated for credit with permission of department.

550 Special Topics (3:3:0). Study of a special topic in the area of German language, literature, or culture. Specific topics are announced in advance. May be repeated for credit with permission of department.

560 History of the German Language (3:3:0). Development of the German language from the eighth century to the present. Phonological, morphological, and syntactic structures characteristic of the various stages of development.

Government and Politics (GOVT)

Public Affairs

103 Introduction to American Government (3:3:0). Analysis of American government examined in light of basic concepts and institutions of democracy.

132 Introduction to International Politics (3:3:0). Nature of international politics; approaches to study of international politics; states and nonstate actors in international system; patterns of action and interaction among nation-states; international institutions; major global issues.

133 Introduction to Comparative Politics (3:3:0). Introduction to the methods and subject matter of comparative political analysis: the major issues of political systems, the politics, participation in politics, government structures, the policy making process, and the evaluation of political performance.

241 Introduction to Public Administration (3:3:0). Prerequisite: GOVT 103 or permission of instructor. Administrative structure and processes, organization theory, administrative behavior, personnel, decision making, communications, leadership, management, budgetary processes, and administrative responsibility.

244 America in the Global System (3:3:0). Prerequisite: GOVT 132. Policies and role of the United States in the world community. Emphasis on analysis of internal and external factors that shaped conduct of the United States in the global system from independence to present. Structure of foreign policymaking; selected major issues in American foreign policy.

250 Introduction to Political Analysis (3:3:0). Prerequisite: GOVT 103. Systematic analysis of political data. Application of scientific method to political subjects. Research design, methodology. Use of computer to assist analysis of politics. Open to freshman and sophomore majors in government, public administration, international studies. Required for government and public administration majors.

300/PHYS 300 Nuclear Weapons: Technology and Politics (3:3:0). Prerequisite: 60 hours or permission of instructor. Study of the history and development of nuclear weapons and nuclear strategy, the physical basis of nuclear weapons and their biological and physical effects, the effects of a nuclear war and the possible effectiveness of civil defense, the possibility of limited and winnable nuclear wars, arms control, nuclear proliferation, and public opinion on nuclear issues. This course may not count toward the requirements of the physics major.

301 Public Law and the Judicial Process (3:3:0). Prerequisite: GOVT 103 and 60 hours. American judicial organization and operation, role of the Supreme Court in policy formation, and selected constitutional principles.

305 Contemporary American Federalism (3:3:0). Prerequisite: GOVT 103. Legal, administrative, fiscal, and political dimensions of evolving American federalism.

307 Legislative Behavior (3:3:0). Prerequisite: GOVT 103. Organization, processes, functions, and roles of the legislature and its members—the U.S. Congress. Includes state legislatures and cross-national comparisons as time and resources permit.

308 The American Presidency (3:3:0). Prerequisite: GOVT 103. A survey of the modern Presidency including constitutional origins of the office, growth and influence of the White House staff, the President's cabinet, presidential appointees and control of the executive branch, relations with Congress, domestic and national security policy making.

309 Government and Politics of Metropolitan Areas (3:3:0). Prerequisite: GOVT 103, GOVT 204, and 60 hours. Government, politics, and problems of metropolitan centers and surrounding areas.


312 Political Parties and Elections (3:3:0). Prerequisite: GOVT 103. Characteristics and functions of political parties, influence of parties and other political forces on electoral decisions, emphasis on parties' inability or ability to hold government accountable to citizens.

318 Interest Groups, Lobbying, and the Political Process (3:3:0). Prerequisite: GOVT 103. The role, internal operations, strategies, and activities of interest groups. Evaluation of their ability to enable citizens to influence or control government, and to enhance the democratic process. Consideration of conditions under which social movements become, or fail to become, effective interest groups.

320 Political Values (3:3:0). Prerequisite: 60 hours. Nature of man, origin and nature of the state, bases of political obligation, problems of consent, concepts of power, and sources of political authority as presented in the works of major writers.

331 Government and Politics of Latin America (3:3:0). Prerequisite: 60 hours. Contemporary political systems of Latin America, with emphasis on institutions, political processes, political behavior. Case studies of several key Latin American politics. Problems of political development in Latin America.

332 Government and Politics of the Middle East and North Africa (3:3:0). Prerequisite: GOVT 132 and 60 hours. Societies of the Middle East and North Africa and their response to the impact of internal sociocultural-political determinants and external forces. Focus on their contemporary politics—ideologies, popular manifestations, institutions, and operations.


334 Government and Politics of Europe (3:3:0). Prerequisite: 60 hours, GOVT 103, or permission of instructor. Contemporary democratic political systems of Europe, with emphasis on political processes, institutions, and behavior. Case studies of key European politics. Problems of multiparty systems, coalition governments, Eurocommunism, and stability and change in post-industrial societies.

335 Government and Politics of Canada (3:3:0). Prerequisite: 30 hours or permission of instructor. Survey of governmental and political systems of Canada, including political parties, parliamentary system, federal system, and specific policy issues of importance to Canadian politics.

336 Political Development and Change (3:3:0). Prerequisite: 60 hours. Process of political development and change in the context of modernization and industrialization. Patterns of political development, with emphasis on the Third World.

337 Ethnic Politics in Western Europe and North America (3:3:0). Prerequisite: GOVT 103 or 133, or permission of instructor. Study of the resurgence of ethnic nationalism in the industrial democracies of Western Europe and North America; the interplay of industrial-
ization and ethnic awareness; the comparative analysis of policy issues related to ethnonationalism; case studies drawn from the industrial democracies.

338 Government and Politics of the Former Soviet Union (3:3:0). Prerequisite: GOVT 132 and 133. Survey of Soviet politics since 1917. Focus on the impact of Stalin, the evolution of the nationalities issue, and changes since Gorbachev.

339 Selected Issues in the Politics of Advanced Industrial Societies (3:3:0). Prerequisite: GOVT 132 or 133, or permission of instructor. Study of selected current political issues in the industrial democracies of Western Europe and North America. Specific topics will be chosen each semester to reflect contemporary political concerns in these countries, but the political process in advanced industrial countries is the organizing principle throughout the course.

340 International Relations Theory (3:3:0). Prerequisite: GOVT 132 and 60 hours. Advanced inquiry into international relations. Theories and concepts of international relations. Major forces and issues in international politics.

341 Methods of International Relations Research (3:3:0). Prerequisite: GOVT 132, 340 Systematic research in international relations: identification of problems, research design, research techniques, and research report. Examples of applied research.


344 American Foreign Policy (3:3:0). Prerequisite: GOVT 132, HIST 122. The central issues surrounding the conduct of America's foreign relations, with special emphasis on structural and constitutional questions, national policy objectives abroad, and the conduct of foreign policy in a democracy.

349 The Global System Perspective (3:3:0). Prerequisite: GOVT 132 or 133, or permission of instructor. An overview of global systems (e.g., technology, environment, communications, etc.) with emphasis on the political subsystem and its interactions with other global subsystems.

355 Public Personnel Administration (3:3:0). Prerequisite: GOVT 241 and 60 hours or permission of instructor. Techniques and tools used in the management of personnel in government organizations, including the merit system, recruiting, placement, career systems, public pay systems, employee motivation, public employee labor relations, employee appraisals, manpower planning, employee separations, and retirement systems.

356 Public Budgeting and Finance (3:3:0). Prerequisite: GOVT 241 and 60 hours or permission of instructor. Tools and techniques used in budgeting and financial management in governments in the United States, including the management of public financial institutions, the budgetary process, budgetary reform, and the relationship of public budgeting to national economic policy.

357 Introduction to Public Planning (3:3:0). Prerequisite: 60 hours or permission of instructor. Framework, subject matter, uses, methods, administration, and future of public planning. Emphasis on setting goals, defining objectives, and choosing among program alternatives. Political and bureaucratic constraints and problems of implementation. Illustrations of planning may be drawn from various levels of government.

359 Computers in Public Management (3:3:0). Prerequisite: GOVT 250. Application of computers and computer-based analytical techniques to management information needs in the public sector. Focus on both mainframe and microcomputer applications.

364 Public Policy Making (3:3:0). Prerequisite: GOVT 103 and 60 hours. Processes, agencies, and politics involved in the proposal, making, implementation, evaluation, and revision of public policy in the United States.

365 Public Policy in Metropolitan Areas (3:3:0). Prerequisite: GOVT 204. Metropolitan political problems and specific policies to deal with them. Substance and impact of such policies as housing, transportation, land use, crime prevention, service delivery, and health care.

366 Public Policy Analysis (3:3:0). Prerequisite: GOVT 250 or permission of instructor. Methods of public policy analysis, evaluation, and research. Design and development of alternative courses of government action and evaluation of results. Problems in applying systematic analysis to political issues.

376 Collective Bargaining in the Public Sector (3:3:0). Collective bargaining and the broad concept of labor relations as involved in selection and hiring, seniority, promotions, and training. Labor relations and the bargaining process extending from initial hiring to retirement.

377 Public Safety Officers and the Law (3:3:0). Law applicable to fire and police protection, firefighters, and police officers and their relationship to the public, their employers, the courts, and other societal institutions. Rights and obligations of the uniformed services in tort and criminal law, historical development of each, Virginia law, and other local topics.

410 The Individual Citizen in a Democracy (3:3:0). Prerequisite: GOVT 103. Aspects of various forces on attitudes and behavior of citizens in a democracy: personality, family and others, political communications, political culture, current political events. How attitudes and behavior of citizens facilitate or hinder operation of democratic system.

411 Campaigns and Elections (3:3:0). Prerequisite: GOVT 103 and 60 hours. Theories of electoral behavior, the role of political parties in candidate recruitment and selection, campaign practices and techniques, campaign organization, financing, polls, and media techniques. Implications of various campaign practices with an emphasis on the American political system.


416 Political Persuasion and Propaganda (3:3:0). Prerequisite: GOVT 103. Techniques and processes of political argument and persuasion as used in campaigns, public education, and political debate. Propaganda in both domestic and international arenas. Political persuasion, myths, and symbols as used to in-
duce conformity and form unified polity. Films and tapes supplement examples of classic political speeches.

420 American Political Thought (3:3:0). Prerequisite: GOVT 103 and 60 hours. Major political values and theories in America from the formation of the American Republic to the present. Changes in American political values in crisis periods and contemporary American political theory, including pluralism, elite theories of democracy, and empirical political theory.

421 Contemporary Political Ideologies (3:3:0). Prerequisite: 60 hours. Study of political ideologies which shape the values, beliefs, and actions of contemporary regimes and political movements. Liberalism, conservatism, socialism, communism, and fascism in theory and in contemporary practice. Problems of totalitarianism and nationalism in post-industrial and developing societies.

422 Constitutional Interpretation (3:3:0). Prerequisite: GOVT 103 and 60 hours. An examination of the Supreme Court’s interpretation of the Constitutional powers of the Congress, the Presidency, and the Judiciary. Also includes an examination of major decisions concerning state regulation, taxation, and interstate relations.

423 Civil Rights and Liberties (3:3:0). Prerequisite: GOVT 103 and 60 hours. Contemporary issues in the application of basic American constitutional principles. U.S. courts’ interpretation and clarification of constitutional rights and liberties in such areas as First Amendment freedoms, equal protection of the laws, state and national interrelations within the federal system, and social and economic protection and regulation.

430 Comparative Political Leadership (3:3:0). Prerequisite: 60 hours. Comparative political leadership, relationships between political cultures and types of leadership, patterns of leadership recruitment, and linkages between political elites and citizenry.

431 COMM 431 Information Technology and the Political Process (3:3:0). Prerequisite: GOVT 103 or 133 or junior standing as a major in communication or permission of instructor. Study of the impact of the information network of wire and wireless communications and computers on the political process in advanced industrial countries.


446 International Law (3:3:0). Prerequisite: GOVT 132 and 60 hours. Nature, sources, and subject of the law of nations; the law and the individual; territorial questions; international transactions; war and the present and future status of international law.

449 Senior Seminar in International Studies (3:3:0). Prerequisite: Open only to majors in International Studies with 90 hours. An integrative seminar that draws previous course material into one analytical framework and provides the opportunity for in-depth study of some aspect of international studies. Format varies, but involves the student in the current literature, research techniques, and major issues of the field.

451 Administrative Management and Behavior (3:3:0). Prerequisite: GOVT 241 and 60 hours. American governmental administration: organizational theory and behavior, administrative responsibility, management systems, roles of the bureaucracy, and relationships between individuals and organizations.

452 Administrative Law and Procedures (3:3:0). Prerequisite: GOVT 241 and 60 hours. Law of public office; procedures followed by, and the legal limits on, the administrative agencies and their officers and employees.

459 Information Decisions and Management in Government (3:3:0). Prerequisite: GOVT 250. Information, records, and knowledge systems in government; information applications, decision-making under risk and uncertainty; high technology development, management and utilization; and sociotechnical systems.

464 Issues in Public Policy (3:3:0). Prerequisite: GOVT 103, 364, or 366. In-depth analysis of selected policy issues, such as health, transportation, communication, immigration, finance, and regulation. Format varies but involves students in current literature, historical and comparative perspective, and research techniques, including political and quantitative analysis.

471/SOCI 471 Prevention and Deterrence of Crime (3:3:0). Prerequisite: 60 hours in-service status or permission of instructor. Theoretical and practical strategies for crime prevention and deterrence. Social, environmental, and mechanical developments. The police, courts, and correctional elements of law enforcement in terms of current effectiveness and future potential for crime prevention.

480 Internship (3:6:0:0). Prerequisite: Open only to majors with 60 hours or 90 hours. Contact the department one semester before enrollment. Internships are approved work-study programs with specific employers. Credit is determined by the department.

490 Seminar (3:3:0). Prerequisite: Open to public affairs majors with 60 hours or 90 hours, and by permission of department to others with 90 hours who have completed at least 12 hours of work in government. May be repeated for elective credit. Subject varies according to the specialization of the faculty member in charge. Readings, individual or group projects, and discussions of seminar papers comprise the content and format. Only three credit hours may be counted within the major program.

496 Directed Readings and Research (1-3:0:0). Prerequisite: Open to majors in public affairs with 90 hours and permission of instructor and department. Reading and research on a specific topic, under the direction of a faculty member. A written report is required; an oral examination over the research and report may be required. May be used for elective credit only.

504 Theory and Practice of International Relations (3:3:0). Prerequisite: Acceptance in MPA program or permission of department. Theoretical and health education
537 Selected Problems of Third World Development (3:3:0). Prerequisite: Graduate standing or permission of department. Third World development problems, including development management, a new international economic order, foreign aid, multinational corporations, international organizations. May be repeated with permission of department.

631 The Dynamics of Development (3:3:0). Prerequisite: Graduate standing or permission of department. Factors and forces—both internal and external—that affect the political development of Third World countries, including North-South relations, dependency theory, and development strategy within the context of resource scarcity.

Health Education (HEAL)

Human Services

110 Personal Health (3:3:0). Individual and family well-being through the integration of such topics as fitness, nutrition, human sexuality, consumer health, drug education, and mental health.

111 Advanced First Aid & Emergency Care (3:3:0). Identification, care, and treatment of various medical emergencies.

120 Community and Environmental Health (3:3:0). Environmental health concerns and organization of community health programs of official and voluntary local, state, and national health programs. Field observation required.

205 Principles of Accident Causation and Prevention (3:3:0). Investigation of safety-related problems; emphasis on fire, home, occupational, and vehicle safety; violent and property crime prevention.

220 Dimensions of Mental Health (3:3:0). Integration of behavioral and sociocultural factors in the study of mental health.

305 Teaching Methods in Health Education (K-12) (3:3:0). Content, methodology, and resource materials in teaching health education for elementary and physical education teaching majors.

310 Drugs and Health (3:3:0). Prerequisite: HEAL 110. Analysis of drug use, with emphasis on its positive aspects; alternatives to drug misuse and abuse.

315 Foundations of Health Education (3:3:0). Prerequisite: HEAL 110 and 120, or permission of instructor. Historical and philosophical foundations of health education with emphasis on principles and theories governing contemporary programs.

323 Community Health Education Programs (3:3:0). Prerequisite: HEAL 120 or permission of instructor. Organization and principles in planning, developing, implementing, and evaluating community health education programs.


414 Student Teaching in Health Education (15:0:0). Prerequisite: Completion of all courses in the approved program, admission to and good standing in the teacher education program, and acceptance in student teaching. An intensive, supervised clinical experience of a full semester in an approved school in Virginia. Experience at the secondary level.

430 Seminar on Contemporary Health Problems (3:3:0). Overview of contemporary and often controversial health issues with analysis of selected problems of current concern to society.

450 Epidemiology (3:3:0). Study of the incidence, distribution, and causes of diseases and injuries in human populations. Emphasis is on essential diagnostics and planning for community health problem solving.

460 Internship in Community Health Education (15:0:0). Prerequisite: Permission of chair. Directed experience to observe and participate in the health education activities of a community health agency or professional health organization in cooperation with approved agency.

480 Special Topics (1-3:3:0). Selected health issues and/or programs are presented for each specific "Special Topics" course. Application of information to education programs receives special attention.

499 Independent Study in Health Education (1-3:0:0). Prerequisite: 90 hours and permission of department. Study of a problem area in health education research, theory, or practice under faculty direction. May be repeated but no more than three hours total credit may be given.

500 Workshop in Health Education (1,2,3:3:0:0). Analysis of selected health problems and issues involving readings, research, and group attention. Six semester hours of HEAL 500 may be applied to degree credit.

511 History and Philosophy of Health Education (3:3:0). Focus on evaluation of significant historical events that affected and contributed to health education development. Emphasis on personalities, institutions, and philosophical ideas of each area.

513 Current Issues in Health Education (3:3:0). Analysis of topical and often controversial health issues with emphasis on selected problems of concern to society.

515 Community Health Education Planning and Delivery (3:3:0). In-depth study of the processes of planning, organizing, delivering, and evaluating community health education programs.

516 Program Development and Resources in Health Education (3:3:0). Prerequisite: Baccalaureate degree in health education or related field, or permission of chair. Procedures used in planning, development, and organization of health education programs in school and health agency settings.

517 Health Education Process: School and Community (3:3:0). Prerequisite: Baccalaureate degree in
History (HIST)

History

101 Foundations of Western Civilization (3:3:0).
Evolution of Western culture from the ancient Mediterranean world to the formation of modern Europe in the seventeenth century.

102 Development of Western Civilization (3:3:0).
History of Western institutions and ideas from the seventeenth century to the present.

121 Formation of the American Republic (3:3:0).
Social, political, economic, and intellectual growth of American institutions from colonization through the Civil War.

122 Development of Modern America (3:3:0).
History of the United States from 1865 to the present.

130 History of the Modern Global System (3:3:0).
Studies the interaction of major world regions that, under the impact of European expansion, became integrated within a single global cultural and economic network. Beginning with a description of regional civilizations around 1500, the course focuses on cultural interaction and economic change through the era of mercantile expansion, industrial revolution, global imperialism, and twentieth-century crises and developments.

251, 252 Survey of East Asian Civilization (3:3:0), (3:3:0). HIST 251 is a survey of the history of China and Japan from prehistoric times until ca. 1600. HIST 252 is a survey of the history of China and Japan from early modern times (ca. 1600) until the present.

251, 252 Survey of African Civilization (3:3:0), (3:3:0). HIST 251 is a survey of African history from earliest times to the decline of Western Sudanic states in the sixteenth century. HIST 252 is a survey of African history from the beginnings of interaction with Europe in the fifteenth century to the recent emergence of new states.


Development of an independent Latin America since 1825. Emphasis on interactions between the United States and Latin America.

281, 282 Survey of Middle Eastern Civilization (3:3:0), (3:3:0). Emphasis on significant cultural, intellectual, social, and political developments. HIST 281 is a survey of the history of the major civilizations of the Middle East from ancient to medieval times (ca. 1258). HIST 282 is a survey of the history of the major civilizations of the Middle East from medieval to modern times (ca. 1258 to the present).

300 Introduction to Historical Method (3:3:0). Prerequisite: History majors and minors with 60 hours or permission of instructor. Preregistration in the department is required. Introduction to historical writing, research techniques, and critical evaluation of primary and secondary sources. Topics will vary according to instructor.

301 Classical Greece (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. Political, social, economic, and cultural history of classical Greece from development of the city-state through the fifth century.

302 Classical Rome (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. Political, social, economic, and cultural history of classical Rome from founding of the city through fall of the Roman republic.

304 Western Europe in the Middle Ages (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. Survey of the development of European society from the collapse of Roman rule in the fifth century to the advent of the Black Death in the 14th century. Emphasis is on the political, social, cultural, and intellectual growth of a society that developed from Roman, Catholic, and Germanic roots.

305 The Renaissance (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. Survey considering the Renaissance as a phenomenon rather than a chronological period. Emphasis on growth of humanism in Italy in the fourteenth and fifteenth centuries, development of new political concepts, and laicization of society including transmission of these developments to transalpine Europe in the late fifteenth and sixteenth centuries.

306 The Reformation (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. Late medieval ecclesiastical conditions and reform movements; late scholasticism; Protestant Reformation, Catholic Reformation, dynastic rivalries, and religious wars. Concludes with the Peace of Westphalia (1648).

308 Nineteenth-Century Europe (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. History of Europe from Congress of Vienna to outbreak of World War I.

309 Contemporary Europe (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. Survey of major political changes in Europe since 1914 with emphasis on broad patterns of ideological conflict.

314 History of Germany (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. Political, diplomatic, economic, social, and cultural development of Germany from the dissolution of Holy Roman Empire to present.

321 Early Modern England (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. The history of England from the late 15th to the mid-18th century, focusing on the social, political, economic, and cultural changes of the period with particular attention to the English Reformation and the causes and consequences of the English Civil War.

322 Modern Britain (3:3:0).
Prerequisite: 6 hours of history or permission of instructor. History of Britain from the mid-18th century to the present. Focuses on the social, political, and economic transformations of industrialization, the culture of 19th-century industrial society, the problems of late 19th-century economic competition and imperialism, the creation of the wel-
fare state, and the experience of post-World War II political, social, and economic realignments.

328 Rise of Russia (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Political, social, and cultural experience of Russia from the appearance of the Kievan state to the age of Pushkin.

329 Modern Russia and the Soviet Union (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Analysis of Russian civilization in nineteenth and twentieth centuries; focus on failure of tsarism, revolutionary response; and development of the Soviet Union.

333 Frontier America: The Westward Movement (3:3:0). Prerequisite: 6 hours of history or permission of instructor. History of exploration, settlement, and expansion of the frontier; emphasis on influence on cultural and political institutions.

335 The Afro-American Experience in the United States: African Background to 1885 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Brief introduction to origin of man, concept of race, impact of color on black experience, moving from the African background to the U.S. Civil War. Attention directed to the effect of plantation on certain African cultural survivals in the New World. Examination of genesis of American slavery and prejudice, colonial heritage, revolutionary legacy, colonization, abolitionism movement, and institutionalized slavery.

336 The Afro-American Experience in the United States: Reconstruction to the Present (3:3:0). Prerequisite: 6 hours of history or permission of instructor. General knowledge of the experience and development of black American society from 1865 to present. Focuses on the parallels between the nineteenth and twentieth centuries.

340 History of American Racial Thought (3:3:0). Introduction to the history of American racial thought, with particular emphasis on the relationship between the social theory and the social practices of racism in American life. The course examines the origins of American racism, the development of nineteenth century racial theories, and the twentieth century movement in anthropology that redefined race in cultural terms.

341 History of the United States Constitutional Law to 1865 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Consideration of the development of the federal Constitution to 1865. Emphasis on Anglo-American origins in common law and American revolutionary ideology, as well as the interplay of politics and the courts. The development of broader understanding of the Bill of Rights' guarantees is a secondary theme.

342 History of the United States, Constitutional Law from Reconstruction to the Present (3:3:0). Prerequisite: 6 hours of history or permission of instructor. The history of the Constitution, its expansion and development, from 1865 to the present. Among the principal elements treated are the adoption and impact of the Fourteenth Amendment, and the consequences of war and reform on twentieth-century government.

345 From Colony to World Power: A History of American Foreign Relations (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Survey of American diplomacy from Revolutionary War to present, with emphasis on twentieth-century issues.

351 History of the Old South (3:3:0). Prerequisite: 6 hours of history or permission of instructor. History of the South to the outbreak of the Civil War, with particular emphasis on the rise of sectionalism. Development of a distinct Southern culture through emergence of economic, political, social, agricultural, and intellectual institutions.

352 The South Since 1865 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. History of the South during Reconstruction, the Redeemer era and the New South, with particular emphasis on race relations. Political, economic, cultural, and intellectual development from aftermath of war.

353 History of Traditional China (3:3:0). Prerequisite: 6 hours of history or permission of instructor. China from earliest times to the period of modern Western intrusion. Development of traditional Chinese culture, society, and government.

354 Modern China (3:3:0). Prerequisite: 6 hours of history or permission of instructor. China from 1644 to the Peoples Republic of China. Emphasis on the coming of the West and the various stages of Chinese reaction.

355 Modern Japan (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Japan from the Meiji Restoration to World War II. Emphasis on Japan's modernization in the face of challenge.

356 The History of Argentina, Brazil and Chile (3:3:0). Prerequisite: HIST 271 or permission of instructor. Intensive study of evolution of Argentina, Brazil, and Chile from the Colonial period to the present with emphasis on changing social, political, and economic conditions.

379 History of Canada (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Introduction to history of Canada from French settlement to present. Emphasis on Canada's historical position in the British Empire and Commonwealth, its unique relations with the United States, and issues related to its French-speaking minority.

390 Topics in History (3:3:0). Study of historical topics or periods of special interest. Topics announced in advance. This course may be repeated for credit when topic is different and with permission of department.

391 History of Virginia to 1860 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Discovery and settlement of Virginia. Colonial period with emphasis on development of representative government and race relations, the "Golden Age" of the Virginia dynasty, coming of Civil War.

392 History of Virginia Since 1860 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Decision to secede, Civil War and Reconstruction, Readjusters and Populism, disfranchisement and Constitution of 1902, rise of Senator Harry F. Byrd. Recent developments.

393 History through Film (3:3:0). Study of historical periods or topics from perspective of feature films and documentaries. Topics available in advance in History Department. May be repeated with permission of de-
partment. Maximum of six hours may be applied toward the history major.

394 History of the Family in the United States and Europe, 1500-Present (3:3:0). Historical development of Western family life. Topics include attitudes toward infants and children, role of family in educating youth and in influencing marriage choice, relationship between parents and adult children, and interaction between nuclear and extended family. Change in family behavior in the context of wider social transformation.

396 History of Western Science II: From the Scientific Revolution to the Twentieth Century (3:3:0). Prerequisite: 60 hours or permission of instructor. Examines the foundations and development of scientific thought in Western Europe from the scientific revolution of the seventeenth century to the twentieth century. Emphasis on the historical context of science. No advanced background in mathematics or natural science is required.

398 The Social History of Technology (3:3:0). Prerequisite: 60 hours or permission of instructor. Introduction to the social, economic, and mechanical conditions that led to technological change. Major historical innovations in the use of machines and materials and their social consequences in Europe, the United States, and Latin America are considered.

401 Colonial America (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Intensive study of colonial American history from its European origins through the Revolutionary War.

403 Early National Period in American History, 1783-1820 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Study of formative years of the new republic from the Treaty of Paris of 1783 to the election of 1820.

404 Jacksonian Democracy, 1820-1848 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Study of the age of Andrew Jackson; emphasis on democratic institutions that emerged as dominant influences in American society.

406 Civil War and Reconstruction (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Course, conduct, and consequences of the American Civil War and aftermath. Emphasis on interconnectedness of political, military, and economic affairs.

409 Between the Wars: The United States, 1919-1941 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Intensive study of political, social, economic, and diplomatic developments in the 1920s and the 1930s.

410 The United States Since World War II: Nation and Empire (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Examination of major domestic and foreign policy factors that shaped American experience from World War II to present. Political, social, and economic forces as they affected the nation's history.

411 Cultural and Intellectual History of the United States: 1600-1865 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Cultural and intellectual currents to 1865.

412 Cultural and Intellectual History of the United States Since 1865 (3:3:0). Prerequisite: 6 hours of history or permission of instructor. American thought and society from 1865 to present. Effect of industrialization on American institutions; development of a business "credo"; growth of radical thought in economics, politics, and religion; changes in social structure; increasing power and influence of the state.

413 War and the Military in American Life (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Study of impact of war on American society; its influence on the shaping of national policy. Topics include role of the military in the economy, minorities in the armed forces, development of peace movements.

416 United States Urban History (3:3:0). Prerequisite: 60 hours or permission of instructor. Examines the process of urbanization in the United States, and the growth of American cities and suburbs from colonial times to the present.

417 History of Metropolitan Washington (3:3:0). Examines urban and suburban growth in Washington, D.C., and its suburbs in Maryland and Virginia since 1790, in the context of United States urban history.

418 Ethnic Groups in American Cities (3:3:0). Prerequisite: 60 hours or permission of instructor. Acquaints students with ethnicity and race in American urban society by comparing the experience of different ethnic groups as migrants to American cities.

420 Topics in Twentieth-Century U.S. Diplomacy (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Topics vary and are available in advance at the History Department.

431/ENGL 431 Medieval Intellectual Topics (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Topics in the intellectual history of the Middle Ages. Topics vary, depending on discipline of instructor. May be taken for credit by English, history, or area studies majors.

435 Society and Culture in Early Modern Europe (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Examination of the social and cultural lives of Europeans from the end of the Middle Ages to the Industrial Revolution. Popular, as well as elite, culture are emphasized, as are the bridges and interrelationships between them. Focus on religious, artistic, literary, and recreational behavior. In addition, political activity—riots, strikes, royal receptions, and rituals—are covered.

436 European Society and Culture; Nineteenth and Twentieth Centuries (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Examination of major cultural trends in Europe since the French Revolution. Major themes include romanticism, socialism, Marxism, the social effect of modernization, science, and societies.

440 Early Modern France (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Survey of French history from the Renaissance to the Enlightenment. The growth, development, and eventual decline of the monarchy is stressed, as well as the social, cultural, and intellectual developments of the period, when France tried to dominate Europe culturally and politically.
441 Modern France (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Study and influence of domestic, foreign and cultural developments in France since the Revolution of 1789.

443 History of Spain and Portugal (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Development of Spain and Portugal from prehistoric to modern times, noting particularly factors related to their former empires in America.

451 The United States and China (3:3:0). Prerequisite: 6 hours of history or permission of instructor. History of foreign relations between U.S. and China in nineteenth and twentieth centuries, with emphasis on causes of their cooperation and conflict.

455/COMM 455 History of Print Journalism (3:3:0). Prerequisite: 3 hours COMM or HIST. Development of print journalism from its inception to the present, with emphasis on the interaction of technology, audience, and government intervention. Topics include birth of the press; development of the modern newspaper and American development, including the Revolutionary and Civil Wars; the rise of the independent press; and the Yellow Journalism period.

463 Ancient India and Pakistan (3:3:0). Prerequisite: 6 hours of history or permission of instructor. History of Indo-Pakistan subcontinent with special reference to Indus Valley people, Hindus, Jains, Buddhists, and Muslims from ancient to medieval times.

464 Modern India and Pakistan (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Political history of Indo-Pakistan subcontinent from mid-eighteenth century to present. Background of earlier cultures of Hindus and Muslims as prelude to developments in modern periods.

465 The Middle East in the Twentieth Century (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Political, social, and cultural history of the Middle East since World War I. Emergence of Israel, Arab nationalism, and political and economic influence of the Middle East in world affairs.

466 Origins of Conflict in Southern Africa (3:3:0). Explores the historical origins of conflict in Southern Africa, focusing on themes of economic change, cultural interaction, and political consolidation over the past five centuries.

470 Diplomacy and War in Latin America (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Balance of power diplomacy among nation states of Latin America from independence to present. Emphasis on sources of conflict.

475 History of Mexico (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Intensive study of Mexican history from pre-Columbian era to present, with emphasis on the national period.

480 Alexander the Great (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Rise of Persia, the Persian wars with Greece, subjugation of Greece by Philip II of Macedon, life of Alexander the Great and his conquest of the Persian empire.

495 Racism in the United States: A Seminar (3:3:0). Prerequisite: 90 hours, 6 hours of history or permission of instructor. Manifestations of racism in U.S., as directed against Indians, Orientals, Jews, Mexican-Americans, and Afro-Americans.

496 Internship (3:6:0:0). Prerequisite: History majors with 60 hours and permission of department. Internships are approved work-study programs in cooperation with specific organizations including area museums; archives; historic sites; and local, state, and federal agencies. Credit determined by department.

498 Directed Readings/Research in History (1-3:0:0). Prerequisite: History majors with 90 hours and permission of instructor. Readings/research conducted on an individual basis in consultation with instructor. A student may not present more than three hours for graduation credit.

499 Senior Seminar in History (3:3:0). Prerequisite: History majors with 90 hours, HIST 300, or permission of instructor. Pre-registration in the department is required. Research on a specialized historical topic culminating in a seminar paper. Subject determined by instructor. Permission must be obtained in advance. A student may present not more than 3 hours for graduation credit. A grade of C or better is required to graduate with a B.A. in history.

Information Systems (INFS)

Information and Software Systems Engineering


311 Database Management (3:3:0). Prerequisite: INFS 310. Study of the logical and physical characteristics of data and its organization in computer processing. Emphasis on data as a resource in computer applications. Examination of Database Management System (DBMS) software and its design, implementation, and use. Lab exercises using one or more DBMS for business applications. Computing lab.

312 Computer Architecture and Operating Systems (3:3:0). Prerequisite: INFS 310. Introduction to computing system hardware components, architecture, organization, and operating system software concepts. Provides basic experience in assembly language programming for modern microprocessors and examines techniques for system evaluation and selection. Computing lab.

315 High-Level Programming Languages (3:3:0). Prerequisite: INFS 310. Study of the structure and application of high-level languages by stressing the design and implementation of data types, data structures, and algorithms. Computing lab.

316 Software Systems Engineering (3:3:0). Prerequisite: INFS 310. Study of programming environments, including software tools and control of software development for large information systems engineering projects. Computing lab.

491 Seminar in Information Systems (3:3:0). Prerequisite: Permission of instructor. In-depth analysis of se-
lected topics which highlight the latest developments in information systems, including contemporary research findings and case studies of information systems.

492 Special Topics in Group Project Implementation (3:3:0). Prerequisite: 6 hours of INFS or CS programming courses including INFS 312 or equivalent. Examines computer system design practices and project management concepts, and gives students practical experience working on an information systems engineering project. With faculty guidance, students participate in a team design and implementation project. Typical projects are (1) an office automation system, (2) a student records information system, or (3) a software design and management effort.

498 Independent Study in Information Systems Engineering (1-3:0:0). Prerequisite: 60 hours; must be arranged with an instructor and approved by the department chair before registering. Directed self-study of special topics of current interest in INFS. May be repeated for a maximum of 6 credits if the topics are substantially different.

499 Special Topics in Information Systems Engineering (3:3:0) Prerequisite: 60 hours and permission of instructor. Topics of special interest to undergraduates. May be repeated for a maximum of 6 credits if the topics are substantially different.

Italian (ITAL)

Foreign Languages and Literatures

100 Survival Italian (3:3:0). Not part of a sequence that fulfills the foreign language requirement. Development of Italian communication skills stressing vocabulary, pronunciation, and idiomatic expressions.

101 Elementary Italian I (3:3:1). Designed for students with no knowledge of Italian. Introduction to Italian, including elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Lab work required.

102 Elementary Italian II (3:3:1). Prerequisite: ITAL 101 or permission of instructor. Continuation of Italian 101. Lab work required.

201 Intermediate Italian I (3:3:1). Prerequisite: ITAL 102 or permission of department. Further development of skills in listening, speaking, reading, and writing. ITAL 201 and 202 must be taken in sequence. Lab work required.

202 Intermediate Italian II (3:3:1). Prerequisite: ITAL 201 or permission of department. Application of language skills to reading, composition, and discussion. Lab work required.

Japanese (JAPA)

Foreign Languages and Literatures

101, 102 Introduction to the Japanese Language (3:3:1), (3:3:1). Must be taken in sequence. Introduction to Japanese, including basic grammar, oral expression, listening comprehension, and reading and writing. Lab work required.

109 Intensive Japanese I (6:6:2). Equivalent to JAPA 101, 102 taught in a single semester. Recommended for students who desire an intensive introduction to Japanese. May not be taken for credit in combination with 101 or 102. Lab work required.

201 Intermediate Japanese I (3:3:1). Prerequisite: JAPA 102 or equivalent. Further development of skills acquired in JAPA 101, 102, including grammar, oral expression, listening comprehension, and reading and writing. The use of the written language (katakana, hiragana, and kanji) emphasized. Lab work required. JAPA 201 and 202 must be taken in sequence.

202 Intermediate Japanese II (3:3:1). Prerequisite: JAPA 201 or equivalent. Continuation of JAPA 201. Lab work required.

209 Intensive Japanese II (6:6:2). Prerequisite: JAPA 102 or 109 or equivalent.Equivalent to JAPA 201, 202 taught in a single semester. May not be taken for credit in combination with 201 or 202. Lab work required.

301 Japanese Culture and Civilization (3:3:0). Prerequisite: 60 hours or permission of instructor. Focus on Japanese behavior in cultural context. Problems of cross-cultural understanding in a multicultural society. Course work in English.

Latin American Studies (LAS)

Area Studies

489 Independent Study (1-6:0:0). Prerequisite: 60 hours, permission of chair and instructor. Intensive study of a period, problem or project related to Latin American Studies proposed by an individual student, to be conducted in close consultation with an LAS faculty member. May be repeated for a total of six credits.

490 Internship (2-6:0:0). Prerequisite: 60 hours and permission of chair. Internships are nonpaying, work-study positions that focus on interdisciplinary LAS issues. Qualified students are placed with area institutions, interest groups, agencies, museums, or corporations. Placement depends upon availability of positions.

491 Contemporary Latin America (3:3:0). Required of Latin American studies majors with 90 hours or permission of instructor. Interrelationship of economic, political, social, and cultural factors in explaining current Latin American reality. Topic announced. May be repeated for credit provided that course subtitle is different.

Latin (LATN)

Foreign Languages and Literatures

Placement: See Admission Procedures.

101, 102 Elementary Latin (3:3:1), (3:3:1). Must be taken in sequence. Introduction to Latin, including basic grammar and development of reading skills; introduction to Latin literature and Roman civilization.

201 Intermediate Latin: Prose and Poetry (3:3:1). Prerequisite: LATN 102 or equivalent. Intensive review of elementary grammar; introduction to more advanced grammatical constructions and patterns of usage; con-

continued development of reading proficiency; study of origin and development of Latin literature.

202 Intermediate Latin: The Golden and Silver Ages (3:3:1). Prerequisite: LATN 201 or equivalent. Study of advanced grammatical constructions and patterns of usage; reading selection from various Latin authors who flourished during the late Republic and early Empire of Rome; study of the cultural and political background of classical Latin authors.

321, 322 Latin Tutorial (1-3:0:0), (1-3:0:0). Prerequisite: LATN 202 or equivalent and permission of department. Readings in Latin drawn from classical or post-classical literature. Selection of authors or genres by the instructor in consultation with the student. Meetings on a tutorial basis. May be repeated once under each number to a maximum of 4 separate topics and 12 semester hours of credit.

351 Latin Prose Authors (3:3:0). Prerequisite: LATN 202 or equivalent. Introduction to the basic themes and rhetorical and literary techniques in Latin prose works. Emphasis on interpretation, stylistic analysis, and the role of prose literature in Roman society. Course concentrates on complete short works and extended prose passages, and includes texts from a representative sample of Latin prose authors.

352 Latin Poetry (3:3:0). Prerequisite: LATN 202 or equivalent. Introduction to the basic meters, genres, themes, and poetic techniques found in Latin poetry. Emphasis on interpretation, stylistic analysis, ancient theories of poetry, and the poet's role in society. A variety of poets are included, with concentration on Catullus, Virgil, Horace, and Ovid.

451, 452 Latin Authors and Literary Genres (3:3:0), (3:3:0). Prerequisite: LATN 351 or 352, equivalent, or permission of instructor. Courses focus on a single Latin author or literary genre, approaching the texts from a variety of interpretive perspectives and using secondary literature as well as primary texts. Topics and authors vary. Sequence may be repeated for credit.

Management (MGMT)

School of Business Administration

If a student takes noncore upper-level business administration courses prior to acceptance to the School of Business Administration, those courses will not count on an undergraduate degree application for any major in the school (except as general elective credit). A grade of C or higher must be presented on the graduation application for each upper-level course in the major. Prerequisites are strictly enforced.

300 Management of Organizations for Nonbusiness Majors (3:3:0). Examination of management functions and practices in private, public, and nonprofit organizations. Emphasis on managerial decision making and organization theory and behavior in domestic and multinational settings. (Course may not be taken for credit by business majors.)

302 Organizational Behavior and Administration (3:3:0). Prerequisite: Completion of at least 60 semester hours including COMM 100, 101, or 130. Review and application of major theoretical issues in organizational behavior. Analysis and critique of research methods used in the field. Particular emphasis on micro factors and their application to development of effective managerial styles.


321 Personnel Administration (3:3:0). Prerequisite: MGMT 302. Principles and procedures related to recruitment and selection of a labor force, grievance and disciplinary procedures, problems involved in collective bargaining, pay policies, merit rating, promotion, and training. Emphasis on their relationship to management.

331 Labor-Management Relations (3:3:0). Examination of American trade unions and of unionism. The labor contract; the bargaining processes; the philosophy of unionism; the use of bargaining techniques for nonwage issues; the legal content of labor-management relations; the responsibilities and duties of unions and management; the political-economic impact of unionism.

341 Business Communication (3:3:0). Introduction to theory and practice of effective business communication. Includes inquiry into principles of communication, communicating through correspondence and reports, and business research methods.

381 Management Problem Solving and Decision Making (3:3:0). Prerequisite: MGMT 302. Application of principles and techniques of management to cases drawn from business, public, and nonprofit organizations. Emphasis on internal management of organizations, applications of systems theory and methodology, and techniques used to analyze problems effectively.


421 Advanced Personnel Administration (3:3:0). Prerequisite: MGMT 321. In-depth, experience-based examination of the more complex areas of personnel administration: job and task analysis, performance appraisal, selection and placement, wage and salary field of personnel administration.

431 Labor Legislation and Collective Bargaining (3:3:0). Prerequisite: MGMT 302. Study of the institutional framework of collective bargaining, with two distinct focuses. The first is on major pieces of legislation from English Common Law through the present day; the second includes an in-depth analysis of collective bargaining—its participants, techniques, issues, and legal environment, and evaluation of the contract.

451 Small Business Management (3:3:0). Prerequisite: MGMT 312. Study of the entrepreneur and entrepreneurial organizations through use of Small Business Institute (SBI) cases. Emphasis on the entrepreneurial process and factors affecting behavior. SBI cases come from a variety of high-technology and service-related businesses.
Management Information Systems (MIS) 215

471 Organizational Management and Environmental Change (3:3:0). Prerequisite: MGMT 302 or 312. An examination of organizational management concepts and applications in response to changing environments. The organizational impact of various stakeholders, as well as the interaction between organizations and processes will be reviewed. Management practices, structures, and processes will be emphasized.

481 Business Interviewing (3:3:0). Prerequisite: MGMT 302 or 312. Study of management and concepts relevant to business interviewing. Relevant theory, examples, and exercises that demonstrate the nuances of the most commonly used forms of the business interview will be introduced. Focus on survey, selection, appraisal, counseling, discipline, and exit interviews from the perspective of the interviewer.

491 Seminar In Management Information Systems (3:3:0). Prerequisite: MGMT 302 and 312. Advanced study of management concepts and selected topics, intensive analysis of management problems which represent long-term strategic significance or current urgency for organizational planning and operations. Significant contemporary research findings.

492 Field Experience in Management (3:3:0). Prerequisite: MGMT 302 and 312. Faculty-governed field experience in a Northern Virginia business. Teams of students, matched with client firms through the Entrepreneurship Center, propose action plans relating to a major problem or opportunity faced by the company.

498 Business Strategy and Policy (3:3:0). Prerequisite: Final semester and FNAN 301, MGMT 302, and MKTG 301. A capstone course designed to acquaint the student with the nature of strategic management and the shaping of business policy. Emphasis on managerial decision making as it relates to business strategy formulation and implementation in large, medium, and small enterprises, both domestic and international.

499 Independent Study (1-3:0:0). Prerequisite: Management majors with at least 9 upper-level management credit hours. Research and analysis of selected problems or topics in management must be arranged with an instructor and receive written approval of chair before registration. Written report required.

Management Information Systems (MIS)

School of Business Administration

If a student takes noncore, upper-level business administration courses prior to acceptance to the School of Business Administration, those courses will not count on an undergraduate degree application for any major in the School of Business Administration (except general elective credit). A grade of C or higher must be presented on the graduation application for each upper-level course in the major. Course prerequisites are strictly enforced.

201 Introduction to Computer-Based Management Information Systems (3:3:0). Prerequisite: CS 161 and DESC 200 with a grade of C or better. Introduction to the components of the management information system (MIS) and their integration for managerial control and decision support. Analysis, design, and implementation of MIS software. Microcomputing lab for database and spreadsheet applications.

403 Computer Systems Analysis and Design (3:3:0). Prerequisite: MIS 201 and INFS 310. INFS 311 recommended. Treatment of the life cycle of a computer information system with emphasis on information requirements analysis, feasibility studies, economics, system design, equipment selection, and the implementation process. Term project required. Computing lab.

410 Managerial Applications of Microcomputers (3:3:0). Prerequisite: MIS 201 and knowledge of DOS and electronic spreadsheets. Selection and use of microcomputer hardware and software management for applications. Word processing, spreadsheet analysis, graphics, communications, file management, and database management. Term project and microcomputing lab.

411 Management and Control of Information Systems (3:3:0). Prerequisite: ECON 306, INFS 311 or MIS 403, or permission of instructor. Uses an economics perspective to study issues arising in the management and control of information systems. Topics include cost/performance trends in information technology, software development cost estimation, systems project management, pricing computer services, and the strategic use of information technology.

420 Business Data Communications (3:3:0). Prerequisite: DESC 352 and INFS 310. INFS 311 recommended. Broad introduction to business data communications. Emphasis on the integration of data communications into the automated business office. Term project.

440 Business Applications of Artificial Intelligence (3:3:0). Prerequisite: DESC 301 and INFS 310 or a 3-hour programming course. Broad introduction to applications of artificial intelligence. Emphasis on the use and application of expert systems and natural languages in business and public sector organizations. Term project.

450 Knowledge-Based Systems Development (3:3:0). Prerequisite: INFS 310 and MIS 440. MIS 403 recommended. Essential steps in knowledge engineering, what knowledge-based systems are, and how to manage development of knowledge-based systems. Course also touches on the evaluation and integration of knowledge-based systems into existing environments, as well as how to maintain and evolve a knowledge-based system.

491 Seminar in Management Information Systems (3:3:0). Prerequisite: DESC 202, DESC 301, MIS 201, and INFS 310. In-depth analysis of selected topics that highlight the latest developments in the information resource management field, including contemporary research findings and case studies of information systems in business and other organizations.

492 Field Experience in Management Information Systems (3:3:0). Prerequisite: Senior standing. Faculty-governed field experience in a Northern Virginia business. Teams of Students, matched with client firms through the Entrepreneurship Center, propose action plans relating to a major problem or opportunity faced by the company.
499 Independent Study in Management Information Systems (1-3:3:0). Prerequisite: Information resource management majors with at least 9 upper-level MIS or INFS credit hours. Research and analysis of selected problems or topics in information resource management. Must be arranged with an instructor and receive written approval of chair before registration. Written report required. May be repeated to a maximum of 6 hours if topics vary.

Marketing (MKTG)

School of Business Administration

If a student takes noncore, upper-level business administration courses prior to acceptance to the School of Business Administration, those courses will not count on an undergraduate degree application for any major in the school (except as general elective credit). A grade of C or higher must be presented on the graduation application for each upper-level course in the major. Prerequisites are strictly enforced.

300 Contemporary Marketing for Nonbusiness Majors (3:3:0). A survey of the marketing of goods, services, and ideas in the economic, social, and international environment. Attention is given to public, private, profit and nonprofit organizations and how the management of the marketing functions is performed. (Course may not be taken for credit by business majors.)

301 Principles of Marketing (3:3:0). Prerequisite: Completion of at least 60 semester hours including ACCT 202 and ECON 103 and 104. Examination of marketing principles, concepts, strategies, tactics, and analytical tools used by profit and nonprofit organizations to market ideas, products, and/or services to selected target groups. Emphasis is on how to promote, distribute, and price the firm’s offering in a dynamic economic, social, political, and international environment.

311 Sales Management (3:3:0). Prerequisite: MKTG 301. Examination and evaluation of the sales effort as it relates to the consumer and participants within the marketing channel.

312 Consumer Behavior (3:3:0). Prerequisite: MKTG 301. Marketing strategy implications of the concepts and propositions that compose consumer decision processes. Emphasis is on life style, situation, and information processing. Lecture and case analysis.

313 Advertising Management (3:3:0). Prerequisite: MKTG 301. In-depth study and application of advertising and its role in marketing planning. Identification of relevant data to analyze the marketing situation, development of product position, marketing and advertising objectives, creative strategy, media planning, and evaluation.

332 Retail Management (3:3:0). Prerequisite: MKTG 301. Comprehensive view of retailing as it relates to the total marketing process. Emphasis on retail decision alternatives used when formulating retail strategy.

333 Industrial and Governmental Marketing (3:3:0). Prerequisite: MKTG 301. In-depth description, analysis, and evaluation of industrial and governmental marketplaces. Emphasis on marketing procedures practiced and available to decision makers when considering pricing, promotion, and channels of distribution.

351 Marketing Research Techniques and Applications (3:3:0). Prerequisite: DESC 202 and MKTG 301. Study of concepts, theories, and principles underlying the marketing research process. Focus on development and evaluation of research designs for gathering marketing information.

407 International Business (3:3:0). Prerequisite: MKTG 301, MGMT 301 or 302, and FNAN 301. Multidisciplinary approach to international trade from the viewpoint of business management. Introduced are unique aspects of international transactions, including patterns and theories of international business, impact of foreign trade and international environment, and international business planning.

471 Marketing Management (3:3:0). Prerequisite: 90 hours including 6 hours of marketing, of which may be taken concurrently. Managerial aspects of marketing, emphasizing development of marketing strategies and plans and integrating specific elements of the marketing process. Emphasis on case analysis.

481 Marketing in the Nonprofit Sector (3:3:0). Prerequisite: MKTG 301. Unique problems of marketing in nonprofit organizations, including government, and their solution through application of traditional and innovative techniques. Marketing commercial ventures owned by nonprofits. Lecture, discussion, and case analysis.

491 Special Topics in Marketing (3:3:0). Prerequisite: 9 hours of marketing. In-depth treatment within a seminar format of contemporary topics in marketing. Culminates in the preparation of a substantial paper and oral presentation.

492 Field Experience in Marketing (3:3:0). Prerequisite: Senior standing. Faculty-governed field experience in a Northern Virginia business. Teams of students, matched with client firms through the Entrepreneurship Center, propose action plans relating to a major problem or opportunity faced by the company.

499 Independent Study (1-3:3:0). Prerequisite: 90 hours including a minimum of 24 hours of business courses including principles of marketing, finance, and management. A primary research proposal in a marketing area with prior approval of the instructor and faculty chairman.

Mathematics (MATH)

Mathematical Sciences

Knowledge of high school algebra is a prerequisite for all mathematics courses. In exceptional cases the prerequisite for a course above the calculus sequence may be waived at the discretion of the instructor.

101 Algebra and Elementary Functions (0:3:0). Meets three hours per week. No degree credit is given; however, tuition and fees are charged for three hours. Basic algebraic manipulations. Linear equations and graphing. A study of the properties of polynomial, logarithmic, exponential, trigonometric functions.

of calculus. Topics covered include trigonometry, functions, and graphing. May not be used as credit toward
the B.A. or B.S. in Mathematics or toward satisfying Area B of the university core requirements or the Analytical Reasoning requirement for the B.A. degree in
College of Arts and Sciences. May not be taken for credit after receiving a grade of C or better in MATH courses numbered 113 or higher.


108 Introductory Calculus with Business Applications (3:3:0). Successful completion of Math Placement Test offered through the Testing Center, or a grade of C or better in MATH 105. Functions, limits, the derivative, the integral. Applications of differentiation and integration. Students who have received credit for MATH 113 or 115 may not receive credit for this course.

110 Finite Mathematics (3:3:0). Elementary set theory, probability, and statistics.


113 Analytic Geometry and Calculus I (4:4:1). Prerequisite: Thorough understanding of high school algebra and trigonometry. Successful completion of MATH Placement Test offered through the Testing Center, or a grade of C or better in MATH 105. Functions, limits, the derivative, the integral. Applications of differentiation and integration. Students who have received credit for MATH 113 or 115 may not receive credit for this course.

114 Analytic Geometry and Calculus II (4:4:1). Prerequisite: C or better in MATH 113. Transcendental functions, methods of integration, infinite series, analytic geometry.

125 Discrete Mathematics I (3:3:0). Introduction to the ideas of discrete mathematics including logic, proof techniques, sets, graphs and trees, and techniques of enumeration. Recommended for mathematics majors, science majors, and SITE students.

203 Matrix Algebra (3:3:0). (Formerly MATH 303) Prerequisite: MATH 114 or permission of instructor. Matrix operations, vector spaces, rank of a matrix, determinants, eigenvalues and eigenvectors.

209 Introduction to Mathematical Modeling (3:3:0). Prerequisite: C or better in MATH 114. Calculus-based introduction to discrete and continuous models in the natural and social sciences. Topics include approximations, data analysis, model evaluation, optimization, difference and differential equations, deterministic and stochastic models.

213 Analytic Geometry and Calculus III (3:3:0). Prerequisite: MATH 114. Infinite series, partial differentiation, multiple integrals, line and surface integrals.

214 Elementary Differential Equations (3:3:0). (Formerly MATH 304.) Prerequisite: MATH 213 and a knowledge of a scientific programming language. First order differential equations, second-order linear differential equations, systems of linear differential equations.


271 Mathematics for the Elementary School I (3:3:0). Concepts and theories underlying elementary school mathematics, including sets, logic, systems of numeration, whole numbers and integers, operations with integers, equations, and inequalities. Intended for school educators; does not count toward a major in mathematics.

272 Mathematics for the Elementary School II (3:3:0). Continuation of MATH 271; MATH 271 is recommended prior to enrolling in MATH 272. Topics include elementary number theory, rational and real numbers, intuitive geometry, and measurement, including the metric system. Intended for school educators; does not count toward a major in mathematics.

290 Foundations of Mathematics (3:3:0). Prerequisite: MATH 114. Axiomatic set theory; graphs; functions; equivalence relations and partitions; partially ordered sets; induction; construction of the natural, rational, real and complex number systems; well-ordering principle; and cardinality. Primarily intended for mathematics majors.

301 Number Theory (3:3:0). Prerequisite: 6 hours of math. Prime numbers, factorization, congruences, Diophantine equations.


305 Discrete Mathematical Structures (3:3:0). Prerequisite: MATH 114. Survey of topics in discrete mathematical structures essential to the study of computer science including numeration schemes, lattices, Boolean algebra, graphs and directed graphs, combinatorics, and elementary introduction to graphs and finite fields and finite-state machines.

313, 314 Introduction to Applied Mathematics (3:3:0), (3:3:0). Prerequisite: MATH 214 or 216. Vector fields and integration, complex analysis, Fourier and orthogonal series, Laplace and Fourier transforms, Green's functions, partial differential equations, boundary value problems, special functions, and other topics arising in mathematical physics.


322 Linear Algebra (3:3:0). Prerequisite: MATH 290 and 203 or 216. Vector spaces, linear independence, bases, linear transformations, matrix algebra, inner product, special topics.

325 Discrete Mathematics II (3:3:0). Prerequisite: MATH 125 or 305. Further development of the ideas of discrete mathematics, including recurrence, generating functions, algorithms of graph theory, predicate calculus, finite state machines, modular arithmetic.
351 Probability (3:3:0). Prerequisite: MATH 213 or 215. Random variables, probability functions, special distributions, limit theorems.

352 Statistics (3:3:0). Prerequisite: MATH 351. Estimation, decision theory, testing hypothesis, correlation, linear models, and design.


411 Functions of a Complex Variable (3:3:0). Prerequisite: MATH 214 or 216. Analytic functions, contour integration, residues, and applications to such topics as integral transforms, generalized functions and boundary value problems.

413 Modern Applied Mathematics I (3:3:0). Prerequisite: Either MATH 216 or (MATH 203 and MATH 214) and MATH 315. Synthesis of "pure mathematics" and "computational mathematics." The interplay between discrete and continuous mathematics is emphasized throughout. Mathematical structure is revealed from equilibrium models in discrete and continuous systems.

414 Modern Applied Mathematics II (3:3:0). Prerequisite: MATH 413. Continuation of MATH 413 which involves a synthesis of "pure mathematics" and "computational mathematics." Fourier analysis and its role in applied mathematics is developed, e.g., differential equations and approximations. Discrete aspects are emphasized in computational models.


441 Operations Research I (3:3:0). Prerequisite: MATH 203 or 216 or permission of instructor. Survey of deterministic methods for solving "real-world" decision problems. The programming model and simplex method of solution, duality and sensitivity analysis, transportation and assignment problems, shortest path and maximal flow problems, project networks including PERT and CPM, introduction to integer and nonlinear programming, dynamic programming and game theory. Emphasis on modeling and problem solving.


446 Numerical Analysis I (3:3:0). Prerequisite: MATH 203 or 216 and knowledge of a scientific programming language. Significant figures, round-off errors, iterative methods of solution of nonlinear equations of a single variable, solutions of linear systems, iterative techniques in matrix algebra, interpolation and polynomial approximation.

447 Numerical Analysis II (3:3:0). Prerequisite: MATH 216 (or 214) and 446. Numerical differentiation and integration, initial-value and boundary-value problems for ordinary differential equations, methods of solution of partial differential equations, iterative methods of solution of nonlinear systems, approximation theory.

491, 492 Reading and Problems (1-3:0:0), (1-3:0:0). For mathematical sciences majors only. Independent study in math. Must be arranged with instructor before registering.

493 Topics in Applicable Mathematics (3:3:0). Prerequisite: 6 credits of math at or above the 310 level. Topics that have been successfully used in applications of mathematics. Subject determined by instructor.

494 Topics in Pure Mathematics (3:3:0). Prerequisite: 6 hours of math at or above the 310 level. Topics of pure math not covered in other courses. Topics might include Galois theory, cardinal and ordinal arithmetic, measure theory, mathematical logic, and differential geometry. Subject determined by instructor.

Medical Technology (MTCH)

Biology

200 Introduction to Medical Technology (1:1:0). Introduction to the profession of medical technology.

401 Orientation to the Problems and Practices of the Clinical Laboratory (1:2:0:0). Prerequisite: Completion of requirements for B.S. with a major in medical technology except for the 30 hours of professional study, and admission to a school of medical technology approved by the National Accrediting Agency for Clinical Laboratories. Orientation to clinical lab; specimen collection and record keeping; management principles and problems; educational theories as they apply to the teaching of clinical laboratory procedures; quality control principles. Not offered on campus.

402 Clinical Hematology and Coagulation (6:8:0:0). Prerequisite: Completion of requirements for B.S. with a major in medical technology except for the 30 hours of professional study, and admission to a school of medical technology approved by the National Accrediting Agency for Clinical Laboratories. Morphology of blood cells in health and disease; theories of hemopoiesis and coagulation; techniques for measurement of hematologic parameters; hematologic pathologies and their lab evaluation. Not offered on campus.

403 Clinical Microscopy (1:3:0:0). Prerequisite: Completion of requirements for B.S. with a major in medical technology except for the 30 hours of professional study, and admission to a school of medical technology approved by the National Accrediting Agency for Clinical Laboratories. Methods for the routine examination of urine, feces, and certain other body fluids, especially the microscopic identification of normal and pathologic components. Includes a study of the kidney and theories of microscopy. Not offered on campus.

404 Serology and Immunohematology (5:7:0:0). Prerequisite: Completion of requirements for B.S. with a major in medical technology except for the 30 hours of professional study, and admission to a school of medical technology approved by the National Accrediting Agency for Clinical Laboratories. Clinical lab procedures that involve antigen-antibody reactions and the theoretical bases of such procedures. Includes both diagnostic and blood bank techniques. Not offered on campus.
405 Clinical Microbiology (4-8:0:0). Prerequisite: Completion of requirements for B.S. with a major in medical technology except for the 30 hours of professional study, and admission to a school of medical technology approved by the National Accrediting Agency for Clinical Laboratories. The biology and pathology of bacteria, rickettsia, fungi, parasites, and viruses of clinical importance and their culture and identification. Not offered on campus.

406 Clinical Chemistry (6-10:0:0). Prerequisite: Completion of requirements for B.S. with a major in medical technology except for the 30 hours of professional study, and admission to a school of medical technology approved by the National Accrediting Agency for Clinical Laboratories. The chemical reactions and procedures used in clinical determinations on blood, urine, and cerebral spinal fluid. Includes manual and automated methods of chemical analyses. Not offered on campus.

Middle East Studies (MEST)

Area Studies

300 Middle East Seminar I: Dimensions of the Middle East (3-3:0). Interdisciplinary introduction to important dimensions of the Middle East. Emphasis on contemporary trends, problems, and conflicts in the region. Underlying themes are the unity and diversity of the peoples and cultures and change and continuity in the region's societies and nations.

400 Middle East Seminar II: Interpretation of Islamic History (3-3:0). Seminar widens students' reading on issues and topics covered in other courses on the Middle East, deepens their understanding of major problems in the Middle East and Islamic history, and suggests ways in which these problems might be approached. The approach is problem oriented, and topical rather than chronological. It focuses on classic and key works of scholarship and on various interpretations of major issues in Islamic and Middle East history.

Music (MUSI)

Music

100 Fundamentals of Music (3:3:0). Study of musical notation, interval and triad construction, the reading of treble and bass clefs, scale construction, rhythm, elementary sight singing and ear training, and application at the keyboard. Cannot be applied toward a degree in music.

101 Music Appreciation (3:3:0). For nonmusic majors only. Introduction to music appreciation through formal and aesthetic principles. The elements of music are examined separately and as combined in various musical forms.

103 Folk and Traditional Music of the World (3:3:0). For nonmusic majors only. Study of musical structure and cultural setting of folk music among diverse peoples, with an introduction to traditional art music of India, China, and Japan.

104 Introduction to Twentieth-Century Music (3:3:0). For nonmusic majors only. Survey of various styles found in twentieth-century music. Tonal, atonal, serial, and experimental music.

105 Music in the United States (3:3:0). For nonmusic majors only. Study of music in the U.S. from colonial times to present. Through interaction with musical examples, the student traces significant African and European influences on emerging style and artistic activity in the U.S.

106 Latin American Music (3:3:0). For nonmusic majors only. Survey of folk, popular, and artistic music of Latin American countries in a historical setting. Influences of other cultures on the musical life of representative countries.

107 The Development of Jazz (3:3:0). For nonmusic majors only. Historical, analytical, and aural survey of jazz from inception to present day. Trends resulting from synthesis of jazz with other musical idioms.

113 Sight Singing and Ear Training I (2:3:0). Prerequisite: MUSI 111 and 171 or permission of instructor. The student is taught to sing a line of music without the accompaniment of an instrument. Matching tones, major and minor scales, key signatures, intervals, rhythm. Treble, bass, alto, and tenor clefs. Rhythmic and melodic dictation.

114 Sight Singing and Ear Training II (2:3:0). Prerequisite: MUSI 111 or permission of instructor. Continuation of Sight Singing and Ear Training I. Modulation, various modes. Melodic and harmonic dictation.

115 Harmony I (3:3:0). Prerequisite: Student must be able to read music and have some proficiency on a musical instrument or in voice. Music notation, scales, key signatures, intervals, chords, cadences, figured bass.

116 Harmony II (3:3:0). Prerequisite: MUSI 111 or permission of instructor. First- and second-inversion chords, modulation, nonharmonic tones, figured bass, seventh chords. Analysis of Bach chorales; composition of four-part chorales in eighteenth-century style.

151 Class Strings: Violin and Viola (1:0:3). Prerequisite: Nonmusic majors must have permission of instructor. Study of techniques of playing and teaching the violin and viola. Survey of instructional materials and bow and instrument selection.

152 Class Strings: Cello and String Bass (1:0:3). Prerequisite: Nonmusic majors must have permission of instructor. Study of techniques of playing and teaching the cello and string bass. Survey of instructional materials and bow and instrument selection.

153 Class Woodwinds: Flute and Clarinet (1:0:3). Prerequisite: Nonmusic majors must have permission of instructor. Study of techniques of playing and teaching the flute and clarinet. Survey of instructional materials and mouthpiece and instrument selection.

154 Class Woodwinds: Oboe and Bassoon (1:0:3). Prerequisite: Nonmusic majors must have permission of instructor. Study of techniques of playing and teaching the oboe and bassoon. Survey of instructional materials, instrument selection, and reed adjustment.

155 Class Brass (1:0:3). Prerequisite: Nonmusic majors must have permission of instructor. Study of techniques of playing and teaching the brass instruments. Survey of instructional materials and mouthpiece and instrument selection.
156 Class Percussion (1:0:3). Prerequisite: Nonmusic majors must have permission of instructor. Study of techniques of playing and teaching the percussion instruments. Survey of instructional materials and instrument selection.

157 Class Guitar (1:0:3). Prerequisite: Nonmusic majors must have permission of instructor. Study of techniques of playing and teaching the guitar. Survey of instructional materials and instrument selection.

158 Class Voice (1:0:2). Prerequisite: Nonmusic majors must have permission of instructor. Study of the human voice in artistic singing. Practical application of basic principles is emphasized.

171 Class Piano I (1:0:3). Prerequisite: Nonmusic majors must have permission of instructor. Study of piano keyboard as it is related to various clefs in music. Emphasis on solution of basic stylistic and technical problems.

172 Class Piano II (1:0:3). Prerequisite: MUS/171 or permission of instructor. Study of piano keyboard as it is related to intermediate song and combined in various music forms.

181, 381 University Chorale (1:0:3). Prerequisite: Audition. Performance of works from the choral repertoire. Public concerts are given. Four credits must be earned at the 181 level before proceeding to the 381 level. May be taken eight times.

183, 383 Symphonic Band (1:0:3). Prerequisite: Audition. Performance of works from the band repertoire. Public concerts are given. Four credits must be earned at the 183 level before proceeding to the 383 level. May be taken eight times.

184, 384 Symphonic Chorus (1:0:3). Prerequisite: Audition. Performance of major works from the choral repertoire. Public concerts are given. Four credits must be earned at the 184 level before proceeding to the 384 level. May be taken eight times.

187, 387 Symphony Orchestra (1:0:3). Prerequisite: Audition. Performance of works from the symphony orchestra repertoire. Public concerts are given. Four credits must be earned at the 187 level before proceeding to the 387 level. May be taken eight times.

189, 389 Jazz Ensemble (1:0:3). Prerequisite: Audition. Provides practical experience in various aspects of jazz performance: section work within a large aggregation, combo work, and improvisation. Public concerts are given. Four credits must be earned at the 189 level before proceeding to the 389 level. May be taken eight times.

215 Harmony III (3:3:0). Prerequisite: MUSI 116 or permission of instructor. Study of four-part chromatic harmony and analysis of nineteenth-century compositions.

216 Harmony IV (2:2:0). Prerequisite: MUSI 215 or permission of instructor. Continuation of study of chromatic harmony as it applies to classical forms.

218 Keyboard Harmony (1:0:2). Prerequisite: MUSI 172 and 215. For music majors only. Study of techniques of harmonization at the piano keyboard.

231 Survey of World Music (3:3:0). Prerequisite: MUSI 215 or permission of instructor. Survey of music literature in the four major theoretical systems of the world. Emphasis on influences of non-Western systems on Western music.

271, 272 Techniques of Accompanying I and II (1:0:3). Prerequisite: 4 credits earned in Private Music Instruction (keyboard instrument) or permission of instructor. Fourteen 1-hour classes and 28 hours of supervised practicum per semester. The latter consists of practical application concepts and techniques learned during class sessions. This practical application normally consists of assignments to function as a pianist for a private Music Instruction students in lessons, practice sessions, and public performances and/or equivalent amount of work as a pianist for GMU ensembles (in rehearsals and performances). MUSI 271 and 272 may each be taken three times.

285 Chamber Ensembles (1:0:3). Prerequisite: Audition. Performance of works from the chamber music repertoire. Public performances are given. May be taken for credit six times.

319 Class Composition and Arranging (3:3:0). Prerequisite: MUSI 114, 216, or permission of instructor. Students write original compositions for specified instruments, voices, or combinations. They then apply compositional principles to the creative arrangement of existing music of various styles.

335 Historical, Theoretical and Analytical Study of Music I (3:3:0). Prerequisite: MUSI 116 or permission of instructor. Study of music in Western civilization from Greek antiquity through the Renaissance, with emphasis on historical, theoretical, and analytical aspects.

336 Historical, Theoretical and Analytical Study of Music II (3:3:0). Prerequisite: MUSI 116 or permission of instructor. Study of music in Western civilization from Monteverdi through Haydn, Mozart, and their contemporaries, with emphasis on historical, theoretical, and analytical aspects.

351 Keyboard Pedagogy (3:3:0). Prerequisite: MUSI 114, 216, 218, and 8 credits in piano or organ, or permission of instructor. Investigation of various methods, theories, techniques, and materials used in teaching of keyboard to children and adults, both in individual and group situations.

379 Improvisation (1:0:2). Prerequisite: MUSI 114, 216, and 218, or permission of instructor. Application of improvisation techniques used in various periods of music history on the student's major instruments and the piano.

380 Wind Ensemble (1:0:3). Prerequisite: Audition. Highly selective group of instrumentalists performing works from the wind ensemble repertoire. Public concerts will be given. May be taken eight times.

382 Piano Ensemble (1:0:3). Prerequisite: Audition and 4 credits in Private Music Instruction—Piano. Study and performance of original four-hand works for one and two pianos. Public performances. May be taken four times.

385 Chamber Singers (1:0:3). Prerequisite: Audition. Discovery, interpretation, and performance of choral music for vocal chamber music ensemble from all historical periods. Emphasis on achieving a high level of artistic performance and on bringing to the university and its surrounding community musical compositions which
are not readily accessible in the regular concert repertoire. May be taken eight times.

386 Laboratory Ensemble (1:0:3). Prerequisite: One semester of class instrumental instruction on a band or orchestral instrument; for music majors only. Vocal and instrumental ensemble for music majors seeking state certification as music teachers, provides opportunities for performance on secondary instruments and voice and to serve as a lab for conducting, methods and materials, and composition and arranging classes. May be taken twice.

388 Musical Theater Techniques (1-3:1:2-6). Prerequisite: Audition and permission of instructor. Preparation and presentation of works or parts of works from the musical theater repertoire (opera, operetta, musical comedy). Students investigate applicable techniques in lab sessions and rehearsals. A public performance is given. May be taken for credit four times.

390 Improvisation Ensemble (1:0:3). Prerequisite: Audition. An ensemble experience designed to promote exploration of new sound sources inherent in each instrument voice. Emphasis on group interaction and sensitivity to musical texture, timbre, and tonal resources through aural awareness. Public concerts are given. May be repeated for a total of 4 credits.

391 General Conducting (2:0:3). Prerequisite: MUSI 114, 172, 216, and 218, or permission of instructor. Study of basic techniques of conducting a musical ensemble.

396 Advanced Conducting (2:0:3). Prerequisite: MUSI 391 or permission of instructor. Advanced conducting course emphasizing the techniques of bringing a musical ensemble to concert standard. Consideration of the interpretation of repertoire from the applicable historical periods.

419 Orchestration (3:3:0). Prerequisite: MUSI 216, 218, and 319, or permission of instructor. Principles of combining and balancing instruments in orchestral and chamber contexts. Attention to orchestral terminology and general notation as well as timbre, range, clefs, transposition, special effects, and scoring procedures.

435 Historical, Theoretical, and Analytical Study of Music III (3:3:0). Prerequisite: MUSI 216 or permission of instructor. Study of development of Western music from Beethoven through the post-Romantic era, with emphasis on historical, theoretical, and analytical aspects.

436 Historical, Theoretical, and Analytical Study of Music IV (3:3:0). Prerequisite: MUSI 216 or permission of instructor. Development of Western music from late nineteenth-century Impressionism to the present, with emphasis on historical, theoretical, and analytical aspects.

437 Choral Literature (3:3:0). Prerequisite: MUSI 216 or permission of instructor. Survey of sacred and secular choral literature from the Middle Ages to the present. Representative genres such as Mass, motet, madrigal, anthem, cantata, passion, oratorio, and part-song.

438 Operatic Literature (3:3:0). Prerequisite: MUSI 216 or permission of instructor. Opera from seventeenth century to present, with emphasis on historical stylistic development. Important works in the operatic repertory.

439 Keyboard Literature (3:3:0). Prerequisite: MUSI 216 or permission of instructor. Chronological survey of keyboard literature and its antecedents from sixteenth century to present. Solo keyboard genres such as chorale prelude, suite, sonata, theme and variations, and character piece in a historical context.

440 Orchestral Literature (3:3:0). Prerequisite: MUSI 216 or permission of instructor. Chronological survey of development of orchestra and its literature from seventeenth century to present. Suites, symphonies, concertos, symphonic poems and other orchestral works of important composers.

461 The Teaching of General Music in the Elementary and Middle School (3:3:0). Prerequisite/corequisite: MUSI 114, 216, 218, 396, and EDUC 300 or 522 and 302. For music majors only. Study of theory, methods, practice and materials involved in the teaching of general music in the elementary and middle school. Field experience required.

463 The Teaching of Vocal Music in the Secondary School (3:3:0). Prerequisite/corequisite: MUSI 114, 216, 218, 396, and EDUC 300 or 522 and 302. For music majors only. Survey of repertoire and methods for teaching high school choral groups, small ensembles and voice classes. Field experience required.

464 The Teaching of Instrumental Music in the Elementary and Middle School (3:3:0). Prerequisite: MUSI 114, 216, 218, 396, and EDUC 300 or 522 and 302. A study of theory, methods, practices, and materials for teaching instrumental music at the elementary school level. Emphasis on philosophical foundations, development of objectives, evaluation of student progress, recruiting techniques, and management of various phases of the instrumental music program. Field experiences in the public schools are required.

465 Selected Topics in Music Education (1-3:1-3:0). Prerequisite: 90 hours in a music degree program or permission of instructor. Topics of practical interest to prospective and practicing music educators covering pedagogy, performance, and logistics relating to teaching music in schools, private studios, and communities. May be repeated for credit.

466 The Teaching of Instrumental Music in the High School (3:3:0). Prerequisite: MUSI 114, 216, 218, 396, and EDUC 300 or 522 and 302. A study of theory, methods, practices, and materials for teaching instrumental music at the secondary school level. Developing goals and objectives for large and small ensembles, and instrument, theory, and music history/literature classes; creating and evaluating learning experiences; managing the classroom, the rehearsal, and the instrumental program in general. Field experiences in the public schools are required.

497, 498 Independent Study (1-3:0:0) (1-3:0:0). Prerequisite: Music majors with 90 hours and two of the following: MUSI 335, 336, 435, 436; and permission of instructor, chair, and the music faculty. Individual research and study of selected subject in close consultation with an instructor. A student may choose from the musicological, ethnomusicological, theoretical, compositional or educational areas of music and produce at least one major written work based on the research.

511 Analytical Techniques (3:3:0). Prerequisite: Bachelor's degree in music or permission of instructor. Detailed
formal and stylistic examination of music selected from the major style periods. Development of the analytical skills necessary for theoretical study at the graduate level.

512 Advanced Orchestration (3:3:0). Prerequisite: Baccalaureate in music with a minimum of 3 hours study in orchestration or permission of instructor. Intensive study through analysis and arrangement of advanced instrumentation methods. Scoring for large forces. Twentieth-century vocal and instrumental techniques such as multiphonics. Unusual instruments. New methods of notation. Late twentieth-century performance practices.

513 Advanced Topics in Music Theory (3:3:0). Prerequisite: Baccalaureate in music or permission of instructor. Intensive study and analysis of music from the theoretical point of view, comparing trends in compositional techniques through various works. May be repeated for credit as topics change.

531 Advanced Topics in Music History and Literature (3:3:0). Prerequisite: Baccalaureate in music or permission of instructor. Thorough examination of a specific musical style, genre, composer, compositional school, or historical development. Primary and secondary source materials studied in historical and/or analytical contexts. May be repeated for credit as topics change.

541 Chamber Music Literature (3:3:0). Prerequisite: Baccalaureate in music or permission of instructor. Historical and analytical study of the extensive literature for chamber ensembles (trios through nonets) in various instrumental combinations, from the seventeenth through the twentieth centuries.

543 Concerto Literature (3:3:0). Prerequisite: Baccalaureate in music or permission of instructor. Historical and analytical study of the concerts which produced the concerto form and its extensive literature, from the seventeenth through twentieth centuries.

561 Advanced Topics in Music Education (1-3:1-3:0). Prerequisite: Degree in music education or permission of instructor. Intensive examination of specific areas of concern to music educators engaged in teaching vocal, instrumental, and general music at all levels or functioning as private studio teachers. Individual research, group discussions, and participation in related activities. May be repeated for credit.

562 The Psychology of Music Teaching and Learning (3:3:0). Prerequisite: Baccalaureate in music or permission of instructor. Study of the learner's musical behaviors (affective, cognitive, and psychomotor) in an effort to devise an empirically based teaching method founded on learning principles.

580 Wind Ensemble (1:0:3). Prerequisite: Audition. Highly selective group of instrumentalists performing works from the wind ensemble repertoire. Public concerts will be given. May be taken for credit four times.

581 Graduate Choral Ensembles (1:0:3). Prerequisite: Audition. Performance of works from the choral repertoire. Public concerts are given. May be taken for credit four times.

583 Symphonic Band (1:0:3). Prerequisite: Audition. Performance of works from the band repertoire. Public concerts are given. May be taken for credit four times.

585 Chamber Ensembles (1:0:3). Prerequisite: Audition and baccalaureate in music or permission of instructor. Performance of works from the chamber music repertoire. Public performances are given. May be taken four times for credit.

587 Symphony Orchestra (1:0:3). Prerequisite: Audition. Performance of works from the symphony orchestra repertoire. Public concerts are given. May be taken for credit four times.

589 Jazz Ensemble (1:0:3). Prerequisite: Audition. Provides practical experience in various aspects of jazz performance. Participation in section rehearsals and small and large jazz groups. Jazz improvisation is expected. Public concerts will be given. May be taken for credit four times.

597 Advanced Topics in Conducting (3:3:0). Prerequisite: Baccalaureate in music with a minimum of two semesters of study in conducting or permission of instructor. Intensive study of an advanced topic in conducting chosen according to interests of students and instructor from such topics as the following: (1) Choral Music Performance Techniques and Score Preparation, (2) Wind Ensemble Performance Techniques and Score Preparation, (3) Orchestral Performance Techniques and Score Preparation, (4) Performance Practices in Choral Music before 1750, (5) Rhythmic Analysis as a Guide to Score Interpretation in Music of All Periods. Maximum of six credits may be earned.

Private Music Instruction
All private music instruction is by arrangement. Students must consult the Applied Music Coordinator in the Department of Music for teacher assignment and registration numbers. The private music instruction fee applies.

Private music instruction is offered in the following areas: accompanying, bassoon, cello, clarinet, composition, conducting, euphonium, flute, classical guitar, harp, harpsichord, horn, koto, oboe, organ, percussion, piano, saxophone, string bass, trombone, trumpet, tuba, viola, viola da gamba, violin, and voice.

Beginning Private Music Instruction (1:2:0:.5-1). Prerequisite: None. For non-music majors only.

To earn one credit per semester, a student takes 14 half-hour private music lessons and is expected to practice 50 minutes each day. To earn two credits per semester, a student takes 14 one-hour lessons and is expected to practice one hour and 40 minutes each day. The two-credit level is restricted to students with substantial prior private study.

Undergraduate Private Music Instruction (1:3:0:.5-1). Prerequisites: For the one- and two-credit level, an audition is required (or portfolio of compositions for private composition); for the three-credit level, students must have 8 credits on the major instrument and approval by the appropriate concentration audition committee.

To earn one credit per semester, a student takes 14 half-hour private music lessons; to earn two or three credits per semester, a student takes 14 one-hour private lessons. In Private Music Instruction—Accompanying, a student takes the equivalent of 14 half-hour private music lessons for one credit per semester or 14 one-hour lessons for two or three credits per semester, a
number of which may be spent in a group-practicum situation at the instructor's discretion.

The following amount of practice (or composing) is expected each day: one credit/50 minutes; two credits/1 hour and 40 minutes; and three credits/2 and one-half hours.

As part of the repertoire requirement, each student must attend at least 10 music programs sponsored by the Department of Music.

Junior and Senior Recitals (1:0:0). Corequisite: Concurrent enrollment in the appropriate three-credit private music instruction course. A public recital given by the student during the junior or senior year. The junior recital must be at least 25 minutes in length; the senior recital must be at least 50 minutes in length.

All recitals are by arrangement. Students must consult with the Applied Music Coordinator to register and to schedule dates.

Nursing (NURS)

Nursing

250 Concepts of Health Throughout the Life Span (3:3:0). Prerequisite: 3 hours of psychology and sociology. (Not open to freshmen.) Consideration of health maintenance and health promotion behaviors throughout the life cycle. Examination of normal growth, development, and nutrition.

254 Introduction to Professional Nursing (3:3:0). Prerequisite or corequisite: NURS 250 or permission of school. Introduction to nursing as an emerging discipline, profession, and occupation. Emphasis on development of a dynamic concept of nursing, essential behaviors of the profession, and the design of nursing systems.

262 Technologies in Nursing (4:2:8). Prerequisite: Anatomy and physiology. Prerequisite or corequisite: NURS 254. Skills required in the assessment, design, and control of nursing systems. Presents fundamental basis for care of clients. Lecture, lab, and clinical practice.

301, 302 Elements of Pathology and Medical Therapeutics (4:4:0), (4:4:0). Prerequisite: Anatomy and physiology, chemistry, microbiology, psychology (3 hours), sociology, NURS 250, 254, 262; or permission of school. Content foundational to nursing: pathology in psychological, sociological, and physiological system; medical technologies; selected modes of medical diagnosis and treatment.

314 Nursing Systems for Adults and Children (3:3:0). Prerequisite: NURS 250, 254, 262; prerequisite or corequisite: NURS 301. This lecture/discussion course includes design and implementation of nursing for adults and children. The self-care conceptual framework and the nursing process are used to identify (1) the agency of clients to manage their health care, and (2) the appropriate methods of nursing assistance. Selected health-related concepts are presented.

315 Application of Nursing Systems for Adults and Children (5:0:15). Prerequisite or corequisite: NURS 314. This clinical course involves application of nursing systems for adults and children in the acute care setting. Clinical experiences focus on using the nursing process to provide care to clients and families with health and self-care needs resulting from medical, surgical, and congenital problems.

318 Concepts of Health, Groups and Professional Issues in Nursing (3:3:0). Prerequisite: Degree in another field, L.P., or R.N. Corequisite: NURS 254. Focus on small groups and families as participants in health care. The influence of professional issues on the nurse's developing role is explored.

318 Concepts of Health, Groups and Professional Issues in Nursing (5:5:0). Prerequisite: Degree in another field. Corequisite: NURS 254. Focus on small groups and families as participants in health care. The influence of professional issues on the nurse's developing role is explored. Life-span growth and development are discussed, focusing specifically on theories, self-care and health maintenance practices, implications of specific hazards as well as foundations of basic and age-related nutritional requirements.

319 Nursing Systems for Individuals and Small Groups (4:4:0). Prerequisite: NURS 254, 262, 318. Corequisite: NURS 320, 426, 430, 450. Course contains content that is foundational for designing nursing systems. Course focus includes concepts related to pathology in the psychological, sociological, and physiological systems. Content focuses on designing nursing systems for the pediatric, maternal, and psychiatric client and/or family.

320 Applications of Nursing Systems for Individuals and Small Groups (6:0:18). Corequisite: NURS 319, R.N. This clinical course concerns the application of nursing systems for individuals and small groups in the psychiatric, maternal, and pediatric setting. Clinical experiences focus on using the nursing process to provide care for clients with health and self-care needs resulting from developmental, maternal, mental health, and pediatric problems. Attention also given to health care coordination within the nursing subsystem.

324 Nursing Systems for Individuals, Small Groups, and Families (3:3:0). Prerequisite: NURS 250, 254, 262; prerequisite or corequisite: NURS 302. Design and implementation of nursing systems for individuals, small groups, and families. The nursing process will be used to identify the current and potential agency of clients to manage their health and self-care and the appropriate methods of nursing assistance for clients with developmental, maternal, and mental health self-care deficits.

325 Application of Nursing Systems for Individuals, Small Groups, and Families (5:0:15). Prerequisite or corequisite: NURS 324. Application of nursing systems for individuals, small groups, and families in the acute care setting. Clinical experiences focus on using the nursing process to provide care for clients with health and self-care needs resulting from developmental, maternal, and mental health problems. Attention is also given to health care coordination with the nursing subsystem.

400 Clinical Nursing Elective (3:3:0). Prerequisite: NURS 301, 302, 314, 315, 324, 325, or equivalent. Course allows students to synthesize previously learned knowledge and skills, acquire additional clinical experience, and observe and participate in nursing practice.
411 Research Dimensions in Nursing (3:2:0). Prerequisite: NURS 301, 302, 314, 315, 324, 325; prerequisite or corequisite: a course in statistics. Introductory research course presenting basic research concepts and methods used in nursing studies. Major nursing theories as a foundation for scholarship.

419 Theoretical Concepts of Nursing Systems for Individuals and Large Groups (3:3:0). Prerequisite: NURS 319, 320, 426, 430, 450. Corequisite: NURS 420, 411, 475. Course focuses on nursing concepts of complex care and includes concepts related to pathophysiology in individuals and groups. Emphasis on nursing systems for adult and aged populations in acute and chronic settings.

420 Implementing Complex Nursing Systems for Individuals and Large Groups (6:0:18). Prerequisite or corequisite: NURS 426, 430, 475. For second degree pathway students. Seven week concentrated medical-surgical experience plus seven week community health experience. Clinical focuses on delivery of nursing care to individuals, families, and groups in acute care and community settings.


430 Nursing Systems for Individuals, Families, and Large Groups in Community Settings (3:3:0). Lecture course which focuses on delivery of nursing care to aggregates in the community. Emphasis is on group concepts, epidemiology, primary, secondary, and tertiary prevention; teaching and learning strategies with large groups; and identification of populations at risk.

431 Application of Nursing Systems for Individuals, Families, and Large Groups in Community Settings (5:0:15). Prerequisite: NURS 301, 302, 314, 315, 324, 325; prerequisite or corequisite: NURS 426. Clinical experience in community health settings. Focus is on delivery of nursing care to families and groups residing in the community.

450 Health Assessment (3:2:2). Prerequisite: NURS 301, 302, 314, 315, 324, 325. Acquisition of skills necessary to collect data for health history and to carry out physical and psychosocial assessment of the individual. Lab experiences develop and validate health appraisal skills.

471 Professional Issues in Nursing Practice (3:3:0). The influence of professional issues on the nurse's role in clinical practice will be explored in small group discussions.

475 Nursing Systems for Individuals and Groups with Complex Problems throughout the Life Span (3:3:0). Examination of nursing implications of selected major health problems that significantly affect individuals or groups throughout the lifespan. Applies nursing process in conjunction with self-care theory. Incorporated within this are health assessment, pathophysiology, stages of the nursing process, pharmacology, and application of appropriate nursing research findings. Case study methods within concentrated NURS 476 and 420 clinical experience.

476 Application of Nursing Systems for Individuals and Groups with Complex Problems (5:0:15). Prerequisite: NURS 301, 302, 314, 315, 324, 325; prerequisite or corequisite: NURS 426. Application in an acute care setting of knowledge of nursing systems for individuals and small groups. Clinical experiences focus on improving and expanding clinical expertise, integrating knowledge with complex nursing care and understanding nursing as a subsystem within a larger health care system. Concentrated 7-week medical-surgical experience.

480 Health Aspects of Aging (3:3:0). Study of physiological and psychological factors which influence health and have implications for preventive measures in disease and health disorders in the aging. Nutrition, the nature of health problems, and methods of assessing physical and psychological needs are examined.

495 Directed Reading in Nursing (2:0:0). Prerequisite: 90 hours and permission of school. Examination of literature on specialized topic in nursing practice, education, or scholarship. Conducted in consultation with faculty.

499 Independent Study in Nursing (1-3:0:0). Prerequisite: permission of school. Individual study of a particular problem area in nursing research, theory development, or education under the direction of faculty. Clinical practice may be arranged.

505 Case Management (3:3:0). Prerequisite: Bachelor's degree or permission of instructor. Open to seniors. Course for health and human service professionals on case management program development and delivery. Study and application of the case manager's role in identifying and coordinating cost-effective services. Topics include information management, sociolegal issues, funding, communication, and self-care/independent living.

530 Nurses as Writers (3:3:0) Seminar focused on the theories and practices related to writing in nursing. Researching, composing, revising, and editing are practiced in a variety of writing styles.

531 Infant/Family Assessment (3:3:0). Designed to present infant (birth to two years) family assessment techniques and tools which will prepare professionals to adapt and utilize results of recent research findings on child/caregiver assessment in early intervention practice. The course offers the opportunity to learn assessment scales that examine the infant's sleep patterns, behaviors, interactions with the caregiver and the environment, including family functioning and social support. Clinical practice focuses on obtaining interobserver reliability in the use of scales. A minimum of ten home visits with a partner required.

542 Health Care and the Political Process (3:3:0) Explores the issues of power, and political and legislative action as they relate to nursing. Effects of political establishment on nursing practice.

543 Global Health: Trends and Policy (3:3:0) Survey of health challenges in the world today; their social, economic, and epidemiological causes; and the role and likely success of high-tech medicine, primary preventive health care, social manipulation, and aid, in alleviating the problems.
550 Pathophysiological Bases for Major Health Deviations of Individuals (3:3:0). Health deviations in individuals occurring in U.S. which require long-term and/or terminal health care interventions. Presented within developmental framework, as they influence physiologic integrity at the cellular level. Focus on man as a whole, open system. Complex health programs from the perspective of maintaining homeodynamics.

555 Issues in Oncology Nursing (3:3:0). Course addresses the major professional nursing concerns in the field of cancer nursing. These include philosophical, ethical, and legal aspects of nursing. Collaborative roles, professional organizations, and research in oncology nursing are also addressed.

570 Cultural Dimension of Aging (3:3:0). Impact of cultural definitions of aging, research methodologies, and findings of cross-cultural studies. Implications for health care and nursing.

594 Special Topics in Nursing (3:3:0). Selected topics analyzing specialized areas in nursing, content varies. Lecture, seminar, laboratory/workshop.

Operations Research (OR)

Operations Research and Applied Statistics

435 Computer Simulation Modeling (3:3:0). Prerequisite: A course in probability and statistics and a scientific programming language. Introduction to the basic concepts of simulating complex systems by computer. Topics covered include Monte-Carlo methods, discrete-event modeling, a specialized simulation language, and the statistics of input and output analysis.

441/MATH 441 Deterministic Operations Research (3:3:0). Prerequisite: MATH 303 or permission of instructor. Survey of deterministic methods for solving "real-world" decision problems. The linear programming model and simplex method of solution, duality and sensitivity analysis; transportation and assignment problems; shortest path and maximal flow problems; introduction to integer, nonlinear, and dynamic programming. Emphasis on modeling and problem solving.


451/DESC 451 Optimization Models (3:3:0). Prerequisite: DESC 352. An examination of optimization models as applied to business problems. Both linear and nonlinear models are considered, including dynamic, integer, and goal programming. Applications to management, finance, and marketing.

481 Numerical Methods in Engineering (3:3:0). Prerequisite: MATH 215 and MATH 303 or 322, or equivalent. Modern numerical methods and software. Emphasis on problem solving through software and assessing the quality of solutions obtained. Topics include computer arithmetic, linear equations and least squares data fitting, interpolation, nonlinear optimization, and differential equations.

498 Independent Study in Operations Research and Applied Statistics (1:3:0:0). Prerequisite: 60 hours; must be arranged with an instructor and approved by the department chair before registering. Directed self-study of special topics of current interest in OR and STAT. May be repeated for a maximum of 6 credits if the topics are substantially different.

499 Special Topics in Operations Research and Applied Statistics (3:3:0). Prerequisite: 60 hours and permission of instructor; specific prerequisites vary with nature of topic. Topics of special interest to undergraduates. May be repeated for maximum of 6 credits if the topics are substantially different.

540 Management Science (3:3:0). Prerequisite: MATH 108 and STAT 250 or DESC 200, or equivalent. Operations research techniques and their application to managerial decision making. Mathematical programming, Markov processes, queuing theory, inventory models, PERT, CPM, and computer simulation. Use of contemporary computer software for problem solving. OR/MS majors do not receive credit.

541 Operations Research: Deterministic Models (3:3:0). Prerequisite: MATH 303 or equivalent. Deterministic methods for solving "real-world" decision problems. The linear programming model and simplex method of solution, duality and sensitivity analysis; transportation and assignment problems; shortest path and maximal flow problems; introduction to integer, nonlinear, and dynamic programming. Emphasis on modeling and problem solving. Students who have taken OR/MATH 441 will not receive credit.


Plan for Alternative General Education (PAGE)

PAGE

Only students enrolled in the PAGE program are eligible to take PAGE courses.

Because PAGE is an integrative program, the courses in one semester are generally prerequisite for the courses in the following semester. (Exceptions for majors in certain departments have been arranged and are available in the PAGE office.)

120 Computers in Contemporary Society (4:4:0). Provides computer literacy through hands-on programming and information processing, as well as appreciation of the computer's roles in modern society.

122 Reading the Arts (3:3:0). Explores the relationship of the parts to the whole in a work of art, the connections among different art forms, and the links between art and the outside world. Specific content and forms considered vary from section to section.
123 Reading Cultural Signs (3:3:0). Uses techniques developed in PAGE 122 and new methods introduced from sociology, economics, history, anthropology, and psychology to explore ways in which various media (art, architecture, movies, literature, and music) reflect and shape personal and social values.

125, 225 Analysis and Solution of Quantitative Problems I, II (3:3:0), (3:3:0). Discusses real-world modeling and problem solving techniques and, in conjunction with the computer and tools introduced from the mathematical sciences, applies these to the analysis and solution of a variety of quantitative problems in the natural and social sciences as well as the business environment.

130 Conceptions of Self (3:3:0). Drawing from appropriate works in the social sciences, arts, and humanities, examines different conceptions of the self characteristic of different cultures.

131 Contemporary Society in Multiple Perspectives (3:3:0). Explores methods and perspectives in the social sciences and humanities to evaluate the contribution of different disciplines to an understanding of significant social issues and their global ramifications.

150, 152, 250 Symbols, Codes and Information (1:1:0), (1:1:0), (1:1:0). Prerequisite: Taken in sequence. Provides a synthesis of the PAGE courses emphasizing the various ways in which people communicate ideas to one another—through language, mathematics, the graphic and musical arts. Lectures by PAGE faculty and guest speakers.

151, 153, 251 Values, Themes, and Cultural Problems (1:1:0), (1:1:0), (1:1:0). Prerequisite: Taken in sequence. Integrates the material treated in the PAGE courses dealing with the interrelationship of the self and society as seen through the various social sciences, humanities, and arts. Lectures by PAGE faculty and guest speakers.

227, 228 Scientific Thought & Processes I, II (4:3:3), (4:3:3). Prerequisite: Taken in sequence. Explores and integrates the principles of classical and modern science through the study of such topics as cosmology, evolution, ecology, mechanics, relativity, and quantum physics.

230 Cross-Cultural Perspectives (3:3:0). Enables students to broaden cultural horizons and to understand human behavior by studying in depth a society different from their own.

252 The Decision Making Process and the Choice of Technologies (3:3:0). Examines decision making in large organizations, its effects on the choice of technologies, and the impact of these choices on values.

253 The Contemporary United States (3:3:0). Studies specific aspects of contemporary U.S. society from historical, sociological, political, economic, cultural, and global perspectives.

Parks, Recreation, and Leisure Studies (PRLS)

Human Services

100 Introduction to Parks, Recreation, and Leisure Studies (3:3:0). Emergence of the recreation, park, and conservation movements since colonial times. Service and professional agency development and organization. Major specializations in leisure services (tourism, therapeutic recreation, outdoor education, etc.). Disciplinary and scientific components of parks, recreation, and leisure studies.

115 Fishing and Camping (2:0:3). Safety and functionality in selecting and using equipment and supplies for fishing and camping. Techniques suited to various conditions and objectives. Maintenance and enhancement of the environment. Fee.


119 Trap and Skeet Shooting (2:0:3). Fundamentals of shooting clay targets. Emphasis on safe handling of materials and equipment. Sport shooting competition. Fee.

120 Hiking, Backpacking, and Orienteering (2:0:3). Basic skills for comfort in and enjoyment of back-country environments. Preparation, materials, and equipment, and safety and stewardship of resources are stressed. Fee.

180 Whitewater Canoeing (2:0:3). Prerequisite: Ability to swim fully clothed for five minutes and to put on the PFD in water. Basic skills must be mastered on flat water prior to the two whitewater canoe trips. Fee.

190 Downhill and Cross-Country Skiing (2:0:3). Basic skills, safety, and equipment for downhill and cross-country skiing. Graded S-NC only. Fee.


255 Basic Scuba Diving (2:0:3). Prerequisite: Intermediate-level swimming ability. Basic skill and knowledge to prepare for the Open Water Diver Certificate (PADI). Fee. This course may not be taken by anyone who has previously taken and satisfactorily completed PHED 255.

300 People with Nature (3:3:0). Perceptions of and attitudes toward nature. Extensive reading and discussion of nature writers' works, including works of Thoreau, Olsen, Seaton, and others.

310 Recreation Program Marketing and Development (3:3:0). Pre- or corequisite: PRLS 100 or permission of instructor. Research for marketing decisions through environmental scan and needs assessment. Design and marketing of leisure services in profit and non-profit settings for individual and community satisfaction and growth. Program evaluation.

316 Recreation and Outdoor Education (3:3:0). Promotion of health and fitness via noncompetitive and informal outdoor recreation activities. Safety and comfort in outdoor pursuits. Sustainable use, conservation, and stewardship of outdoor recreation resources.

317 Determinants and Outcomes of Play and Recreation (3:3:0). Prerequisite: PRLS 100 or permission of instructor. Explores theories of play and recreation behavior with emphasis on learning, effectance, and arousal theories. Empirical research evidence of ante-
320 Leadership Principles and Techniques in Leisure Services (3:3:0). Prerequisite: PRLS 100 or permission of instructor. Theories of leadership and determinants of leadership effectiveness. Leadership styles and group facilitation techniques. Models for team effectiveness. Assessment of personal leadership styles and effectiveness.

326 Problem Solving in Recreation and Parks (3:3:0). Systematic application of problem-solving models to current problems in the provision of park and recreation services. Case study method is used to study problems faced by agencies in Washington and Northern Virginia and to explore alternatives for resolution.

402 Environmental Impacts of Recreational Use (3:3:0). Prerequisite: PRLS 100 or permission of instructor and 60 hours. Environmental consequences of recreational use of land and water resources. Compaction, erosion, pollution of land and water, noise, crowding, and conflicts among users are examined. Mitigation of deleterious impacts and deprecative behaviors. Introduction to proxemics, environmental influences on behavior, and environmentally sensitive design of facilities.

405 Planning, Design, and Maintenance of Leisure Facilities (4:3:2). Prerequisite: PRLS 310 or permission of instructor and 60 hours. Quantity, location, and design standards for facilities. Safety, functionality, durability, and maintenance demand criteria in planning and design. Programmatic and operational objectives to be met, including user comfort and convenience, crowd management, and traffic flow. Space relationships. Includes field study of local facilities.

410 Management and Administration of Recreation Services (3:3:0). Prerequisite: PRLS 320 or permission of instructor and 60 hours. Management of revenue budgeting and financing park and recreation systems. Organizational structure and development. Service contracts.


450 Senior Research Seminar (3:3:0). Prerequisite: PRLS 317 or permission of instructor and 60 hours. Development of empirical research designs for both practical and theoretical problems in time use or recreation service and resource management. Literature review of hypothesized relationships and formulation of research proposals.

460 Legal Aspects of Park and Recreation Administration (3:3:0). Prerequisite: PRLS 100 or permission of instructor and 60 hours. Emphasis on safety, liability, risk, and insurance. Legal jurisdictions, apparatus, and decision making. Current issues for administrators of park and recreation facilities and programs.

490 Internship (12:0:0). Paid or voluntary work experience in a park and recreation agency. Minimum period of 10-12 weeks of full-time employment. Application of course work, theories, and research to work settings. Work sites are chosen by students after approval of faculty supervisors. Includes meetings and assignments prior to as well as during the internship.

499 Independent Study (1-3:0:0). Individual study of topic area in leisure research, theory, or practice under the direction of faculty.

526 Heritage Interpretation and Visitor Services (3:3:0). Prerequisite: PRLS 402 or permission of instructor and 60 hours. Philosophies, concepts, and techniques associated with communication and dissemination of information pertaining to use of recreation resources. Design and implementation of programs to interpret cultural, historical, and natural resources to visitors and site users. Evaluation methodologies for interpretive and visitor services programs.

Philosophy (PHIL)

Philosophy and Religious Studies

100 Introduction to Philosophy (3:3:0). Introduction to nature of philosophical reasoning and to some of the main problems of philosophy.


111 Introduction to Social and Political Philosophy (3:3:0). Examination of philosophical foundations of some of the major concepts and institutions in social and political thought.

151 Introduction to Ethics (3:3:0). Consideration of some of the perennial issues in ethical theory.

173 Introduction to Logic (3:3:0). Basic concepts and techniques of deduction, emphasizing the modern treatment of such topics as quantification and rules of inference, with study of the classical treatment. Basic principles of induction, informal fallacies, and uses of logic in everyday life.

212 Alternative Futures for Science and Society (3:3:0). Inquiry into how values of freedom and rationality are involved in the ways in which science and technology are being used to meet problems of our day.

253 Philosophy and Literature (3:3:0). This course can count for literature credit as well as philosophy credit. The philosophic significance of psychiatry, existentialism, and Marxism and their expression in twentieth-century literature in the stories of Mann, Kafka, Hesse, Camus, Sartre, Koestler, Bellow, and Pynchon. Themes include paradox, alienation, absurdism, narcissism, totalitarianism versus democracy, art and neurosis, sexuality, symbolism, freedom, and authenticity.

254 Contemporary Ethical Problems (3:3:0). Topics include homosexuality, abortion, drugs, civil disobedience, capital punishment, the rights of the individual versus the rights of society.

300/EUST 300 Foundations of European Civilization (3:3:0). Up to 3 credits in seminars listed under EUST 300 may be credited toward the philosophy major.
301 History of Western Philosophy: Ancient (3:3:0). Classical Greek philosophy, including Pre-Socrates, Socrates, Plato, and Aristotle.

302 History of Western Philosophy: Medieval (3:3:0). Figures and problems of medieval philosophy: in-depth study of leading thinkers from the fifth to the fifteenth centuries.

303 History of Western Philosophy: Modern (3:3:0). Figures and problems of modern philosophy: in-depth study of such philosophers as Descartes, Locke, Berkeley, Hume, Kant, and Hegel.

304 Business Ethics (3:3:0). An examination of some of the moral problems that arise with regard to the responsibilities of various segments of the business community—employers, management, stockholders—to one another, to the consumer, and to society at large.

306 Criminal Justice Ethics (3:3:0). Prerequisite: 60 hours or permission of instructor. In-depth analysis of the ethical principles relevant for those working in criminal justice.

309 Medicine and Human Values (3:3:0). Examination of some of the major moral issues involved in the practice of medicine and arising from research in the life sciences. Topics include medical experimentation, eugenics, definition of death, euthanasia, abortion, distribution of scarce resources, transplants, organ donation, and psychiatric medicine. May not be taken by students who have previously taken PHIL 310.

311 Philosophy of Law (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Investigation of theories of natural law, legal positivism, and legal realism as they pertain to some of the central philosophical questions about law: What is the nature of law? What is a legal system? What is a valid law? What is a good reason for a judicial decision?

313 Philosophy of Religion (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Study of classical appeals to philosophy in support of belief in God's existence (Philo, Augustine, Anselm, Aquinas, Descartes); the fideism of Hume and the metaphysical agnosticism of Kant; the concept of religious experience in the philosophies of Hegel, Schleiermacher, and Kierkegaard; the problem of religious language contemporary empirical philosophy.

315 Philosophy of History (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Investigation of development of historical consciousness of humanity. Intended to distinguish the historical from the unhistorical attitudes of human consciousness and to investigate the various forms of historical consciousness by studying different interpretations of history.

325 Karl Marx's Social and Political Thought (3:3:0). Prerequisite: 3 credits in PHIL or permission of instructor. Study and evaluation of Marx's social and political ideas based on writings selected from several phases of his career. Examination of relation of Marx's thought to post-Marxist socialist theory and practice.

326 Contemporary Theories of Justice (3:3:0) Prerequisite: 9 hours of philosophy or permission of instructor. Examination of alternative theories of justice, focusing on recent work by a major libertarian philosopher and recent work by a major egalitarian philosopher. The central questions of the course are: What constitutes a just distribution of property? How is the right to individual freedom to be weighed against the right to receive basic human necessities?

331 Philosophy in the United States (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Selected studies of American philosophers of the nineteenth and early twentieth centuries, such as Emerson, Thoreau, Peirce, James, Royce, Santayana, Dewey, and Whitehead. Emphasis on their relation to American culture.

332 Twentieth-Century Analytic Philosophy (3:3:0). Prerequisite: 3 hours of logic and PHIL 303 or permission of instructor. Examination of the attempts of twentieth-century philosophers to solve philosophical problems by an analysis of language. Figures and movements covered include Russell, Moore, Wittgenstein, logical positivism, and ordinary language philosophy.

333 Feminism and Philosophy: Issues (3:3:0) Prerequisite: 3 hours in philosophy. Examination of philosophical issues raised by the women's movement. Among the topics included are abortion, pornography, affirmative action, comparable worth, women's moral development, women's spirituality.

334 Latin American Thought (3:3:0). Historical sources and present range of Latin American thought. Metaphysical, ethical, and aesthetic themes from colonial-period scholasticism to modern personal and national philosophies. Distinguished philosophers of recent times such as Korn and Romero (Argentina), Farias Brito (Brazil), Varona (Cuba), Caso and Vasconcelos (Mexico), Deusta (Peru), and Vaz Ferreira (Uruguay). Contemporary thought touching religious, social, and political topics.

335 Nineteenth Century Philosophy (3:3:0) Prerequisite: 3 hours in philosophy or permission of instructor. Development of German Romanticism and Idealism during a brilliant period in the history of the West rivaled only by ancient Greece. Kant, Fichte, Hegel, Kierkegaard, Schopenhauer, Nietzsche mount a revolt against the rationalism and scientificism of the modern world. They open up a new philosophic horizon with the concept of the creative powers of the self, the intertwining of self and society, the subordination of truth to the will of the artist or the group, and madness as the terror of modernity.

336 Contemporary Continental Thought: Existentialism (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Examination of existential philosophy from its 19th-century origins to its 20th-century expressions. Philosophers studied include Kierkegaard, Nietzsche, Sartre, De Beauvoir, and Buber.

337 Twentieth-Century Continental Thought: Phenomenology (3:3:0). Prerequisite: 3 hours of philosophy and permission of instructor. Examination of the phenomenological way of doing philosophy, its findings in regard to the "life-world," questions of "first philosophy," and the subject matter of the social sciences, as well as critical difficulties in its development. Texts by Husserl, Heidegger, Merleau-Ponty, Sartre, Schutz, and Derrida.

338 Woman: The Philosophical Questions (3:3:0) Prerequisite: 3 hours of philosophy or permission of instructor. An exploration of the meaning and politics of the question of women which puts the idea of woman
340 Hermeneutic Philosophy (3:3:0). Prerequisite: 3 hours in philosophy or permission of instructor. Study of the development of hermeneutic philosophy in works by Heidegger, Gadamer, and Ricoeur, as an effort at coming to terms with the historicity of human experience. Implications for interpretive understanding of artworks, institutions, events, texts, and the human condition.

350/EUST 350 Classicism and Romanticism (3:3:0). Up to 3 credits of listed European Studies seminars may be credited toward the major.

355 Contemporary Ethical Theory (3:3:0). Prerequisite: PHIL 151 or permission of instructor. Major trends and issues in recent moral philosophy.

356 Philosophy of Art (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Basic problems that arise from an inquiry into the meaning and value of art and our response to art.

357 (SOCI 599) Philosophy of the Social Sciences (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Philosophical issues relating to competing methodologies for the social sciences. Analysis and critique of mainstream positivism and behaviorism; paradigm theory and scientific revolutions; interpretive understanding and hermeneutical science; phenomenology and the social construction of reality; ethnomethodology and situational meaning; analytic philosophy and action theory; the "idea" of a social science; sociology of knowledge and theory of ideology. Western Marxism and critical theory.

371 Philosophy of Natural Sciences (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. One semester of logic recommended. Study of aims and methodology of science. Among the questions of concern are: What constitutes a good scientific explanation? What grounds are used for comparing rival theories? Is there a special method of scientific discovery?

372 Philosophical Methods (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Study of the relationship between a philosopher's method, doctrine, and concept of truth. Philosophers studied vary, but include representatives from among the Empirical, Analytical, Phenomenological, Hermeneutical, and Structuralist movements.

373 Theory of Knowledge (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Discussion of specific problems concerning the nature of knowledge, with study of the relation of knowledge to perception, belief, and language.

374 Philosophy of Mind (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Investigation of such theories as dualism, behaviorism, and materialism as they pertain to some of the central philosophical questions about mind: What is mind? What is the relation of mind to body? What is the justification of our belief in minds other than our own?

375 Metaphysics (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Study of basic problems concerning being in general and foundations of individual being; traditional treatments of such problems and criticism of the possibility of such knowledge. Selected readings from figures such as Plato, Aristotle, Aquinas, Spinoza, Leibniz, Kant, Bradley, Heidegger, and others.

376 Symbolic Logic (3:3:0). Prerequisite: PHIL 173 or MATH 110 or permission of instructor. Study of predicate calculus by means of a step-by-step construction of artificial languages. Topics include procedures for constructing a calculus, proof techniques, significant properties of predicate calculus; and procedures for recognizing phrases.

391, 392 Special Topics in Philosophy (3:3:0), (3:3:0). Examination of topics of current interest, such as death and dying, the rights of children, or philosophical controversies in modern physics.

421, 422, 423, 424 Seminar (3:3:0) for each. Limited to philosophy majors with 9 hours of philosophy, but others may be admitted if the topic is sufficiently close to their fields of study. Topics vary.

425, 426 Independent Study (3:3:0), (3:3:0). Prerequisite: Philosophy majors with 60 hours and 15 hours of philosophy and permission of department.

450/EUST 450 The Twentieth Century in Europe (3:3:0). Up to 3 credits of seminars listed under EUST 450 may be credited toward the major.

510 Seminar in the Ethics of Health Care (3:3:0). Prerequisite: 90 hours, graduate standing, or permission of instructor. An examination of moral dilemmas within the health care profession on ethical theories and principles. Special emphasis on patients' rights, social justice of health care, and evolving health care technologies.

512 Issues in Philosophy and Literature (3:3:0). Prerequisite: 90 hours, 6 hours of 300-level English and 6 hours of 300-level philosophy, or permission of instructor. Topics vary; possible topics include structuralism, technology, form and matter, conceptions of the future. The course is cross-listed and team taught.

520 Current Issues in the Philosophy of Science (3:3:0). Prerequisite: 12 hours of philosophy, including either PHIL 173 or 376; or 12 hours in a single natural scientific discipline; or permission of instructor. Advanced exploration of the current issues addressing the structure of scientific knowledge. The fundamental question is: What are the rational standards for acquiring knowledge of the physical world? This question is explored from rival philosophical perspectives: the logical-empiricist perspective of the Received View, represented by R. Carnap and C. Hempel; the problem-solving perspective of the historicists T. Kuhn and L. Laudan; the rationalism of W. Newton-Smith; and the antirealism of V. van Fraassen.

531 Freud and Philosophy (3:3:0). Prerequisite: 6 hours of philosophy or a course in personality theory or permission of instructor. Exploration of philosophical aspects of Freud's thought, focusing on Freud's philosophy of human nature and culture and its influence on contemporary thought.

550 Contemporary Theories of Justice (3:3:0) Prerequisite: 9 hours in philosophy or permission of instruc-
toe Examination of alternative theories of justice, focusing on recent work by a major libertarian philosopher and recent work by a major egalitarian philosopher. The following are central questions of the course: What constitutes a just distribution of property? How is the right to individual freedom to be weighed against the right to receive basic human necessities?

555 Environmental Ethics (3:3:0). Prerequisite: 90 hours of graduate standing, and 3 credits in philosophy plus a combined total of 9 additional credits in philosophy and sciences, or permission of instructor. An examination of ethical principles affecting environmental issues with special emphasis on the problems encountered by environmental biologists.

574 Current Issues in Philosophy of Psychology (3:3:0). Prerequisite: Combined total of at least 12 credits in philosophy or psychology, at least 3 of which must be in philosophy and at least 3 of which must be at 300 level or above, or permission of instructor. A careful examination of some issue or issues of current interest to both philosophers and psychologists. Typical issues examined include the mind-body problem, philosophical and psychological implications of work in artificial intelligence, philosophical issues in psycholinguistics.

591 Special Topics in Philosophy (3:3:0). An examination of specific topics in philosophy that are both of central interest in that field and of interdisciplinary interest. Topics will be selected with special reference to the areas of technology, aesthetics, philosophy of religion, and ethics and social and political philosophy.

Physical Education (PHED)

Human Services
Activity Courses
All 100- and 200-level activity courses are open to students with handicapping conditions; accommodations for these students are made on an individual basis. Students unable to participate in regular activity classes may be placed in an individualized class (PHED 170, 171, 172, 173) if so desired.

100 Foundations of Exercise and Fitness (1:1:0). Develop an understanding of cardiovascular health and fitness through a personal exercise program. Special emphasis is given to strength, endurance, and weight management as components of health and wellness through conditioning. This course is a prerequisite or corequisite to all physical education activity classes (101-299).

Physical education majors enrolled in activity classes are not required to take PHED 100 as a prerequisite or corequisite.

101 Soccer and Volleyball (1:0:2). Basic skills, rules, and strategies of each sport.

102 Beginning Fencing (1:0:2). Basic skills, techniques, and rules of foil fencing.

103 Noncontact Lacrosse (1:0:2). Basic skills, rules and strategies.

104 Aerobics, Basic Conditioning (1:0:2). Develop skills for cardiovascular fitness and personal conditioning programs.

106 Beginning Gymnastics (1:0:2). Basic skills and techniques of gymnastics. Fall semester only.

107 Folk, Square, and Social Dance (1:0:2). Basic steps, sequences, and style of each dance form.

108 Weight Training and Body Conditioning (1:0:2). Principles and techniques of individualized progressive resistance exercise and cardiovascular fitness programs.

109 Beginning Ice Skating (1:0:2). Criteria for selecting equipment and fundamental skills such as skating forward and backward. Fee.

110 Beginning Swimming (1:0:2). Introduction open only to nonswimmers. Emphasis on becoming safe swimmers. Fee.

111 Basketball and Soccer (1:0:2). Basic skills, strategies, and rules of each sport.

116 Combative Sports, Games, Unarmed Combat and Wrestling (1:0:2). Development and skill in combative sports.

121 Flag Football and Basketball (1:0:2). Basic skills, rules, and strategies for each sport.

124 Basketball and Softball (1:0:2). Basic skills, rules, and strategies for each sport.

131 Volleyball and Field Hockey (1:0:2). Basic skills, strategies, and rules for each sport.

133 Tennis for All (1:0:2). Basic ground strokes, volley, serve and smash, rules, strategies, and terminology.

140 Golf (1:0:2). Grip, stance, swing, rules, and etiquette. Fee.

148 Badminton and Bowling (1:0:2). Basic skills, rules, terminology, and strategies. Fee.

150 Intermediate Swimming (1:0:2). Increase proficiency, endurance and versatility in aquatics. Fee.

151 Beginning Tennis (1:0:2).* Basic skills, rules, terminology, and strategies for beginners.

152 Tennis for the Advanced Beginner (1:0:2).* Prerequisite: PHED 151 or equivalent experience and permission of instructor. Continuation of basic ground strokes, serve, volley, and smash; racket selection, rules, terminology, and strategies.

153 Intermediate Tennis (1:0:2).* Prerequisite: PHED 152 or equivalent experience and permission of instructor. Basic skills with the introduction of the chop, slice, half volley and lob; singles and doubles strategy.

154 Advanced Tennis (1:0:2).* Prerequisite: PHED 153 or equivalent skill level and permission of instructor. For experienced players to strengthen skills, strategies, and tactics.

*Students taking tennis classes are required to purchase a can of new balls and a United States Tennis Association Rule Book.

161 Archery and Golf (1:0:2). Basic skills, techniques, and rules of target archery and golf.

165 Racquetball (1:0:2). Fundamental skills, techniques, and strategies of playing singles and doubles racquetball.

170, 171, 172, 173 Individual Physical Education (2:0:3 for each).* Prerequisite: Permission of instructor. Students unable to participate in the regular program of physical education may register for this course. Activities based on the physician's recommendation.
200 Swimmers (1:0:2). Prerequisite: Ability to swim 50 meters of crawl or breast stroke and permission of instructor. Speed, endurance and perfection of strokes and diving. Fee.

207 Intermediate Folk, Square and Social Dance (1:0:2). Prerequisite: PHED 107 or permission of instructor. Advanced skills in square and social dance with new steps and styles to folk and social dances.

210 Advanced Life Saving (1:0:2). Meets certification requirements for Advanced Life Saving for the American Red Cross. Fee.

250 Water Safety Instructor (2:0:3). Meets the Water Safety Instructor requirements for the American Red Cross. Fee.

255 Basic Scuba Diving (2:0:3). (See PRLS 255.)

Major Courses: 300 and 400 level

300 Kinesiology (3:3:0). Prerequisite: BIOL 124, 125. Anatomical and mechanical study of human movement.

301 Physical Education in Elementary School (3:3:0). Prerequisite: Major in elementary school education. Planning experiences in physical education for children. Field experience (10 to 15 hours) in public schools required.

302 Gymnastics for Children and Youth (3:1:4). Prerequisite: PHED 106 or permission of instructor, and major in physical education. Fundamentals and progressions in teaching gymnastics, preschool through secondary school age, with 12 to 15 hours of field experience involving lab. Spring semester only.

303 Professional Dimensions of Physical Education (3:3:0). Introduction to the professional practice of physical education.

304 Sport, Culture, and Society (3:3:0). Prerequisite: PHED 106 or permission of instructor. Sport viewed from historical, political, economic, and cultural perspectives. Spring only.

305 Sports officiating and Intramural Administration (3:2:3). Application of officiating techniques and organization of intramural programs.

306 Psychomotor Learning (3:3:0). Prerequisite: Permission of instructor. Learning theory, processes, and conditions as they affect movement. Field experience required. Spring only.

308 Developmental Physical Education (3:2:2). Prerequisite: BIOL 124 and 125. Chronic and functional impairments as they affect physical education and exercise.

310 Prevention and Care of Athletic Injuries (3:3:0). Prerequisite: BIOL 124 and 125. Preventive, rehabilitative, and medical management of athletic injuries. Fall semester only.


350 Measurement and Evaluation in Physical Education (3:3:0). Selection, administration, evaluation, and construction of measurement and evaluation instruments and techniques in physical education; statistical analysis of data and survey of selected instruments. Spring only.

371 Curricular Experiences in Secondary School Physical Education (3:3:0). Prerequisite: PHED 303. Analysis and application of instructional experiences and methods of teaching physical fitness activities, basic motor skills, and games and sports at the secondary school level. Field experience (15-20 hours) in public schools required. Fall only.

380 Tennis (1:0:3). For physical education majors to improve basic skills and knowledge through in-depth study of skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Fall semester only.

381 Folk, Square, and Social Dance (1:0:3). For physical education majors to improve their basic skills and knowledge through in-depth study of skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Fall semester only.

382 Flag Football (1:0:3). For physical education majors to improve their skills and knowledge through in-depth study of skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Fall semester only.

383 Volleyball (1:0:3). For physical education majors to improve their skills and knowledge through in-depth study of basic skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Fall semester only.

384 Archery and Badminton (1:0:3). For physical education majors to improve their skills and knowledge through in-depth study of basic skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Fall semester only.

385 Golf (1:0:3). For physical education majors to improve their skills and knowledge through in-depth study of basic skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Fall semester only.

386 Weight Training and Body Conditioning (1:0:3). For physical education majors to improve their skills and knowledge through in-depth study of basic skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Spring semester only.

387 Track and Field (1:0:3). For physical education majors to improve their skills and knowledge through in-depth study of basic skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Spring semester only.

388 Basketball (1:0:3). For physical education majors to improve their skills and knowledge through in-depth study of skill progressions and skills for teaching. Includes skill analysis and peer group teaching. Spring semester only.

389 Soccer (1:0:3). For physical education majors to improve their skills and knowledge through in-depth study of skill progressions and drills for teaching. Includes skill analysis and peer group teaching. Spring semester only.

Only students in teacher certification programs must apply to and be accepted in the teacher education program before registering for PHED 400-level courses.
403 Curricular Experiences in Elementary School Physical Education (3:3:0). Prerequisite: PHED 303 and permission of instructor. Curricular experiences and methods for elementary school physical education; requires 12 to 15 hours of field experience. Fall only.

410 Psychology of Sport and Coaching (3:3:0). Research, trends, and techniques of coaching.

415 Student Teaching in Physical Education (15:0:0). Prerequisite: Completion of all courses in the approved program; admission to and good standing in the teacher education program; acceptance in student teaching. Supervised clinical experience of a full semester in approved Virginia schools. Required experiences in elementary (seven weeks) and secondary (seven weeks) school settings. Includes participation of one week in school preservice workshops and related activities (fall) or one week special simulated workshop (spring), and weekly seminar sessions.

420, 421 Coaching of Sports (2:1:3), (2:1:3). Prerequisite: Permission of instructor. Sports usually coached at the secondary level with each activity scheduled on a semester basis and conducted independently for 2 credit hours. Principles and fundamentals of offensive and defensive play strategy, team and staff organization, and materials for coaching.

441 Practicum in Athletic Training (1-3:0:0). Prerequisite: PHED 330 and permission of instructor. Application of techniques and procedures in the care and prevention of athletic injuries in a selected environment under certified trainer supervision. Involves at least 100 hours of participation for each credit hour in athletic training.

442 Practicum in Physical Education (1-3:0:0). Prerequisite: 90 hours or 60 hours and permission of instructor. Supervised professional practice in a selected area of interest. Student may repeat this course but no more than 3 hours credit may be given. Each credit hour requires a minimum of 60 hours of participation in the specialty over a period of six weeks. Areas selected with faculty adviser approval.

450 Physiology of Exercise (3:3:0). Prerequisite: BIOL 124 and 125 and PHED 300. Human physiological response to environmental changes and exercise.

460 Management and Organization in Physical Education (3:3:0). Prerequisite: PHED 303 and permission of instructor. Management, administration, and evaluation of elementary and secondary school physical education programs. Includes physical education instructional programs, intramural programs, and interscholastic sports. Field experience required. Fall only.

490 Internship in Physical Education with Selected Specialization (15:0:0). Directed internship in a physical fitness or sports program in cooperation with a community agency, business, or industrial organization. Requires weekly seminar.

499 Independent Study in Physical Education (1-3:0:0). Prerequisite: 90 hours and permission of instructor. Study of a problem area in physical education research, theory, or practice under the direction of faculty. May be repeated, but no more than 3 hours total credit may be given.

Graduate courses on the 500-level are open to undergraduate students with permission.

500 Workshop in Physical Education (1, 2, 3:0:0). Prerequisite: Graduate standing or permission of instructor. Concentrated full-time workshops, weekend seminars, and workshops dealing with selected topics in physical education and ancillary fields. May be repeated. No more than 6 semester hours may be applied for degree credit.

508 Seminar in Special Physical Education (3:3:0). Prerequisite: Graduate standing or permission of instructor. Discussion of current problems, issues, and research in special physical education. Pracica may be included.

599 Independent Study in Physical Education (1-3:0:0). Prerequisite: Graduate standing or permission of instructor. Study of a problem area in physical education research, theory, or practice under the direction of faculty. May be repeated, but no more than 3 hours total credit may be given.

Physics (PHYS)

103, 104 Principles and Development of Modern Physics (4:3:3), (4:3:3). PHYS 103 prerequisite to PHYS 104. For nonscience majors. Topics include mechanics, relativity, cosmology, atomic physics, electricity and magnetism, nuclear physics, and elementary particles. Emphasis on historical, philosophical, and social aspects of modern physics.

106, 107 Physics for the Life Sciences (3:3:0) (3:3:0). Prerequisite: One year of college mathematics; PHYS 106 is prerequisite to 107. Topics include mechanics, properties of fluids and gases, sound, heat, electricity, light, the atom, the nucleus, and radiation. Basic principles of physics emphasizing applications to biological sciences.

141 Elementary Physics (3:3:0). One-semester course for nonscience majors covering the basic concepts of classical and modern physics. PHYS 142 is an optional one-credit lab for this course.

142 Elementary Physics Lab (1:0:1). Corequisite: PHYS 141. Laboratory for PHYS 141.

201 Energy and Environment (3:3:0). Basic ideas of science and technology with emphasis on their interaction with our contemporary culture. Designed for science and nonscience majors with interests in current concerns of energy and environment. Origin, forms, uses, and distribution of energy and resulting environmental effects. May not be included for credit by physics majors within the 44 hours of physics courses required for B.S. degree or within the 31 hours of physics courses required for the B.A. degree.

225 Problems in Physics I (1-3:0:0). Prerequisite: 24 hours and 3.00 GPA in physics and mathematics. Individual study of physics problems of current interest. May be taken 3 times.


300/GOVT 300 Nuclear Weapons Technology and Politics (3:3:0). Prerequisite: 60 hours or permission of instructor. A study of the history and development of nu-
clear weapons and nuclear strategy, the physical basis of nuclear weapons and their biological and physical effects, the effects of a nuclear war and the possible effectiveness of civil defense, the possibility of limited and winnable nuclear wars, arms control, nuclear proliferation, and public opinion on nuclear issues. This course may not count toward the physics major requirement.

303 Classical Mechanics (3:3:0). Prerequisite: PHYS 352, 353 and MATH 214. Motion of a particle in one, two, and three dimensions; systems of particles; non-inertial coordinate systems; equations of Lagrange and Hamilton.


306 Wave Motion and Electromagnetic Radiation (3:3:0). Prerequisite: PHYS 305. Vibrating string, plane waves, interference, diffraction, polarization, electromagnetic waves, dispersion, and relativity.

307 Thermal Physics (3:3:0). Prerequisite: PHYS 352, 361, or permission of instructor. Classical concepts of energy and temperature, basic definitions, first and second laws of thermodynamics, properties of pure substances, equations of state, introduction to classical and quantum statistics and their application to physical systems.

311, 312 Mathematical Methods in Physics and Engineering (3:3:0). Prerequisite: PHYS 352 and MATH 214 or 306; PHYS 311 or MATH 313 is prerequisite for PHYS 312. Math techniques as applied in physics and engineering. Ordinary and partial differential equations, special functions, Fourier series, Laplace transforms, integral equations, matrices, and complex variables.

316 Sound and Light in the Arts (3:3:0). Nature of light, color and sound, mechanisms of vision and hearing, color addition; synthesis of musical sounds, computer-generated music and art; lasers; holography and fiber optics; recording and reproduction of sound and light. May not be included for credit by physics majors within the 44 hours of physics courses required for B.S., or within the 31 hours of physics courses required for B.A. Frequent demonstrations.

326 Problems in Physics II (1:0:0). Prerequisite: 60 hours and 2.50 GPA in physics and mathematical science. Individual study of physics problems of current interest. May be taken three times.


343, 345 College Physics (3:3:0), (3:3:0). (One hour recitation) Prerequisite: 60 hours or one year of college-level science and one semester of college-level mathematics, or permission of instructor. PHYS 343 is prerequisite to 345. Two-semester basic physics course with emphasis on topics of classical and modern physics of particular importance to science majors. The principles of mechanics, heat, electricity, magnetism, optics, atomic and nuclear physics.

344, 346 College Physics Lab (1:0:1), (1:0:1). Corequisite: 343 (for 344) and 345 (for 346). Laboratory portion of two-semester basic physics course.


361 Modern Physics with Applications (3:3:0). Prerequisite: MATH 214 and PHYS 352 or PHYS 342 and permission of instructor. Study of modern physics with emphasis on applications for scientists and engineers. Topics include modern optics, lasers, binding and energy bands in solids, electrical, thermal and magnetic properties of solids, semiconductors, radioactivity, nuclear reactions, radiation detectors, and applications of nuclear physics to other sciences.

402 Introduction to Quantum Mechanics and Atomic Physics (3:3:0). Prerequisite: PHYS 303 and 361, or permission of instructor. Experimental basis of quantum mechanics; the wave function; systems in one, two, and three dimensions.

407 Senior Laboratory in Modern Physics (3:0:9). Prerequisite: 90 hours. Experiments in modern physics involving advanced techniques in electronics, optics, nuclear physics, and solid state. Typical experiments: the Frank Hertz Experiment, Hall Effect, electron paramagnetic resonance, Mossbauer Effect.

408 Senior Research (2:0:0). Prerequisite: 90 hours. The student works under the guidance of a faculty member on a research project in experimental or theoretical physics.

416 Special Topics in Modern Physics (1:2:0). Prerequisite: 90 hours. Topics of major current interest in modern physics with emphasis on the breadth of physical understanding needed to approach many of today’s problems. Seminar every other week.

417/GEOL 417 Geophysics (3:3:0). Prerequisite: GEOL 101, 102, 201, 301; MATH 113, 114, and PHYS 250. Corequisite: MATH 212; PHYS 350, 351. Seismological and gravitational theory and application to an understanding of the earth’s interior. The geology requirement may be waived for physics and engineering students with sufficient background.

428/ASTR 428 Relativity and Cosmology (3:3:0). Prerequisite: PHYS 352, MATH 214 or 216; and PHYS 303, 305 or permission of instructor. Special relativity, four-dimensional space-time, general relativity, non-Euclidian geometries, geodesic and field equations, tests of general theory of relativity, black holes, cosmology, models of the universe, remnant blackbody radiation, big bang cosmology, thermodynamics and the universe.
500 Physics for High School Teachers (3:3:0). Prerequisite: certification as a secondary school physics instructor or permission of department. Techniques of teaching high school physics. Introduction to modern physics with emphasis on concepts rather than mathematical formalism. Recent developments in physics.

501 Physics Laboratory Techniques for High School Teachers (3:3:0). Prerequisite: Graduate standing. Theory and performance of experiments applicable to high school teaching with practical sessions on use of lab apparatus and computer. Recommended for high school teachers of physics.

502/PHYS 402 Introduction to Quantum Mechanics and Atomic Physics (3:3:0). Prerequisite: PHYS 303 or permission of instructor. Experimental basis of quantum mechanics; the wave function; systems in two, three, and four dimensions.

510 Computational Physics I (3:3:0). Prerequisite: PHYS 303 and 305. Study of the computational aspects of continuous media with emphasis on the application of various numerical algorithms and techniques for solution. Includes physical perspective, mathematical formulation, and computer solution of problems in physics and astrophysics concerning ideal and non-ideal fluids, waves in fluid media, shock formation, and magnetohydrodynamics. Some knowledge and experience in FORTRAN programming and microcomputer operation desirable.


512 Solid State Physics and Applications (3:3:0). Prerequisite: PHYS 402 or 502. Crystal structures, binding, lattice vibrations, the free electron model, metals, semiconductors and semiconductor devices, superconductivity, magnetism.

513 Applied Electromagnetic Theory (3:3:0). Prerequisite: PHYS 305, 306, MATH 313, 314 or equivalent. Classical electromagnetic theory with applications. Topics include electrostatics, magnetic fields and materials, electromagnetic wave propagation, wave guides, transmission lines, radiation and antennas.


530 Astrophysics (3:3:0). Prerequisite: PHYS 345 or 351 and MATH 113 or 115. Topics include physical concepts, magnitudes of stars, Hertzsprung-Russell diagram, high-energy astrophysics, stellar radiation, interstellar matter, dust, molecules, and other topics.

531 Relativity and Cosmology (3:3:0). Prerequisite: PHYS 352; MATH 214 or 216, and PHYS 303, 305, or permission of instructor. Special relativity, 4-dimensional space-time, general relativity, non-Euclidian geometries, geodesic and field equations, tests of general theory of relativity, black holes, cosmology, models of the universe, remnant blackbody radiation, big bang cosmology, thermodynamics and the universe.


540 Nuclear and Particle Physics (3:3:0). Prerequisite: PHYS 502. Accelerators, detectors and related electronics; nuclear and elementary particle structure; symmetries and conservation laws; the electromagnetic, weak, and hadronic interactions; nuclear models; the quark model; nuclear science and technology.


590 Selected Topics in Physics (3:3:0). Prerequisite: Graduate standing or permission of instructor. Selected topics from recent theoretical developments and applications. Satisfies the needs of the professional community to keep abreast of current developments.

Plan for Alternative General Education: See PAGE

Psychology (PSYC)

Psychology

100 Basic Concepts in Psychology (3:3:0). Prerequisite to all other courses in psychology. Introduction to psychology as a scientific discipline. Includes an examination of concepts and methods in learning, motivation, development, personality, and measurement.

211 Developmental Psychology (3:3:0). Prerequisite: PSYC 100 or permission of instructor. Review of major developmental theories including perspectives of childhood, adolescence, adulthood, and old age.

220 Personality Theory (3:3:0). Prerequisite: PSYC 100 or permission of instructor. Introduction to classical and contemporary theories of personality and a comparative evaluation of major theories in terms of relevant research studies.

230 Industrial and Organizational Psychology (3:3:0). Prerequisite: PSYC 100 or permission of instructor. Examination of application of psychological principles and methods to problems commonly encountered in business and industry.

231 Social Psychology (3:3:0). Prerequisite: PSYC 100 or permission of instructor. Study of human behavior development in a social matrix, including such topics as socialization, cultural behavior, group norms, and attitude formation.

260 Basic Research Methods in Psychology (1-3:0). Introduction to research methods in psychology in the context of assisting with faculty research; individualized sections by arrangement with faculty. Methods taught vary, but generally include basic data collection.
and recordkeeping methods in research. Course culmi­
nates in a paper describing techniques learned. No more
than six credits in PSYC 260, 350, and 460 can be used to­
ward a psychology major.

300 Statistics in Psychology (4:3:2). Prerequisite: 6
hours of psychology including PSYC 100 (grade of C or
better) and 3 hours of mathematics coursework, or per­
mission of instructor. (Math prerequisite effective Spring
1993.) Descriptive and inferential statistics in design,
analysis, and interpretation of psychological research
with practical application using computers in laboratory.

304 Principles of Learning (4:3:2). Prerequisite: 
PSYC 300 (grade of C or better) or permission of instruc­
tor. Principles of animal learning, including such topics
as classical and operant conditioning, discrimination
learning, and animal cognition. Laboratory projects re­
quire working with animal subjects.

305 Memory and Cognition (4:3:2). Prerequisite: 
PSYC 300 (grade of C or better) or permission of instruc­
tor. Experimental methodology within the context of dis­
crimination, concept formation, verbal learning,
psycholinguistics, and memory.

309 Sensation, Perception, and Information Pro­
cessing (4:3:2). Prerequisite: PSYC 300 (grade of C or
better) or permission of instructor. Principles of perception,
including topics such as psychophysics, perceptual or­
ganization, perceptual learning, and perceptual con­
stancies. Laboratory projects demonstrate and investi­
gate perceptual phenomena.

313 Child Psychology (3:3:0). Prerequisite: 6 hours
of psychology including PSYC 100, or permission of instruc­
tor. Study of human psychological development from con­
ception to adolescence including such topics as gen­
etic factors, emotional and intellectual growth, and en­
vironmental influences.

314 Adolescent Psychology (3:3:0). Prerequisite: 6
hours of psychology including PSYC 100, or permission of
instructor. Study of the biological and cultural changes
accompanying adolescence, including the effect of these
changes on emotional, intellectual, and social develop­
ment.

320 Psychological Tests and Measurements
(4:3:2). Prerequisite: PSYC 300 or permission of instruc­
tor. Examination and application of principles under­
lying the theory, interpretation, and administration of
psychological tests; including a study of tests of intelli­
genue, achievement, and ability.

321 Counseling Psychology (3:3:0). Prerequisite: 
PSYC 325 or permission of instructor. Review of the theo­
ries and methods in psychological counseling.

322 Behavior Modification (3:3:0). Prerequisite: 
PSYC 220 or permission of instructor. Examination of ex­
perimental principles of human and animal learning
within the theoretical framework of applied behavior
analysis, including the design, implementation, and eval­
uation of operant intervention programs across a
wide variety of human situations.

323 Clinical and Social Psychology Research Tech­
niques (4:3:2). Prerequisite: PSYC 300 or permission of
instructor. Review and application of some research tech­
niques including interviewing, survey analysis, and pro­
cess analysis.

325 Abnormal Psychology (3:3:0). Prerequisite: 
PSYC 100 or permission of instructor. Study of develop­
ment of abnormal behavior patterns, including such top­
ics as methods of diagnosis and prevention of serious
mental disorders such as psychosomatic disorders, psy­
choses, character disorders, and mental retardation.

326 Therapeutic Communication Skills (3:3:0). Pre­
requisite: PSYC 325 or permission of instructor. Introduc­
tion to understanding and use of basic therapeutic
communication skills used in clinical and counseling
psychology.

330 Psychology of Adjustment (3:3:0). Prerequisite: 
PSYC 100 or SOCI 101 or NURS 250 or EDUC 200 or
equivalent. Nature of effective and faulty patterns of ad­
justment. Factors in healthy and unhealthy personality
development, unique motivation patterns of individu­
als, and influence of personally significant groups on
adjustment. Resources for personal growth and applica­
tion of contemporary psychological principles to
achievement of increased intellectual, emotional, and
social competence.

350 Directed Reading and Research in Psychol­
ogy (1-3:0:0). Prerequisite: PSYC 100, 300, permission of
instructor and department. Library research in psychol­
ology, culminating in a substantial formal paper; individu­
alized sections by arrangement with faculty. No more
than six hours in PSYC 260, 350, and 460 can be used to­
ward psychology major.

362 Psychology of Women (3:3:0). Prerequisite: 
PSYC 100, BIOL 103, 104, or equivalent, or permission of
instructor. Behavior and attitudes of women; influ­
ence of sex chromosomes and sex hormones on behav­
or; influence of culture on sex role differentiation; theo­
ries of sex role development.

372 Physiological Psychology (3:3:0). Survey of
neuroscience, including basic neuroanatomy, neural
and synaptic transmission, neural mechanisms underly­
ing normal and abnormal behavior, and biological
mechanisms of drug action.

373 Physiological Psychology Laboratory (1:0:2). Pre­
requisite: PSYC 372 and BIOL 103-104 or permission of
instructor. Corequisite: PSYC 472. Functional anatomy
and physiology of the brain, including dissection of
brain and eye, demonstration and practice in research
methods for studying physiological mechanism's under­
lying behavior.

410 Motivation and Emotion (3:3:0). Prerequisite: 
PSYC 100, BIOL 103, 104, or permission of instructor.
Study of the concepts and principles that determine
human and animal motivation, including such topics as
instincts and drives.

414 Behavior Disorders of Childhood (3:3:0). Pre­
requisite: PSYC 313 and 325 or permission of instructor.
Review of the theories, methods, and research dealing
with emotional and behavioral disorders of children.

415 Psychological Factors in Aging (3:3:0). Pre­
requisite: 3 hours in PSYC or SOCI. Examination of the sen­
sory, perceptual, intellectual, and personality changes
that occur in older people. Common adjustment prob­
lems as well as more serious adjustment difficulties are
discussed. Applications of various personality theories of
ageing.
421, 422 Undergraduate Practicum In Psychology (3:3:0), (3:3:0). Prerequisite: PSYC 325 and 326 and permission of Clinical Review Committee. Supervised experience in application of psychological principles requiring work in a nonclassroom situation.

423 Group Psychotherapy Techniques (3:3:0). Prerequisite: PSYC 220 or permission of instructor. Review of theory and methods of group therapy with emphasis on humanistic and interpersonal approaches, including applications to family therapy, alcoholism, and drug abuse.

425 Seminar In Abnormal Psychology (3:3:0). Prerequisite: PSYC 325 or permission of instructor. Selected topics include stigma, specific forms of psychopathology, psychosocial issues, or deinstitutionalization.

435 Personnel Training and Development: A Psychological Perspective (3:3:0). Prerequisite: PSYC 230. Prerequisite or corequisite: PSYC 320, or permission of instructor. An overview and critique of training methods currently used in industry from the viewpoint of psychological theory, including simulations, on-the-job training, supervisory/leadership skills training, computer-assisted instruction, and programmed texts. Principles of needs analysis, program development, and program evaluation are discussed within the framework of industrial psychology.

460 Independent Study in Psychology (1-3:0-0). Prerequisites: PSYC 305, a 2.50 GPA in psychology, and a written proposal approved before registration by instructor and the department chair. Advanced research methods in psychology in the context of individual student projects or assisting with research on faculty projects; individual sections by arrangement with faculty. No more than six hours in PSYC 260, 350, and 460 can be used toward the psychology major.

461, 462 Special Topics (3:3:0), (3:3:0). Prerequisite: Permission of instructor. Selected topics reflecting interest in specialized areas. Announced in advance.

465 History and Systems in Psychology (3:3:0). Prerequisite: PSYC 305 (grade of C or better). Historical background and major theoretical systems in modern psychology. Approaches include behaviorism, cognitive/information processing approaches, and psychodynamic theories.

472 Advanced Physiological Psychology (3:3:0). Prerequisites: PSYC 372 and BIOL 103, 104 or permission of instructor. Physiological mechanisms underlying behavior, including neuroanatomical, neurochemical, and endocrinological bases of behavior. Emphasis on research basis of current knowledge in neurosciences.

499 Senior Thesis (3:0:0). Prerequisite: Psychology major with 90 hours, an experimental psychology lab course, 3.00 GPA in psychology, PSYC 460, permission of instructor, and prior approval of thesis proposal. Directed research on a topic agreed on by student and adviser. The student should take PSYC 460 with the same adviser to develop a thesis proposal before registering for PSYC 499. The student must complete a thesis and defend it orally before the adviser and two faculty members. With permission of department, students may take a second semester for a maximum of 6 hours credit.

506 Theories of Personality (3:3:0). Prerequisite: PSYC 220. Comparative review of prevalent theories of personality with special emphasis on their fundamental models and their similarities and differences.

508 Theories of Development (3:3:0). Prerequisite: PSYC 313 or 211. Major theories of infant and child development including works of Piaget, Freud, Erikson, and Spitz.

513 Infant Development (3:3:0). Prerequisite: PSYC 313 or permission of instructor. Examination of current issues, research methods, and clinical evaluation techniques in the field of infant development.

530 Human Factors Engineering (3:3:0). Prerequisite: PSYC 230 or an experimental lab course or permission of instructor. Investigation of complex man-machine interactions found in industry today. Extensive empirical research findings are examined.

533 Seminar in Industrial/Organizational Psychology (3:3:0). Prerequisite: PSYC 230 or PSYC 436 or permission of instructor. Rotating topics (e.g., leadership theories and management development, performance appraisal) to be announced in advance. May be repeated for credit.

536 Psychology of Work Motivation (3:3:0). Prerequisite: PSYC 230 or permission of instructor. Examination of the psychological literature of (1) the need, cognitive, and reinforcement theories of motivation; (2) organizational attachment (commitment, absenteeism, and turnover); (3) job design and quality of work issues. Methodological and psychometric issues in the interpretation and evaluation of work motivation research are emphasized.

541 Survey Research (3:3:0). Prerequisite: PSYC 300 or SOCI 221 or equivalent. Introduction to theory, method, and practice of survey research; students complete a survey research project.

546, 549 Practicum in Gerontology (3:3:0), (3:3:0). Prerequisite: Completion of three of the required courses in the gerontology certificate program. Practical experience in a gerontological setting under supervision of a qualified professional 150 contact hours per three semester hour's credit.

553 Quantitative Methods I: Advanced Statistics (4:3:2). Prerequisite: Passing grade on screening test given the first evening of class. Topics in introductory psychological statistics from an advanced perspective. Additional topics are included. Lab provides introduction to use of computer packages in data handling and analysis. Required for degree students. Requirement may be satisfied by demonstrating competence on an independent examination.

557 Psychometric Methods (3:3:0). Prerequisite: PSYC 553 or permission of instructor. Examination of the concepts of psychological measurement with emphasis on predictor test and criterion development. Discussion of reliability, validity, and specialized techniques used to develop tests of ability, interest, and personality.

559 Drugs, Hormones, and Behavior (3:3:0). Prerequisite: PSYC 372 or equivalent or permission of instructor. Overview of the chemistry of behavior, including neurotransmitters, mechanisms of action of therapeutic drugs such as antidepressants, actions of hallucinogens and other psychoactive drugs, chemical theories of memory, and effects of hormones on behavior.
560 Advanced Applied Social Psychology (3:3:0). Prequisite: PSYC 231. Study of major trends in social psychological research with emphasis on the ethical and practical problems posed by human experimentation. Topics include attitude measurement, attitude change, conformity, social perception, and small group interaction.

565 Cognitive and Perceptual Development (3:3:0). Prequisite: 6 hours of child psychology and a course in experimental psychology. Experimental study of child development. Topics include biogenetic factors in development, sensory processes, learning, perception, motivation, language, and cognitive development.

581/ENGL 581 Survey of Psycholinguistics (3:3:0). Prequisite: ENGL 391 or PSYC 305 or permission of instructor. Study of the psychological basis of human language acquisition and competence, including research on aphasia, association, autism, second language learning, grammatical transformations, and the psychological reality of transformational rules.

592 Special Topics (3:3:0). Prequisite: Permission of instructor. Special topics reflecting interest in specialized areas.

Public Administration (PUAD)

Public Affairs

502 Theory and Practice of Public Administration (3:3:0). Prequisite: Graduate standing or permission of department. Survey and review of the field of public administration, including development of U.S. governmental administration, theories of administrative organization and behavior, administrative processes, management of people and money, administrative responsibility, and the nexus of public policy making and implementation.

Religious Studies (RELI)

Philosophy and Religious Studies

Areas of study may be identified by the second digit of the course numbers as follows:

1-History of Religions
2-Religion and Culture
3-Religious Literature
4-Religious Thought

100 The Human Religious Experience (3:3:0). Examination of the primary forms of expression that belong to religion, and of the nature and functions of religion. Topics to be considered may include the idea of ultimate reality; religious interpretations of nature; the person and the need for salvation; symbol, parable, and myth; magic and ritual; functions of religion in society; mystical experience. Efforts are made through considerations of more specific topics such as these, to address the general question of the nature of religion and to consider modern as well as classical interpretations of religious ideas. This course may not be taken by students who have taken RELI 132.


231 Religion in America (3:3:0). Religious heritage in American culture; growth of denominations and sects; interrelationship of religion and socio-political life.


271 Contemporary Religious Ethics (3:3:0). Prequisite: 24 hours or permission of instructor. Philosophical examination of major theoretical and practical issues in contemporary Judeo-Christian morality.

300 Approaches to the Study of Religion (3:3:0). Prequisite: 3 credits in philosophy, 3 credits in religious studies, or permission of instructor. Methods used in study of religious phenomena. Diverse assumptions of different perspectives and how they affect the understanding of religious phenomena. Illustrative readings from a variety of perspectives are critically evaluated, including the anthropological, historical, linguistic, literary, philosophical, psychological, and sociological approaches.

313 Hindu Religion and Philosophy (3:3:0). Hindu religious and philosophical developments from origins through formative periods.

314 Chinese Philosophies and Religious Traditions (3:3:0). Prequisite: RELI 212 or permission of instructor. A survey of major religious traditions and philosophical themes of China including Confucianism, Taoism, and Chinese Buddhism and Neo-Confucianism. The course examines the foundation of the Chinese world view and spirituality by investigating the diverse religious traditions that have created tensions and harmony among them.

315 The Buddhist Tradition (3:3:0). Prequisite: RELI 212 or permission of instructor. A survey of the Buddhist religious traditions. The main thrust of the course includes, but is not limited to, the historical development of Buddhism in India, China, and Japan, examining both Theravada and Mahayana traditions; philosophical and religious significance of Buddhism; social and political implications of the Buddhist traditions in the South Asian and East Asian countries.

331 Civil Religion in America: The Americanization of God (3:3:0). Prequisite: RELI 231 or permission of instructor. Development of American political religion, or religious nationalism/Christianism; the concept of America as a New Israel; the myths, rituals, symbols, and liturgical calendar of the nation.

332 American Religion in Social Thought and Action (3:3:0). Prequisite: RELI 231 or permission of instructor. Churches' involvement in social thought and action during the nineteenth and twentieth centuries.
332 Contemporary Religion in America: Diversity and Dissent (3:3:0). Prerequisite: RELI 231 or permission of instructor. Nature of consensus and dissent.

337 Mysticism: East and West (3:3:0). Prerequisite: 3 hours in religious studies or permission of instructor. A comparative treatment of major expressions of mysticism in East and West through exploration of various ways of understanding mystical experience. Readings and discussion emphasize one or more of the Eastern (Hinduism, Buddhism, Taoism, Zen) and Western traditions (Judaism, Christianity, Islam).

340 Religious Dimensions of Contemporary Dramatic Literature (3:3:0). Contemporary religious thinking through study of selected modern plays of the Western stage. Focuses on such themes as the self, human finitude, loneliness and alienation, love and redemption, personal guilt and social responsibility, suffering and death.

351 Nationalism and Universalism in the Quest for Jewish Identity (3:3:0). Prerequisite: 3 hours in RELI 211 or 251 or ANTH 207 or HIST 281, 282, or permission of instructor. Examination of the tension inherent in Israel's concept of herself as a chosen and covenanted people with a call to universal mission. Study focuses on the recurrence and attempted resolution of this tension, Zion and the issue of exclusivity versus universalism in Judaism in Biblical and modern times.

352 Judaism Between the Old and New Testaments (3:3:0). Prerequisite: 3 hours of RELI 251 or 252 or permission of instructor. A survey of Jewish religion, culture, and history in the period between the Old and New Testaments. Developments in Intertestamental Judaism crucial to the formation of later Judaism and Christianity will be examined.

370 Judaism: Life and Thought (3:3:0). Prerequisite: RELI 211 or RELI 251 or permission of instructor. A study of Judaism from Biblical times to contemporary American developments, with a focus on medieval and modern Judaic life and thought.

371 History of Western Christian Thought I: Classical and Medieval (3:3:0). Prerequisite: 3 credits in RELI or PHIL or permission of instructor. Development of Christian doctrine from the close of the New Testament period to the Reformation. Relationship between Greek, Roman, and Medieval philosophy and the theological expressions of belief.

372 History of Western Christian Thought II: Modern (3:3:0). Prerequisite: 3 credits in religious studies or philosophy or permission of instructor. Development of Christian doctrine from Reformation to present. Effects of scientific empiricism, existentialism, and linguistic analysis on Protestant and Catholic theology.

373 Contemporary Issues in Religious Thought (3:3:0). Prerequisite: Junior standing or permission of instructor. Selected issues in contemporary religious thought, especially with reference to ways in which those issues are defined and treated in the light of unique demands made upon religion by modernity. Issues may include current redefinitions of the idea of God; symbol, myth and interpretation; the impact of Eastern thought on Western religious experience; contemporary problems in religious ethics; secularization; role of religious institutions in modern society; religion, society, and technology.

374 Islamic Thought (3:3:0). Prerequisite: RELI 211; 60 hours or permission of instructor. Major components of Islamic thought and its role in regulating the various aspects of social life in the Muslim World. Emphasis on religious foundation of Islamic society and culture.

376, 377 Special Topics in Religious Thought (3:3:0). Prerequisite: 3 hours in philosophy or religion or permission of instructor. Selected topics from a philosophical perspective.

490 Comparative Study of Religions (3:3:0). Prerequisite: 9 credits in religious studies including RELI 211 and 212, or permission of instructor. Cross-cultural examination of the comparative aspects of religious phenomena. Examines the significance of religious phenomena from diverse religious and cultural perspectives, and investigates patterns of religious phenomena that have appeared in world cultures and civilizations.

591 Current Issues in Religious Studies (3:3:0). Special topics in religious studies that are of central interest in that field and of interdisciplinary interest as well. Topics are selected with special reference to their current importance in the field of religious studies and their pertinence to discussions of the role of religion in contemporary social, cultural, and political life.

Russian (RUSS)

Foreign Languages and Literatures
Placement: See Admission Procedures.

101 Elementary Russian I (3:3:1). Designed for students with no knowledge of Russian. Introduction to Russian, including elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Lab work required.

102 Elementary Russian II (3:3:1). Prerequisite: RUSS 101 or permission of department. Continuation of RUSS 101. Lab work required.

109 Intensive Elementary Russian (6:6:2). Equivalent to RUSS 101 and 102 taught in a single semester. Recommended for students who desire an intensive introduction to Russian. May not be taken for credit in combination with RUSS 101 and 102. Lab work required.

201 Intermediate Russian I (3:3:1). Prerequisite: RUSS 102 or 109, or appropriate placement score, or permission of department. Further development of skills in listening, speaking, reading, and writing. RUSS 201 and 202 must be taken in sequence. Lab work required.

202 Intermediate Russian II (3:3:1). Prerequisite: RUSS 201 or appropriate placement score or permission of department. Application of language skills to reading, composition, and discussion. Lab work required.

209 Intensive Intermediate Russian (6:6:2). Prerequisite: RUSS 102 or 109, or appropriate placement score, or permission of department. Equivalent to RUSS 201 and 202 taught in a single semester. May not be taken for credit in combination with RUSS 201 or 202. Lab work required.

300 Field Study in Russian Culture (1-3:0:0). Prerequisite: HIST 320 or 329, GEOG 230, RUSS 353 or 354; or permission of instructor. Two- to three-week study tour to the Soviet Union. Students must attend a series of lec-
tutes before the tour and must consult with the designated faculty member on a research project on a topic in Russian culture resulting in a term paper or report.

302 Russian Conversation and Composition (3:3:0). Prerequisite: RUSS 202 or permission of instructor. Development of students' ability to express themselves orally on topics of current interest and everyday situations; composition provides practice in more difficult forms of expression.

303 Russian Advanced Conversation (3:3:0). Prerequisite: RUSS 202 or equivalent. Development of oral proficiency, including current Soviet expressions.

310 Readings in Russian Literature (3:3:0). Prerequisite: RUSS 202 or permission of instructor. Readings of Russian literary works in the original language with lectures, discussions, and examination in Russian. This course may not be taken by anyone who has previously taken and satisfactorily completed RUSS 254. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

311 Contemporary Soviet Short Fiction (3:3:0). Prerequisite: RUSS 202 or equivalent. Reading and discussion of recent short stories by the best-known Soviet writers of today. Readings in original language, with lectures and discussion in Russian. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

314 The Slavs: A Cultural Survey (3:3:0). Prerequisite: RUSS 310 or permission of instructor. Survey of Russian literature of the late nineteenth and the twentieth centuries. Course work in English. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

319 The Slava: A Cultural Survey (3:3:0). Prerequisite: RUSS 310 or permission of instructor. Development of Russian culture through the ages with emphasis on the western (Polish, Czech) and southern (Yugoslav, Bulgarian) Slavs. Course work in English.

325 Major Russian Writers (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Study of the works of major Russian writers in translation; course work in English. Writers to be studied vary. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

326, 327 A Survey of Russian Literature (3:3:0), (3:3:0). Prerequisite: 60 hours or permission of instructor. RUSS 326 consists of a survey of Russian literature from its beginning to 1880. RUSS 327 consists of a survey of Russian literature of the late nineteenth and the twentieth centuries. Course work in English. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

353 Russian Civilization (3:3:0). Prerequisite: 60 hours or permission of instructor. Civilization and culture of Russia and the Soviet Union. Includes films, slides and music in addition to readings and lectures. Course work in English. May be taken toward fulfillment of the non-Western culture requirement for the B.A. degree.

354 Contemporary Soviet Life (3:3:0). Prerequisite: 60 hours or permission of instructor. Social life, art, economics, education, view of life, and personal aspirations of the Soviet citizen today. Course work in English. May be taken toward fulfillment of the non-Western culture requirement for the B.A. degree.

380, 381 Advanced Russian (3:3:0), (3:3:0). Prerequisite: RUSS 202, 209, or equivalent. A comprehensive study of the more difficult characteristics of contemporary standard Russian in the areas of grammar, style, and vocabulary usage. Emphasis on developing fluency in oral and written expression.

401 Readings in the Social Sciences (3:3:0). Prerequisite: 15 hours of Russian or equivalent. Reading, translation, and discussion of Soviet materials in fields of history, politics, geography, and sociology.

402 Scientific Russian (3:3:0). Prerequisite: 15 hours of Russian or equivalent. Reading, translation, and discussion of Soviet materials in natural and physical sciences.

407 Russian Drama and Theater (3:3:0). Prerequisite: 60 hours or permission of instructor. Development of Russian theater including directing techniques in the Moscow Art Theater. Reading and discussion of major Russian plays of the nineteenth and twentieth centuries. Course work in English; knowledge of Russian not required. May be taken toward fulfillment of the general requirement in literature for the baccalaureate degree.

410 Russian Poetry (3:3:0). Prerequisite: 15 hours of Russian or equivalent. Historical development of Russian poetry and of representative works of the major poets. Reading is in Russian. Course work in English and Russian. May be taken toward fulfillment of the general requirement in literature for baccalaureate degrees.

415 The Slavs: A Cultural Survey (3:3:0). Prerequisite: 60 hours or permission of instructor. Development of Slavic culture through the ages with emphasis on the western (Polish, Czech) and southern (Yugoslav, Bulgarian) Slavs. Course work in English.

480, 481 Fourth Year Russian (3:3:0). Prerequisite: RUSS 380, 381 or equivalent or permission of instructor. Advanced work in major grammatical and lexical topics of Russian. Application of theoretical principles in guided written and oral exercises.

490, 491 Independent Study (1-3:3:0), (1-3:3:0). Prerequisite: Russian studies major with 90 hours and permission of instructor. Research and analysis of a selected problem in language, literature, or culture in consultation with a member of the Russian studies faculty.

499 Seminar on Russian Literary and Critical Bibliography (3:3:0). Prerequisite: Major in Russian, 90 hours, and permission of instructor. Comprehensive bibliographic survey of the major primary and secondary works of Russian literature and criticism.

Social Work (SOCW)

Human Services

100 Introduction to Social Work (1:1:0). Introductory classroom discussion and field observation on functions, values, methods, effectiveness, opportunities, and limitations of social work in helping people.

300 Alcohol and Substance Abuse: Policies and Programs (3:3:0). Primary issues related to alcoholism including key concepts, theories, policies, and research regarding the use and abuse of alcohol. Emphasis on the impact of the policies and programs on the well-being of ethnic minority and disadvantaged service populations.

301 Laboratory in Interpersonal Communication (3:3:0). Prerequisite: SOCI 101, PSYC 100, or permission of instructor. Emphasis on experiential learning of the biological, psychological, social, and cultural influences on the behavior of those who need and those who give help. Students examine their own behavioral and
learning patterns, values, and attitudes to increase their ability to understand and help social work clients. Field service of at least 60 hours required.

323, 324 Human Behavior in the Social Environment I, II (3:3:0), (3:3:0). (Must be taken in sequence) Prerequisite: SOCI 101, BIOL 104, or permission of instructor. A social systems approach unifying and integrating concepts and knowledge from biology, anthropology, sociology, and psychology about human behavior. Applications in professional practice in the social work literature and in the field experience.

351 Social Welfare Policy and Services (3:3:0). Prerequisite: SOCI 101, PSYC 100, or permission of instructor. Introduction to social welfare, including its historical development, central concepts, institutional nature, and the functions of social work as a profession. Analyses of human service delivery systems, settings, and roles of social work.

352 Social Welfare Policy and Service II (3:3:0). Prerequisite: SOCI 351, 60 hours, or permission of instructor. Analysis of various social welfare policies; components of policy in our society. Examines the political, economic, and cultural influences on the policymaking process.

357 Methods of Social Work Intervention I (3:3:0). Prerequisite: SOCI 101, PSYC 100 or permission of instructor. Social work practice from a systems perspective. Particular emphasis on problem-solving activities with microsystems. The common core of knowledge, values, and skills essential to social work practice is analyzed to gain insight into social work functions and the role of the social worker as a change agent.

358 Methods of Social Work Intervention II (4:3:0). Prerequisite: SOCI 301, 357, or permission of instructor. Continues a generic problem-solving model, focusing on group and macrointervention systems, settings, and skills. Emphasis on working with groups from treatment to task purposes. Group processes as goal formulation, contract setting, composition, termination, skills and techniques necessary for effective worker intervention are partial knowledge base of the course. Field service of 40-60 hours required.

423 Social Work with Adolescents (3:3:0). Prerequisite: 60 hours and concurrent field experience or permission of instructor. Major needs of adolescents with their implications for social work practice. Problems of family and peer group relationships; occupational choice; sexual and scholastic adjustment; and special problems of racial and cultural alienation; alcohol and drug abuse; and delinquency. Studies various theoretical orientations and evidence from research. Analyses both individual and group approaches to counseling and treatment.

424 Social Work Practice: Family and Group (3:3:0). Prerequisite: SOCI 338 or permission of instructor. This course should be taken simultaneously with SOCI 453 or 454 (Senior Practicum). Theoretical and applied concepts in social work practice with the family and the group. Opportunity through client contact in the practicum to develop skills and techniques in social group work and family practice.

425 Planning and Organizing for Community Change (3:3:0). Prerequisite: 90 hours or permission of instructor. Community organization and planning, with specifics in the practice of grass-roots community organizations. Includes the community development approach, neighborhood study and analysis, direct services in the neighborhood, relevant roles for neighborhood residents in service delivery, independent social action, role of social work in planned change.

453 Senior Practicum I (5:0:0). Prerequisite: SOCI 301, 323, 324, 351, 352, 357, and 358, with a grade of at least C and recommendation of faculty. Open only to social work majors. Under supervisory instruction provided by field agencies, students are involved two days per week in learning through participation in the provision of service to individual clients, families, groups and/or communities, and in activities sponsored by or involving professional social workers. Weekly seminar and periodic faculty-agency consultations.

454 Senior Practicum II (5:0:0). Prerequisite: SOCI 453, with a grade of at least C and recommendation of faculty. Field experience and weekly seminar.

455 Senior Practicum/Block Placement (10:0:0). Prerequisite: SOCI 301, 323, 324, 351, 352, 357, 358, 471; completion of all required social work courses except electives; social work major with 90 hours; GPA of 3.50 (in social work) and recommendation of the faculty and the director of field instruction. Under supervisory instruction provided by field agencies, students are involved four days per week in learning through participation in the provision of service to individual clients, families, groups and/or communities and activities sponsored by or involving professional social workers. Weekly seminar, completion of a special project, and periodic faculty-agency visits.

471 Research in Social Work (3:3:0). Prerequisite: SOCI 221 or PSYC 300, SOCI 453, or permission of instructor. Principles and the theory underlying scientific inquiry. Emphasis on the use of research in social work practice, steps in conducting research, and utility of research efforts in developing and evaluating social work knowledge and skills.

475 Selected Topics in Social Work Policy (3:3:0). Prerequisite: 60 hours or permission of instructor. Opportunity to study in depth special areas of social work that are of interest to students, faculty, and the social work community. Topics vary.

483 Selected Approaches to Social Work Intervention (3:3:0). Prerequisite: 60 hours or permission of instructor. Taken simultaneously with SOCI 453 or 454 (Senior Practicum). Opportunity to examine critically personal use of different approaches to social work intervention currently employed in practice settings. Students thus have an opportunity to use with clients the technical skills these approaches require. May be taken more than once for credit.

499 Independent Study in Social Work (1-3:0:0). Prerequisite: 90 hours and a research proposal approved by instructor before enrollment. Investigation of a research problem in the field of social work.

500 The Family and Alcohol Dependence (3:3:0). Prerequisite: Senior or graduate standing. Examines the role played by the family in the etiology of alcohol dependence and the resources available in the community for prevention of this chronic and potentially fatal disease.
Sociology (SOCI) 241

501 Case Management (3:3:0). Prerequisite: Senior or graduate standing. Course for health and human service professionals on case management program development and delivery. Study and application of the role of the case manager in identifying and coordinating cost effective services. Topics include information management, sociological issues, funding, communication, and self-care/independent living.

Sociology (SOCI)
Sociology and Anthropology

101 Introductory Sociology (3:3:0). Introduction to basic sociological concepts. Aspects of human behavior; individual and group interaction; social mobility and stratification; status and class; race relations; urbanism; crime and criminology; social change and reform.

152 Modern Social Problems (3:3:0). Prerequisite: SOCI 101 or permission of instructor. Sociological analysis of the problems of modern society, including those related to stratification, urbanism, family and kinship, cultural change, and deviant behavior.

201 Marriage and the Family (3:3:0). Prerequisite: SOCI 101 or permission of instructor. Study of marriage and family in contemporary America. Human sexuality, premarital behavior, marital adjustment, socialization of children, family economics, divorce, and variations in family life.

206 Personal Worth and Collective Identity: The Socialization Process (3:3:0). Prerequisite: 3 hours of sociology or permission of instructor. Institutional and personal dimensions of the socialization process analyzed in terms of norms, roles, group processes, and stratification. Development of self-concept throughout the life cycle is examined in terms of major agents of socialization. Focus on influence of certain ascribed status prescriptions in contemporary society—such as race, age, sex, and handicaps.

221 Statistics for the Behavioral Sciences (4:3:2). Prerequisite: SOCI 101 or permission of instructor. Introduction to fundamentals of applied statistics as used in behavioral science to include descriptive statistics, inferential statistics, correlation-regression, analysis of variance, factor analysis, nonparametric statistics, and practical experience with calculators in applying statistical analysis to actual problems of the behavioral sciences.

240 Social Services in Society (3:3:0). Prerequisite: SOCI 101 or permission of instructor. Survey course covering the institutions of health and welfare in society. Emphasis on various ameliorative efforts made by organizations to combat effects of social problems and discussion of the variety of skills and resources involved.

299 Independent Study (1-3:0:0). Prerequisite: SOCI 101 and a written proposal approved before enrollment. Individual study of a sociological topic of interest to the student. Open to sociology majors only.

300 Social Control (3:3:0). Prerequisite: SOCI 101 or permission of instructor. How various social institutions function to organize and regulate society. Topics include family, education, ideology, law, media, work, governmental planning, and stratification. Course serves as a foundation of many specialized courses offered by the department, especially those that focus on control of crime and delinquency.

301 Criminology (3:3:0). Prerequisite: SOCI 101 or permission of instructor. Analysis of the nature, genesis, organization, and personal and social consequences of crime and criminal behavior. Examination of theories regarding punishment and treatment of criminals and prevention of crime; police and court systems, prisons and reformatories.

302 Sociology of Delinquency (3:3:0). Prerequisite: SOCI 101 or permission of instructor. Types, causes, treatment, and prevention of delinquent behavior.

303 Sociological Research Methodology (4:3:2). Prerequisite: SOCI 221 or permission of instructor. Introduction to empirical design in sociological research. Historical development, research design, sampling, methods of gathering data, sociometric scales, analysis and interpretation of results, and research reporting.

304 Sociology of Work (3:3:0). Prerequisite: 3 hours of sociology or permission of instructor. Meaning and structure of the world of work and its relationship to other spheres of life.

305 Sociology of Small Groups (3:3:0). Prerequisite: 6 hours of sociology or permission of instructor. Characteristics, structure, and processes of small group dynamics; theories and models of group analysis, techniques of observation and research in small groups; research theory and application of small group knowledge to such natural groups as mutual aid self-help groups, families, juvenile delinquent gangs, and task groups in work sites.

306 Demographic Analysis (Population Problems) (3:3:0). Prerequisite: 6 hours of sociology including SOCI 101 or permission of instructor; SOCI 322 recommended. Influence of population structure distribution and change in vital rates of ecological, social, economic, and political problems of human society.

307 Sociology of Collective Behavior (3:3:0). Prerequisite: 6 hours of sociology including SOCI 101 or permission of instructor. Analysis of crowds, mobs, and publics. Structure and function of social movements distinguished from other formal and collective behavior.

308 Sociology of Race Relations and Minorities (3:3:0). Prerequisite: 6 hours of sociology including SOCI 101, or permission of instructor. History and changes in racial, ethnic, and minority relations in modern society, with particular emphasis on blacks in American society.

310 Sociology of Deviance (3:3:0). Prerequisite: 3 hours of sociology or permission of instructor. Analysis of the macro- and micro-level deviance producing processes, of the meaning and control of deviance, and of the major theoretical approaches to deviance.

311 Classical Sociological Theory (3:3:0). Prerequisite: 9 hours of sociology including SOCI 101 or permission of instructor. Sociological tradition is explored through readings and discussions of ideas drawn from the writings of selected sociological thinkers such as Comte, Marx, Weber, Durkheim, and others.

315 Sociology of Sex Roles (3:3:0). Prerequisite: 60 hours or permission of instructor. Changing conceptions of sex roles, both female and male, in contemporary society. Using historical and comparative data, considers the differential socialization of males and females in re-
325 Sociology of War and Conflict (3:3:0). Prerequisite: 6 hours of sociology or permission of instructor. Study and analysis of war as a sociopolitical phenomenon in our society and in other societies. Total war and other conflict alternatives—such as limited war, nonnuclear war, subversion and sabotage, terrorism, guerilla war—are primary units of analysis.

326 Military Sociology (3:3:0). Prerequisite: 60 hours or permission of instructor. The military from a sociological perspective. Topics include role of military in society, revolutions, civil-military relations, military as a profession, and military culture.

332 Sociology of Urban Communities (3:3:0). Prerequisite: 6 hours of sociology including SOCI 101, or permission of instructor. The urban community: historical development, demography, and ecology of metropolitan areas; urbanism as a way of life; the emergence of suburbia; the future of cities.

340 Power in Society: Introduction to Political Sociology (3:3:0). Prerequisite: 6 hours of any social science including SOCI 101, or permission of instructor. Analysis of how political power is related to other aspects of social life, in terms of such sociological approaches as conflict, social consensus, elite analysis, and protest and revolution.

350 The Sociology of the Life Cycle (3:3:0). Prerequisite: 3 hours of sociology or permission of instructor. Consideration of social influences on the timing of the life course. Topics include cultural variations in defining age roles, historical social development of generational subcultures, youth and age as new minorities, community structure and the aging process, the mass media and the American cult of youth, and explorations of alternative patterns of generational interaction.

373 The Community (3:3:0). Prerequisite: 6 hours of sociology including SOCI 101, or permission of instructor. Examination of small to moderately sized communities ranging through the village, rural community, small town, and city subcommunity. The latter category includes city localities, ethnic villages, and suburban communities.

382 Education in Contemporary Society (3:3:0). Prerequisite: 6 hours of sociology including SOCI 101 or permission of instructor. Study of education as a social institution, and its function as a socialization agency for social stability and social change. Emphasizes influences of social class elements on educational process and social organization of the U.S. public school system.

385 Sociology of Religion (3:3:0). Prerequisite: 3 hours of sociology or permission of instructor. The personal and institutional dimensions of religious life in relation to major sociological concepts such as role, status, norms, and social aggregates. The student selects an aspect of religion for in-depth study.

390 Medical Sociology (3:3:0). Prerequisite: 6 hours of sociology including SOCI 101, or permission of instructor. Examination of social context of disease and medical care, position of the professions in the medical care structure, delivery of medical care, and the physician-patient relationship under different systems practice. Etiology, incidence and prognosis of disease, and the restoration of patients to their normal social functions are studied in relation to the social environment.

401 Social Stratification: The Study of Inequality (3:3:0). Prerequisite: 12 hours of sociology including SOCI 101 or permission of instructor. Structure of social inequality from a stratification framework. Social class systems are analyzed through economic, political, and prestige structures. Includes the study of social mobility and differential life stages and opportunities.

402 Sociology of Punishment and Corrections (3:3:0). Prerequisite: 6 hours of sociology including SOCI 101 or permission of instructor. Historical overview and theory of justice; analysis of the treatment of adult and juvenile offenders. Includes discussion of the origin and development of punishment, correction, rehabilitation, residential treatment, and the halfway house. Roles of legal and social agencies in the treatment process are compared and contrasted.

403 Sociology of Law (3:3:0). Prerequisite: 60 hours or permission of instructor. Social relations and reciprocal influence between the law and (1) the American community, (2) special group interests in the U.S., (3) social change, and (4) social deviance.

405 Analysis of Social Data (4:3:3). Prerequisite: 60 hours, SOCI 221, or permission of instructor. Overview of the management and analysis of empirical social science data, including file construction, scaling and measurement, data transformation, and treatment of missing data. Manipulation, management, and analysis data sets using computers is emphasized.

410 Social Surveys and Attitude and Opinion Measurements (3:3:0). Prerequisite: 12 hours of sociology including SOCI 221 and 303 or permission of instructor. Survey research methods and techniques used in collecting and analyzing social data and techniques and methods of measuring social attitudes and opinions.

412 Contemporary Sociological Theory (3:3:0). Prerequisite: 12 hours of sociology including SOCI 101 and 311, or permission of instructor. Contemporary sociological theorists such as Parsons, Merton, Mills, Berger, and Gouldner are analyzed in terms of their relationship to major schools of contemporary sociological theory.

413 Seminar in Social Issues (3:3:0). Prerequisite: 90 hours and 12 hours of sociology. Opportunity to apply to contemporary relevant issues the theoretical perspectives and methodological skills previously learned.

414 Sociology of Language (3:3:0). Prerequisite: 60 hours and 3 hours of sociology, or permission of instructor. Interaction of language and social structure. Focus on language as revealing culturally specific rules of interpretation; on the sex, class, race, and setting specific uniformities in the production of talk; and on language as it constrains the individual.

420 Regional and Societal Development (3:3:0). Prerequisite: 60 hours or permission of instructor. Social dimensions of economic growth and development with particular emphasis on Third World countries. Examines alternative definitions of development; problems related to the implementation of change strategies; and the contexts of national, regional, and institutional change.

421 Fieldwork in Social Change (3:3:0). Prerequisite: 6 hours of sociology or permission of instructor. In-
depth investigation of planned social change through fieldwork internship with a change organization of student's choice. Groups may be involved in influencing peace, environment, civil rights, consumer protection, poverty, or other public issues. Topics include ideologies, targets, organizational structures, opposition, and strategies of change.

441 The Sociology of Aging (3:3:0). Prerequisite: 6 hours of sociology or permission of instructor. Aging from a sociological perspective. Topics covered include demographic trends and the aging population in America, the social construction of life stages and the creation of "old age," cultural labeling and human resistance.

471 Prevention and Deterrence of Crime (3:3:0). Prerequisite: 60 hours, inservice status, or permission of instructor. Theoretical and practical strategies for crime prevention and deterrence. Social, environmental, and mechanical developments. Police, courts, and correctional elements of law enforcement in terms of current effectiveness and future potential for crime prevention.

480 Seminar in Sociology (3:3:0). Prerequisite: Open only to senior majors in sociology. May be taken for credit only once. Topics of contemporary interest in sociology through individual class reports and group discussion. Topics vary.

492 Formal Organizations (3:3:0). Prerequisite: Junior standing or permission of instructor. Analysis of types of large, complex organizations in society; a study of bureaucracy and of the informal group formation which is often a part of the larger structure. Effectiveness of the formal organization and its administration.

495 Sociocultural Change (3:3:0). Prerequisite: 60 hours or permission of instructor. Sources, processes, and consequences of social and cultural alteration. Anthropological and sociological models for case analysis of social movements, culture contact and borrowing, innovation-adoptation, and planned change.

499 Independent Research in Sociology (1-3:0:0). Prerequisite: 18 hours of sociology including SOCI 221, 303, 311 and 412, a 3.00 GPA in sociology, and a research proposal approved by instructor and department chair before enrollment. Investigation of a sociological problem according to individual interest with stress on research.

503 Family Law (3:3:0). Prerequisite: Undergraduate senior status in sociology, graduate standing, or permission of instructor. An examination of the salient aspects of the law as it affects the family in our dynamic society. Topics include the nature and formalities of the marital relationship; infraharmy torts and crimes; termination of the marital relationship; child custody and support; adoption; separation agreements; and the economic and sociological aspects of marriage, separation, and divorce.

505 Sociology of Sex and Gender (3:3:0). Prerequisite: Undergraduate senior status in sociology, graduate standing, or permission of instructor. An advanced study of sex roles in contemporary society. Using historical and comparative data, course examines perceived, prescribed, and actual sex differentiation in political, economic roles.

510 Employees, Employers, and the Changing Labor Force (3:3:0). Prerequisite: Undergraduate senior standing in sociology, graduate standing, or permission of instructor. Focus on the nature and origin of recent developments, for example, in technology, affirmative action policy and debates, migration and immigration, and public and private job training programs. Course examines their impact on the social structure of work.

515 Applying Sociology (3:3:0). Prerequisite: Undergraduate senior status in sociology or graduate status. Course provides overview of the ways sociologists have applied their theoretical and methodological skills and understanding in sociological practice in nonacademic settings.

523 Racial and Ethnic Relations: American and Selected Global Perspectives (3:3:0). Prerequisite: Undergraduate senior status in sociology, graduate standing, or permission of instructor. Demographic purlview of racial and ethnic groups in the United States, racial and ethnic groups as human-social-minority groups. Factors making for minority status including personality factors, group cultural factors; reactions of racial and ethnic minorities to minority status; programs, methods, social movements, and philosophies seeking to change minority group status.

525 Current Research in Sex and Gender (3:3:0). Prerequisite: Undergraduate senior status in sociology, graduate standing, or permission of instructor. Advanced study of the current social science research and research methodology used in the study of sex and gender.

541 Survey Research (3:3:0). Prerequisite: PSYC 300 or SOCI 221 or equivalent. Introduction to the theory, method, and practice of survey research design and analysis. Students complete a survey research project.

599 Issues in Sociology (3:3:0). Prerequisite: Undergraduate senior status in sociology or graduate status. Contemporary topics in sociology including issues in sociological theory, crime and delinquency, advanced research methods, social and cultural change, urban sociology, medical sociology, sociology of aging, and rural sociology. Course may be taken only once for credit.

Spanish (SPAN)

Foreign Languages and Literatures

Placement: See Admission Procedures.

100 Survival Spanish (3:3:0). Development of skills stressing vocabulary, pronunciation, and use of idiomatic expressions. Not part of sequence that fulfills foreign language requirement. May not be taken for credit by students who have previously earned any credit in Spanish. (Students with credit for SPAN 100 may take any Spanish course for credit for which they meet the prerequisite.)

101 Elementary Spanish I (3:3:1). For students with no knowledge of Spanish. Introduction to Spanish, including elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Lab work required.

102 Elementary Spanish II (3:3:1). Prerequisite: SPAN 101 or permission of department. Continuation of SPAN 101. Lab work required.
105 Review of Elementary Spanish (3:3:1). Prerequisite: Appropriate placement score or permission of department. Review of elements of Spanish for students who have studied Spanish previously. May not be taken for credit in combination with SPAN 101, 102 or 109. Lab work required.

109 Intensive Elementary Spanish (6:6:2). Equivalent to SPAN 101 and 102 taught in a single semester. Recommended for students who desire an intensive introduction to Spanish. May not be taken for credit in combination with SPAN 101, 102, or 109. Lab work required.

141, 142 Applied Spanish for the Social Sciences (4:4:2), (4:4:2). (Must be taken in sequence) Designed to meet the professional needs of majors in social service fields.

201 Intermediate Spanish I (3:3:1). Prerequisite: SPAN 102, 105, or 109; appropriate placement score; or permission of department. Further development of skills in listening, speaking, reading, and writing. SPAN 201 and 202 must be taken in sequence. Lab work required.

202 Intermediate Spanish II (3:3:1). Prerequisite: SPAN 201, appropriate placement score, or permission of department. Application of skills to reading, composition and discussion. Lab work required.

209 Intensive Intermediate Spanish (6:6:2). Prerequisite: SPAN 102, 105, or 109; appropriate placement score; or permission of department. Equivalent to SPAN 201 and 202, taught in a single semester. May not be taken for credit in combination with SPAN 201 or 202. Lab work required.

241 Applied Spanish for the Social Sciences (4:4:2). Prerequisite: SPAN 142 or equivalent. Continuation of SPAN 142.

301 Grammar and Syntax (3:3:0). Prerequisite: 12 hours of Spanish or permission of instructor. In-depth review of Spanish grammar and syntax. Extensive practice in controlled and free writing; emphasis on fundamental difficulties and points of interference which exist between English and Spanish.

311 Introduction to Hispanic Literary Analysis (3). Prerequisite: 15 hours of Spanish or permission of instructor. This required course prepares students for the study of Hispanic literatures. It introduces basic terminology of literary analysis and provides practice in the examination of texts in the major genres: poetry, narrative, and drama.

321 Introduction to Spanish Culture (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Designed for nonmajors. History, culture, economic and social development, scientific and artistic achievements that have contributed to the formation of modern Spain. Course work in English. Credit may be earned either in SPAN 321 or 461, but not in both.

322 Introduction to Latin American Culture (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Designed for nonmajors. History, culture, economic and social development, scientific and artistic achievements that have contributed to the formation of modern Latin America. Course work in English. Credit may be earned either in SPAN 322 or 466, but not in both.

323 Field Study in Hispanic Culture (1-3:3:0). Prerequisite: 60 hours or permission of instructor. Study tour to an area of the Spanish-speaking world. Students must attend a series of lectures before the tour and must consult with the designated faculty member on a research project on a topic in Hispanic culture resulting in a paper or report.

324 Study Abroad in Spanish (3:3:0). Prerequisite: SPAN 202 or 209 or equivalent, or permission of instructor. Study at an academic institution in a Spanish-speaking country, including classroom studies with professors from the host country and field experiences.

325 Major Hispanic Writers (3:3:0). Prerequisite: ENGL 101 or equivalent or permission of instructor. Designed for nonmajors. Study of the works of major Hispanic writers in translation. Writers studied vary. Course work in English. May be taken toward fulfillment of the humanities requirement in literature for baccalaureate degrees. May be repeated for credit with permission of department.

329 Special Topics in Spanish and Latin American Literature (3:3:0). Prerequisite: ENGL 101 or permission of instructor. Designed for nonmajors. Course work in English. May be taken toward fulfillment of the humanities requirement in literature for baccalaureate degree.

351 Spanish Conversation (3:3:0). Prerequisite: 12 hours of Spanish or equivalent or permission of instructor. Development of oral expression on topics of current interest and everyday situations, including written assignments. Not open to native speakers.

352 Spanish Composition (3:3:0). Prerequisite: 12 hours of Spanish or equivalent or permission of instructor. Development of ability in written expression on topics of current interest.

353 Spanish for the Business World (3:3:0). Prerequisite: 12 hours of Spanish or permission of instructor. Introduction to terminology and usage of Spanish in business transactions; practice in the composition of business reports and letters.

359 Introduction to Translation (3:3:0). Prerequisite: 12 hours of Spanish or permission of instructor. Readings and translation of texts selected from current periodicals and newspapers. Recommended for students who wish to improve reading and writing of Spanish and for Latin American Studies majors.

420 Studies in Spanish Linguistics (3:3:0). Prerequisite: SPAN 451, 452, or permission of instructor. Studies in Spanish phonetics, phonology, morphology, syntax, semantics, dialectology, or linguistic history. The topic for a given semester may be obtained from the department in advance. May be repeated for credit with permission of department.

425, 426 Independent Study (1-3:0:0), (1-3:0:0). Prerequisite: Major in Spanish, 90 hours, and permission of instructor. Research and analysis of a selected problem in literature or linguistics in consultation with a department member. Maximum of 6 hours of independent study may be applied to fulfillment of major requirements.

451 Advanced Oral Spanish (3:3:0). Prerequisite: 15 hours of Spanish or permission of instructor. Development of vocabulary and strengthening of conversational
skills through class discussions and oral and written reports based on contemporary themes. Not open to native speakers.

452 Advanced Written Spanish (3:3:0). Prerequisite: 15 hours of Spanish or permission of instructor. Development of skills required in writing Spanish. Guided and original compositions. Grammatical structures reviewed and supplemented with individual corrections.

461 (361) Spanish Civilization and Culture (3:3:0). Prerequisite: 15 hours of Spanish or permission of instructor. Survey of Spanish culture and civilization from the pre-Roman era to the twentieth century.

466 (366) Latin American Civilization and Culture (3:3:0). Prerequisite: 15 hours of Spanish or permission of instructor. Examination of the main periods, trends, genres, and most representative works of Spanish peninsular literature from the twelfth century to the present. Required for Spanish majors.

471 (317) The Literature of Spain (3:3:0). Prerequisite: SPAN 311 or permission of instructor. Examination of the main periods, trends, genres, and most representative works of Spanish peninsular literature from the pre-Columbian era to the twentieth century.

472 (318) The Literature of Spanish America (3:3:0). Prerequisite: SPAN 311 or permission of instructor. Development of Spanish-American literature: main authors, periods, and literary trends. Required for Spanish majors.

480, 481 Special Topics in Hispanic Literature (3:3:0). Prerequisite: SPAN 311 or permission of instructor. Examination of a particular genre or period. May be repeated for credit with permission of department.

497, 498 Senior Honors Tutorial (3:0:0), (3:0:0). Prerequisite: Major in Spanish, 90 hours, and GPA of 3.00 and 3.00 in the major field. Students meeting these requirements are admitted to candidacy upon submission of a letter of application to the department. May be repeated for credit with permission of department.

500 History of the Spanish Language (3:3:0). Study of the evolution of the Spanish language from its origin to vulgar Latin to its present forms.

501 Applied Spanish Grammar (3:3:0). Analysis of Spanish grammar as a basis for teaching language skills. Terminology and methodology for the teaching of syntax are stressed.

502 Hispanic Sociolinguistics (3:3:0). Introduction to sociolinguistics with emphasis on bilingualism and language contact in the Spanish-speaking world, including the United States.


520 Studies in Medieval Spanish Literature (3:3:0). Intensive study of a major work or a literary genre of this period.

525 Studies in Renaissance Literature (3:3:0). Study of a literary movement or selected authors of the Spanish Renaissance.


540 Studies in Nineteenth-Century Literature (3:3:0). Study of a writer, genre, theme, or movement of this period.

545 Studies in Hispanic Literature (3:3:0). Study of major writers in a particular generation or movement.

551 Special Topics in Spanish (3:3:0). Special studies in Spanish or Latin American language, literature, or culture. Specific topics are announced in advance. May be repeated for credit with the permission of the department.


565 Studies in Spanish American Drama (3:3:0). Study of playwrights who have made a major contribution to the development of the genre.


580 Contemporary Hispanic Institutions (3:3:0). In-depth study of twentieth-century cultural, social, and political institutions in Spain and Spanish America with emphasis on language and terminology used to describe their functions, regulations, and conditions.

Statistics (STAT)

Operations Research and Applied Statistics

250 Introductory Statistics I (3:3:0). Prerequisite: High school algebra. Elementary introduction to statistics with emphasis on applications and model formulation. Topics include descriptive statistics, sampling and sampling distributions, inference, correlation and regression, and survey sampling methods.

344 Applied Probability for Engineers and Scientists (3:3:0). Prerequisite: MATH 114. Introduction to probability with applications to the computer, information, engineering, and physical sciences. Probability laws, discrete and continuous random variables, joint probability distributions, conditional distributions, independence, expectations, variable transformation, system reliability, sampling distributions.

354 Statistical Methods for Engineers and Scientists (3:3:0). Prerequisite: STAT 344 or MATH 351. Introduction to statistical methods with applications to the computer, information, engineering, and physical sciences. Descriptive statistics, point and interval estimation, tests of hypothesis, regression, analysis of variance, categorical data analysis, nonparametric inference. Quality control, acceptance sampling, and reliability analysis.

362 Introduction to Computer Statistical Packages (3:3:0). Prerequisite: CS 103 or equivalent and a course in statistics. Use of computer packages in the statistical analysis of data. Topics include data entry, checking, and manipulation, as well as the use of computer statistical packages for regression and analysis of variance.

363 Introduction to Survey Sampling (3:3:0). Prerequisite: 200-level course in probability or statistics. Introduction to the design and analysis of sample surveys. Sample designs cover include simple random sampling, systematic sampling, stratified, cluster, and multi-stage sampling. Analytical methods include sample size determination, ratio and regression estimation, imputation of missing data, nonresponse error adjustment. Applications are to the decision, information, and social sciences, and engineering. Class project involves an actual survey.

361 Introduction to Decision Theory and Research (3:3:0). Prerequisite: STAT 250, DESC 202, or equivalent. Introduction to theory and research bearing on decisions made under uncertainty. Illustrations of the importance and interpretation of the uncertainty and value ingredients of choice are drawn from a number of contexts including business, medicine, law, and science. Topics include issues in the generation, assessment, and combination of these decision ingredients.

382 Introduction to Decision Analysis (3:3:0). Prerequisite: STAT 381. Survey of alternate strategies for assisting persons who face complex inference and decision tasks. Major topics include structuring inference/decision tasks and various schemes for eliciting and combining decision ingredients. Students analyze decisions through case studies selected from different contexts.

455 Experimental Design (3:3:0). Prerequisite: STAT 350, 354 or DESC 353. Principles of analysis of variance and experimental design. Topics covered include computation and interpretation of analysis of variance; multiple comparisons; orthogonal contrasts; design of experiments including factorial, hierarchical, and split plot designs; principles of blocking and confounding in \(2^k\) experiments; estimation of variance components. Optional topics may include analysis of covariance, partial hierarchical designs, or incomplete block designs. Computer statistical packages are used to perform computations.

457 Applied Nonparametric Statistics (3:3:0). Prerequisite: STAT 350, 354 or DESC 353 or equivalent. Introduction to nonparametric methods with applications to the decision and information sciences and operations analysis. Testing and estimation for one- and two-sample problems, independent and paired samples, location and dispersion problems, one- and two-way layouts, tests for independence, regression, discussion of efficiency.

463 Introduction to Exploratory Data Analysis (3:3:0). Prerequisite: STAT 250 or equivalent. Introduction to modern exploratory data analysis techniques. Topics include graphical techniques, such as scatter plots, box plots, parallel coordinate plots, and other graphical devices, re-expression and transformation of data, order statistics, influence and leverage, and dimensionality reduction methods such as projection pursuit.

**Systems Engineering (SYST)**

**Systems Engineering**

301 Systems Methodology and Design I (3:3:0). Prerequisite: ENGR 107, MATH 213, or permission of instructor. Morphologies and methodologies of systems engineering, systems design, design for functionality, information requirement determination. Overview of selected methods for formulation, analysis, and interpretation of systemic issues and design alternatives.

302 Systems Methodology and Design II (3:3:0). Prerequisite: SYST 301 or permission of instructor. Systems life cycle, design for functionality, systems management, specification of system architecture, evaluation of alternatives, software systems engineering, operational test and evaluation.

401 Decision Support System Design (3:3:0). Prerequisite: SYST 301 or permission of instructor. Description of decision support systems and their component sub-systems. Introduction to the design of decision support systems and their integration in organizations to support human decision making. Evaluation of DSS. A systems engineering approach to DSS design is taken in which the implications of research on human information processing for development of DSS will be considered.

419 Engineering of Large Scale Systems (3:3:0). (Formerly SYST 431). Co-requisites: SYST 302, or 441, or permission of instructor. Formulation and solution of large scale static and dynamic models of complex systems. Techniques of relaxation and decomposition. Exploitation of special structure. Parallelism. Test and evaluation. Applications to manufacturing, transportation, water resources, and defense.

420 Network Analysis (3:3:0). Prerequisite MATH 213; co-requisite OR 441, or permission of instructor. Network nomenclature. Elementary graph theory. Linear and nonlinear network models: multicommodity flow, mathematical games and equilibria on networks, network design and control. Dynamic network models. Applications to transportation, telecommunications, data communications, and water resource systems.

421/ ECE 421 Classical Systems and Control Theory (3:3:0). Prerequisite: A grade of C or better in ECE 360 or permission of instructor. Introduction to the analysis and synthesis of feedback systems. Functional description of linear and nonlinear systems. Block diagrams and signal flow graphs. State-space representation of dynamical systems. Frequency response methods. Root Locus, Nyquist, and other stability criteria. Application to mechanical and electromechanical control systems.

422 Data Communications and Networks (previously INFSC 410) (3:3:0). Prerequisite: ECE 331 or
INFS 311 and 312, or permission of instructor. Introduction to the concepts and design issues in data communications systems. Emphasis on the impact of communications technology on information systems. Term project.

430 System Organization, Design, and Development (3:3:0). Prerequisite: SYST 302 or permission of instructor. Introduction to systems management that emphasizes systems definition, organization, design, and development. Operational feasibility determination. Design for verification and validation. Case studies from systems engineering.

470 Human Factors Engineering (3:3:0). Prerequisite: SYST 302, PSYC 100, or permission of instructor. Human information processing, inferential analysis, biases and heuristics in human information processing, support systems to aid in human information processing, human-system interaction, software systems engineering considerations.

498 Independent Study in Systems Engineering (1-3:0:0). Prerequisite: 60 hours; must be arranged with an instructor and approved by the department chair before registering. Direct self-study of special topics of current interest in SYST. May be repeated for a maximum of 6 credits if the topics are substantially different.

499 Special Topics in Systems Engineering (3:3:0). Prerequisite: 60 hours and permission of instructor; specific prerequisites vary with nature of topic. Topics of special interest to undergraduates. May be repeated for a maximum of 6 credits if the topics are substantially different.

Theater (THR)

Dance and Theater

101 Theatrical Medium (3:3:0). Designed to introduce the student to the medium of theatrical performance, its validity in contemporary society, and an investigation of the components of production from conception through performance to ensuing criticism. Delivered in a lecture/demonstration format by a team of theater professionals. Students are required to attend theatrical performances on- and off-campus, and submit a written report on each.

150, 151 Drama, Stage, and Society I and II (3:3:0). In the first semester, the development of Western drama and theater from its beginnings through Shakespeare is studied. The second semester, 151, brings the study up to the present day. Readings in dramatic literature and the history of the theater considered in its social context.

200 Play Production Practicum (5:5:0). Practicum is academic credit awarded to Theater Division B.A. candidates for satisfactory participation in major departmental or Theater of the First Amendment productions. One-half credit hour is awarded for each production assignment up to a total of two credits, which fulfills the departmental major requirement. See departmental listing for more information.

201 Stage Management (1:1:0). Theory and technique of stage management for theater. Special emphasis on problem-solving skills.

202 Literary Management (1:1:0). Principles of literary management and dramaturgy for the regional/resident theater. Directed primarily toward the development of new work.

203 Production/Company Management (1:1:0). Techniques of production and company management applied to university and professional theater productions.

210 Acting I (3:3:0). Basic training in acting, emphasizing theater games, improvisations, and nonscripted situations and scenes.

230 Introduction to Technical Theater I (3:3:0). Review of basic theater organization and technology. The first semester emphasizes lighting and scenery. Participation in Theater Division productions is required.

231 Introduction to Technical Theater II (3:3:0). A continuation of the work begun in THR 230, stressing the contributions of costumes, sound, and props to theatrical production. Intensive work in drafting for the theater. Participation in Theater Division productions is required.

233 Stage Design (3:3:0). Prerequisite: THR 230. Fundamentals of creating, developing, and communicating the design idea through sketches, plans, renderings, and/or models. Analysis of the text from the designer's perspective.

234 Lighting Design (3:3:0). Study of lighting design as an art that defines space and reveals form. Introduction to the tools, equipment, and process of lighting design. Analysis of the text from the designer's perspective.

235 Costume Design (3:3:0). Lecture/lab in fundamentals of costume design for the stage. A project-oriented class emphasizing the process of designing and building. Costume is studied in relation to historical periods and the artistic demands of the script.

240 Directing I (3:3:0). An introduction to text analysis, rehearsal procedure, staging techniques, and the development of a production idea. Students direct exercises and short scenes along with preparing written production notes.

300 Voice and Speech Fundamentals (3:3:0). Basic techniques in breathing, vocal production, and articulation for the actor.


303 Movement for the Actor I (3:3:0). Development of the physical side of the actor's instrument emphasizing free and responsive expression of impulse and intention.

304 Movement for the Actor II (3:3:0). Advanced work in the techniques established in THR 303.

310 Acting II (3:3:0). Extends the principles begun in THR 210 through scene study, audition technique, and work in analysis, characterization, and relationships.

320, 321 Acting Ensemble I, II (3:3:0), (3:3:0). Audition required. A concentrated course of study in the varied skills associated with the versatile actor and company player with individualized attention to students' needs.
322 Alexander Technique/Stage Combat (3:3:0).
Offered during the Acting Ensemble time block but open to all theater majors.

330 Seminar in Technical Theater (3:3:0). Rotating topic. Offered periodically, the course addresses a selected topic in design or technical theater on an advanced level.

340 Directing II (3:3:0). Based on the techniques developed in THR 240, students analyze and stage extended scenes and/or one-act plays. Emphasis on the collaborative process and production organization.


351 Dramatic Theory and Criticism (3:3:0). A chronological study of the development of dramatic theory and criticism from Plato and Aristotle through modern movements. Students read plays, theoretical works, and critical responses; and they write original criticism of performances and/or texts.

352 Dramatic Literature Seminar (3:3:0). Rotating topic, period, or genre. An intensive study of a particular topic, period, or genre in dramatic literature. Topics may include 20th-century American women playwrights, Ibsen, tragedy and comedy, 17th-century drama in England, France, and Spain. This course may be repeated up to three times provided the specific course content is different.

355 Moral Vision in American Theater (3:3:0). Prerequisite: THR 101 or permission of instructor. The goal of this course is to begin to piece together, in a coherent and systematic manner, the vision of American society that is being created and presented in contemporary American theater. The subject is defined as "moral" vision because the focus is on how we perceive ourselves in relation to other persons and to standards of value in society. Perspectives will include sociology, theory of culture, practical theater craft, and literary criticism. The key question underlying the course is: What are we making of ourselves? Features plays by a wide range of American playwrights.

380 Playwriting I (3:3:0). Students are be exposed to the principles of dramatic writing: character, plot, dramatic structure, dialogue, exposition, setting, and creating theatrical images using examples from plays, screenplays, and the students' own work.

381 Playwriting II (3:3:0). An intensive continuation of the work begun in THR 380.

420, 421 Acting Ensemble III, IV (3:3:0), (3:3:0). Audition required. The second year in the sequence of a concentrated course of study in the varied skills associated with the versatile actor and company player with individualized attention to students' needs.

422 Stage Make-up/Stage Clothing (3:3:0). Introduces the actor to the challenges of working with make-up and costume as a stylistic enhancement of the performance task. Questions of period style and behavior are also considered.

423 Audition Techniques: Stage and Camera (3:3:0). Professional directors, coaches, and casting directors offer their perspective on what makes an effective and honest audition. Students prepare a repertoire of pieces for stage and camera auditions.

440 Advanced Studies in Directing/Dramaturgy (3:3:0). A course in the collaborative development of production ideas by director/dramaturgy teams. Students conceive ideas for and present work in the classical and contemporary repertoire, supported by full dramaturgical apparatus.

480 Advanced Playwriting (3:3:0). Advanced playwriting workshop for members of the Playwriting Unit or creative writing students only. Students explore their own voice in terms of theatrical writing.

490 Special Topics in Drama (3:3:0). Rotating topic. Advanced seminar in topics of special interest in the field. Topics include puppetry, dramatic writing for other media, and feminism in the contemporary theater. This course may be repeated up to three times provided the specific course content is different.

491 Major's Seminar on the Profession (1:1:0). Designed to acquaint upper-division majors with the realities of living and working in the theater.

494 Field Experience (3:3:0). An off-campus experience with a professional theater to provide the student with an opportunity to apply classroom training, knowledge, skills, and theory to a professional situation.

497 Independent Study (3:3:0). Prerequisite: Open only to theater majors with 90 hours and by special permission of the chair. Individual research or a creative project in close consultation with instructor. Selection from projects in performance, directing, technical theatre and design, playwriting, or theater history and criticism. This course may be repeated once provided the suffix citing specific course content is different.

Urban and Suburban Studies (USST)

Geography and Earth Systems Science

301 Urban Growth in a Shrinking World (3:3:0). Course examines the process of urbanization and the way that process has transformed most of the world since the 18th century. It briefly examines the history of cities before modern urbanization and contrasts the role of cities in a mostly rural world with the role of cities in a society undergoing urbanization. The urbanization process is examined historically and comparatively. For major world regions, attention is given to the political economy of urbanization and its impact on social and economic relations. The course concludes with an examination of the growing globalization of the world economy and its implications for urban life and the urban political economy of the future.

390 Special Topics in Urban and Suburban Studies (3:3:0). Subject varies according to specialization of instructor.

401 Seminar: The Future of Metropolitan America (3:3:0). Prerequisite: 12 hours of USST approved courses, including USST 301. Course examines trends in the development of the American metropolis, including the impact of the information economy and technological developments on metropolitan form and life, continuing outward growth and increasing decentralization of metropolitan areas, changing functional organization of
Urban Space Engineering (USE)

Systems Engineering

210 Measurements and Surveying (3:3:0). Prerequisite: ENGR 107. An introduction to state-of-the-art equipment and software for digitizing and computer utilization of field data, satellite positioning and other modern surveying procedures, with special emphasis on land measurements, mapping, and surveying. Inherent errors in these measurements and methods of diagnosis, detection, and correction of them. Laboratory exercises involving linear and angular measurements, open and closed traverses. Topographic mapping, video, remote sensing, and optical techniques in surveying.

300 Urban Systems Planning and Management I (3:3:0). Introduction to the complex relationships of overlapping urban systems such as land, transportation, energy, water, and communications. History of engineering, land, and infrastructure. The social, economic, environmental, political aspects of urban policy and decision making. Examination of current issues in the urban environment. Discussions of contemporary urban systems engineering design problems.

310 Hydraulics (3:3:0). Prerequisite: ENGR 206 or 210 and MATH 213. Principles of fluids in equilibrium and in motion. Topics include hydrostatic pressure; continuity, Bernoulli, and momentum equations; viscosity flow problems; measuring instruments; and applications to closed conduits and open channels.

340 Water Resource Engineering (Formerly USE 464) (3:3:0). Analytic methods and computer models for the design and evaluation of such water resource projects of flood control, river basin development, including the governing principles, common models, and typical applications for water resource systems. Principles of design for stormwater management systems. Tangible and intangible consequences of environmental policies; environmental impact assessments.

350 Water Supply and Distribution (3:3:0). Prerequisite: ENGR 308 and USE 340. Introduction to the design elements associated with providing a public water supply. Topics include criteria review for different water supply sources, water quality and quantity requirements, treatment requirements and methods, water distribution including line sizing, fire protection, pumping, and storage and the hydraulic analysis of systems. Tangible and intangible consequences of environmental policies; environmental impact assessments.

400 Urban Systems Planning and Management II (3:3:0). Prerequisite: SYST 301 and USE 300. Quantitative and qualitative analysis in planning, design, construction, and management of engineering systems and facilities. Introduction to the policies, programs, and regulations that influence land development, history enabling legislation, governing and regulating bodies, controlling the site plan development and approval process. Examination of the structure, function, and purpose of urban systems and ways in which urban systems design can be achieved. Impact assessment and cost benefit/effectiveness analysis. Contemporary theories of urban design. Physical relationships between development, land use, transportation, energy, communications, and water. Politics of systems management and development. Evolution and development of housing, transportation, and taxing policies. Study of the public and private sector urban development industry including terminology, analytical techniques, evaluation techniques, and information sources at each phase. Overview of U.S. competitiveness in domestic and international urban systems markets. Policy and decision making process in the urban infrastructure. Issues and challenges associated with innovation and competition on the basis of new technology. Environmental issues in land use.


416 Engineering Law (3:3:0). Prerequisite: USE 400. An overview of the body of law surrounding design, construction, and facilities maintenance and operations. Introduction to tort law and its relationship to design and construction contracting. Contract form, general and special conditions, ethics, contract administration, claims, dispute resolution, arbitration, and the appeals process are studied through case studies.

451 Wastewater Management I (Formerly USE 351) (3:3:0). Prerequisite: USE 340 and ENGR 308. Introduction to the planning and design considerations in wastewater collection and disposal systems. Topics covered include wastewater flow rates, regulatory requirements, small on-site disposal systems, sewer collection systems, pump stations, wastewater treatment, effluent disposal, environmental considerations, financing and management. Tangible and intangible consequences of environmental policies; environmental impact assessments; federal, state, and local government laws and regulations related to public water systems.

452 Wastewater Management II (Formerly USE 352) (3:3:0). Prerequisite: USE 451. Continuation of USE 351. Exploration of the design fundamentals for the treatment options of wastewater. Environmental and economic considerations.
453 Solid Waste Treatment (Formerly USE 353) (3:3:0). Exploration of the design fundamentals for the treatment of solid waste. Environmental and economic considerations of the categorization, collection, disposal, and treatment of solid waste.

463 Construction Systems (3:3:0). Prerequisite: SYST 301. Overview of the urban construction industry, including its organizations and interactions. Project and construction management for operational, tactical, and strategic planning and decision making. Cost estimation and scheduling, accounting, estimating, resource planning, and structuring of urban systems construction projects. Legal theories and relationships among parties in the construction process, including the role of the design professional and manager. Introduction to value engineering.

465 Transportation Systems I (3:3:0). Corequisite: SYST 301. Introduction to urban transportation systems and the factors that influence their planning, design, and operation. Fundamentals of travel demand forecasting, supply modeling, demand management, systems design, and equilibrium analysis. Mass transit, automated guideway transit, and pedestrian and cycling facilities in context with automotive transport. Introduction to project evaluation, benefit cost analysis, and time staging methods for transportation systems.

466 Transportation Systems II (3:3:0). Prerequisite: USE 465. Introduction to the analysis of transportation systems for passengers and freight. Deterministic and stochastic models for transportation systems. Detailed study of the theory and techniques for state-of-the-art transportation planning and design decision support systems. Discrete and continuous network design models. Interface of transportation planning and design software with geographical information systems. Suburban mobility.

467 Behavior of Concrete and Steel Structures (3:3:0). Prerequisite: ENGR 310. Stress and deformation of concrete under differing amounts and types of stress and failure criteria. Mechanical properties of steel. Reinforced concrete structures. Behavioral models and nonlinear analysis. Structural design of transportation structures.

490, 495 Senior Design Project I, II (3:3:0), (3:3:0). Prerequisite SYST 301; corequisite: USE 400. Capstone design experience. Integrates all design fundamentals employed by a typical urban systems design team. Major team efforts include land use, transportation, water and sewerage, stormwater, site analyses, economic considerations, regulatory considerations, sectioning, grading, and siting. Students focus on teamwork, interdisciplinary interaction, and tradeoff decision making. Design team analyzes all aspects of a major urban project, develops solutions to design problems, produces a project report and verbal presentation. The design effort proposed is completed and a report prepared, presented, and evaluated. The primary goal of the course is to produce a design for a contemporary urban systems project.

498 Independent Study in Urban Systems Engineering (1-3:0:0). Prerequisite: 60 hours; must be arranged with an instructor and approved by the department chair before registering. Directed self-study of special topics of current interest in USE. May be repeated for maximum of 6 credits if the topics are substantially different.

499 Special Topics in Urban Systems Engineering (3:3:0). Prerequisite: 60 hours and permission of instructor; specific prerequisites vary with nature of topic. Topics of special interest to undergraduates. May be repeated for a maximum of 6 credits if the topics are substantially different.

University (UNIV)

Office of the Provost

190 Freshman Seminar (3:3:0). Broad interdisciplinary subjects taught by distinguished scholars and teachers, including the Robinson Professors. Topics vary. Enrollment is by invitation only. Courses may be repeated for up to 12 credit hours.

290 Sophomore Seminar (3:3:0). Broad interdisciplinary subjects taught by distinguished scholars and teachers, including the Robinson Professors. Topics vary. Enrollment is by invitation only. Courses may be repeated for up to 12 credit hours.

301 Great Ideas in Science (3:3:0). A nontechnical introduction to the ideas that have shaped the growth of science from the building of Stonehenge to the modern theories of the Big Bang. The idea behind each major advance is treated in its historical context, with special attention to its importance in mankind's understanding of the nature of the universe. Examples are taken from the physical, geological, and biological sciences. The course is intended for nonscience majors and uses little mathematics. Robinson Professor J. S. Trefil.

Women's Studies (WMST)

Women's Studies Program

100 Representation of Women (3:3:0). Course surveys representations of women in a variety of cultural forms, including art, advertising, costume, television, film, fiction, and science. By examining the diversity of representations of women, course uncovers the social negotiation of gender and the construction of cultural ideas of womanhood.

200 Introduction to Women's Studies (3:3:0). Prerequisite: 30 hours. Interdisciplinary introduction to the field of women's studies, encompassing key concepts in the field, history of women's movements and women's studies in America, cross-cultural constructions of gender, and a thematic emphasis on the diversity of women's experience across class, race, and cultural lines.

300 Current Issues in Women's Studies (3:3:0). Prerequisite: WMST 200 or permission of instructor. Detailed study of selected topics central to contemporary women's studies. Topics vary, but include subjects such as women and violence, women and international development, women's myth and ritual, the history and politics of sexuality, psychoanalysis, and religion.

330 Feminist Theory Across the Disciplines (3:3:0). Prerequisite: WMST 200 or permission of instructor. Course examines feminist critique and transformation of the theories, methods, and methodologies of the sciences and humanities.
General Policies
General Policies

Statement on Equal Opportunity/Affirmative Action

George Mason University is an equal opportunity/affirmative action institution committed to the principle that access to study or employment opportunities afforded by the university, including all benefits and privileges, be accorded to each person — student, faculty, or staff member — on the basis of individual merit and without regard to race, color, religion, national origin, sex, sexual preference, or age (except where sex or age is a bona fide occupational qualification).

Appropriate procedures shall be adopted for the promotion of this principle in every phase of university operations. Furthermore, affirmative action will be taken to ensure that opportunities afforded by the university are fully available to handicapped persons, women, and minorities. The university will make every reasonable accommodation to enable handicapped students to undertake work or study for which they qualify.

Students should bring problems or questions regarding EEO/AA/Sexual Harassment policies to the attention of the harasser's supervisor, department chair, the dean of student services, an academic dean, the director of Human Resources, the university ombudsperson, a trusted faculty or staff member, the Women's Student Research and Resource Center, or to Earl G. Ingram, vice president and university equity officer, D105 Mason Hall, 993-8730. Students with disabilities can contact Disability Support Services at 993-2474.

As required by the Civil Rights Restoration Act of 1987, the university is committed to the broad application of Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and Title VI of the Education Act of 1964.

Conduct

The university respects and protects the individual dignity, integrity, and reputation of its students. Students must comply with the conventions and regulations of university life that are necessary to maintain order, protect individuals and property, and fulfill the purposes and responsibilities of a university.

Students enrolling in the university assume an obligation to conduct themselves in a manner compatible with the university's function as an educational institution. The Code of Virginia (Section 23-9:2) confers upon the university the responsibility for maintaining order within the university and the right to exclude those who are disruptive.

The Office of the Judicial Administrator is administratively responsible for supervising student conduct on campus. A system of courts administers nonacademic discipline. In addition to these courts, the student Honor Committee, described under Academic Policies, is responsible for adjudicating violations of the Honor Code that relate to academic matters. Questions regarding student conduct should be directed to the Judicial Affairs office, Room 302, Student Union I (993-2884).

Privacy of Student Records

Annually, George Mason University informs students of the Family Educational Rights and Privacy Act of 1974. This act, with which the institution intends to comply fully, protects the privacy of education records, establishes the right of students to inspect and review their education records, and provides guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the Family Educational Rights and Privacy Act office (FERPA) concerning alleged failures by the institution to comply with the act.

Local policy explains in detail the procedures to be used by the institution for compliance with the provisions of the act. The Office of Student Records keeps a copy of the policy and also maintains a Directory of Records listing all education records maintained on students by this institution.
Questions concerning the Family Education Rights and Privacy Act may be referred to the Office of Student Records.

Drugs and Alcohol Policy
(Adopted by the Board of Visitors May 1990)

The abuse of drugs and alcohol by members of the George Mason University community is incompatible with the goals of the university. By defining standards of behavior and by providing educational programs to create an awareness of drug and alcohol-related problems, the university attempts to prepare individuals to act responsibly. Those in need of assistance in dealing with such problems are encouraged to seek the confidential services of the university's Counseling Center, the Student Health Center, or the Drug Education Center.

Drugs
The university prohibits the possession and use of illegal drugs. Possession, sale, use, or distribution of controlled substances, including marijuana, is a violation of both federal and state laws, and university regulations.

Alcohol
The use of alcoholic beverages on campus is at the discretion of the university and subject to state alcoholic beverage regulations. Unless the university has specifically sanctioned the location and condition of alcohol use, the possession and consumption of alcohol on campus is prohibited.

Individuals involved in the sale, use, or distribution of controlled substances (drugs and alcohol) are subject to arrest and university disciplinary action. The university imposes a variety of sanctions, which may include eviction from university housing and suspension or dismissal from the university.

The regulations outlined in this policy also apply to officially sponsored university activities held off campus.

Notice to All State Employees
The federal Drug-Free Workplace Act requires that we inform you that the unlawful manufacture, distribution, possession, or use of a controlled substance is prohibited in the workplace. The workplace consists of any state-owned, controlled, or leased property, or the site where state work is performed. Any employee who violates this prohibition will be subject to disciplinary action up to and including discharge and/or will be required to satisfactorily participate in a drug abuse assistance or rehabilitation program at the discretion of management. As a condition of employment, each employee must abide by the terms of this prohibition and notify his/her supervisor of any criminal drug statute conviction occurring in the workplace no later than five days after such conviction.

I. General Laws & Regulations
A. Those who choose to purchase, possess, and consume alcoholic beverages on campus must do so responsibly and be of legal age (21). All members of the university community, to include students, faculty, staff, alumni, and their guests, are expected to comply with federal and state laws regarding the use of alcohol and university-related regulations contained in this policy. This compliance also extends to university-sponsored activities held off campus. Students and employees are expected to take personal responsibility for their own conduct when making decisions regarding the use of alcohol.

B. Virginia state law prohibits the purchase, possession or consumption of beer, 3.2 beverages, wine or distilled spirits by persons under the age of 21. It is also prohibited to purchase for, or to serve such beverages to a person under 21. Underaged persons who use or attempt to use a driver’s license which has been altered, forged, borrowed from another, or is in any way deceptive in an attempt to obtain beverages prohibited to them shall have their driver’s license revoked for not less than thirty days but not more than one year. Consuming alcohol in non-licensed public places or offering a drink to another in a non-licensed public place is also a violation of Virginia law. The sale of alcoholic beverages to an intoxicated person is prohibited. It is also unlawful for an intoxicated person to purchase or possess alcoholic beverages. While this purchase or possession is a misdemeanor, violators are also subject to having their driver’s license revoked for a year. It is illegal to operate a motor vehicle—including mopeds—while a person has a blood alcohol concentration (BAC) of .10 percent or higher. Sobriety spot-checks to detect drunken drivers are legal.

C. Possession, use, sale or distribution of controlled substances, including marijuana, is a violation of both federal and state laws and university regulations. The 1988 federal Drug-Free Workplace Act also prohibits the unlawful manufacture, distribution, possession, or use of a controlled substance in the workplace.

D. Students, faculty, staff, and sponsoring organizations found in violation of state and/or university regulations may be subject to disciplinary action, civil action, and/or loss of the privilege to reserve or use university facilities. Disciplinary action for students or student...
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General Policies

II. Health Risks
For most people in our society the use of chemicals is a daily reality. These chemicals include over-the-counter medications, prescription drugs, and illegal drugs such as marijuana, cocaine, and LSD. They also include legal chemicals such as alcohol, nicotine, and caffeine. Many chemicals have the potential to improve our health and enrich our lives. Yet many of these chemicals also have the potential to cause serious health problems.

Alcohol is a depressant that slows down brain activity. Like any drug that affects the mind, alcohol has the potential to be abused. Decision-making abilities can be impaired by alcohol use, which can cause negative consequences such as risky sexual behavior. It is expected that all students and employees respect those who choose not to drink. Drinking alcohol should be avoided particularly by pregnant women and anyone taking prescribed medications or operating a motor vehicle. Long term or heavy use of alcohol is linked to cancer, heart and liver damage, and other serious illnesses. Tolerance, physical and psychological dependence can develop. The potential for health problems can also develop from the use of nicotine or caffeine products.

Illicit drugs have more than legal consequences; they have specific health and ethical risks which can cause dangerous consequences and/or unhealthy dependent behavior. Use of alcohol or any other drug in a manner that leads to impairment or intoxication is unhealthy, risky, and should be avoided and discouraged.

Those in need of assistance in dealing with alcohol and other drug problems are encouraged to seek the confidential services of campus departments listed in Section IV.

III. General Regulations for Individuals and Organizations Serving Alcoholic Beverages
A. University regulations prohibit the possession or consumption of any alcoholic beverage on university campus unless the university has sanctioned the location and/or conditions for possession or consumption (e.g. Rathskeller). For further information regarding service of alcohol at public and private events, as well as at the Patriot Center and Arlington Campus, please review the comprehensive guidelines for alcohol service available in the Drug Education Center.

IV. Campus and Community Resources
Drug Education Center—Nancy Schulte, LCSW, 993-3686
A. Individual assessments and training programs
B. Educational materials—print and video
C. GMU Alcohol and other Drug Policy handouts
D. CAMPUS NETWORKS—peer educator program
E. Community resource liaison/referral
The Counseling Center—Phyllis Anderson, Psy D., 993-2380
A. Personal and group counseling
B. ACOA and recovery support groups
Human Resources—Norman Kerr, 993-2600
A. Information and referral services for employees
The State Employee Assistance Service (SEAS) 786-6741
A. Call to make an appointment
Alcoholics Anonymous—for campus meetings call 993-3686; or in VA, 824-0071; in MD and DC, 966-9155
Narcotics Anonymous—in VA, call 281-8638; in MD, 731-7221
Northern Virginia Hotline 536-4077
A. 24 hour information help-line
Fairfax County - Falls Church Programs 359-7040
A. Programs funded by the county and based on a sliding fee scale.
The Alcohol and Other Drug Policy, composed of these four sections, outlines subject matter pertaining to university regulations on substance use and abuse. This policy is annually distributed to all employees and students as a means of informing the campus community of alcohol and other drug laws, health risks and campus and community resources. University regulations regarding the Alcohol and Other Drug Policy have been developed by a committee of faculty, staff, and students. This policy statement is available in the Drug Education Center in Student Union I, Room 352. This policy is also distributed through the university catalogs, student and faculty/staff
handbooks, and the university's two newspapers: *Broadside* and *The Mason Gazette*.

**Computer Use Policy**

George Mason University has established regulations regarding computer resources. These regulations define computer violations and actions that are taken when a violation is confirmed.

University computer resources are restricted to use for research, instructional support, and administrative purposes. Unauthorized access, including illegal use of passwords on mainframe systems, is prohibited. Also prohibited is use of legal access for unauthorized purposes, such as tampering with or destroying files, soliciting, or harassing.

Illegal use or copying of licensed software or student files is also an offense.

In all cases where a violation is reported, the user's access to hardware and/or software is terminated until a final decision is made. Depending on the status of the person involved and the nature of the violation, referral may be made to Student Services, Human Resources, or University Police. Section II of the Honor Code also applies to computer programs. A complete copy of the policy may be obtained from the Office of the Associate Vice President for Student Services or from University Computing and Information Services.

**Motor Vehicles Policy**

The privilege of operating and parking a motor-driven vehicle at George Mason University is extended to all students, subject to the following procedures:

- Vehicles must be registered with the Parking Services Office. At the time of registration, operators must certify that (a) vehicles have a valid state registration and valid insurance from a recognized insurance company, evidencing coverage for public liability in conformance with the laws of the Commonwealth of Virginia; (b) they have a valid state driver's license; and (c) they understand that they are governed by *University Motor Vehicle and Traffic Rules and Regulations*, a copy of which is furnished at the time of registration of the vehicle. A state vehicle registration card must be provided at the time of registration.

- There is a fee for registering vehicles. Decals may be purchased for the full academic year or by the semester or for Summer Term.

- Day passes are also available. They may be purchased singly at the booths or in bulk at the office.

The Parking Services office is in the main lobby of Student Union I. The hours of operation are Monday through Thursday, 9 a.m. to 7:30 p.m., and Friday, 9 a.m. to 12 p.m. when school is in session. Hours are Monday through Thursday, 9 a.m. to 4:30 p.m., and Friday, 9 a.m. to noon when school is not in session. For special parking requests or problems, go to the main office in Room 354 of Student Union I or call 993-2710.

Registered vehicles must display in full view the university's vehicular registration decal, affixed immediately upon issue as per the instructions on the reverse side of the decal.

**Other Regulations**

**Weapons**

The unauthorized possession, storage, display, or use of any kind of ammunition, firearms, fireworks, explosives, air rifles, air pistols, or other lethal instruments is prohibited on university property. Any questions regarding this regulation should be directed to the University Police (993-2810).

**Smoking**

Smoking is not permitted in classrooms, lecture halls, theaters, or in the university libraries. Lounge areas in the student union buildings and other university buildings have been set aside for this purpose.

For more specific information on the location of smoking areas on campus, call 993-2880.

**Bicycles/Skateboards**

Bike racks are provided at various locations on campus for the convenience of students who bike to and from the university. For resident students, there are bike racks in the residential complexes.

Bikes and skateboards are not permitted on sidewalks, ramps, footpaths, or grassy areas of campus or inside university buildings.

**Pets**

No pets are permitted in university buildings at any time. Additionally, pets that are on campus grounds must be on a leash and under supervision at all times.

**Solicitors and Salesmen**

Solicitors and salesmen, except on official business with the university, are not permitted on the campus without prior approval of the Auxiliary Enterprises office.
Administration and Faculty
Administration and Faculty

Board of Visitors
The Rector and Visitors
Charles H. Nance, Rector, Alexandria, VA
Gayle Perkins Atkins, Secretary, New York, NY
Hector Alcalde, Arlington, VA
Giuseppe Cecchi, McLean, VA
Bette G. Clements, Arlington, VA
Sheila B. Coates, Chantilly, VA
Kelly R. Curtis, Hampton, VA
(Charles H. Nance, Rector, Alexandria, VA
Gayle Perkins Atkins, Secretary, New York, NY
Hector Alcalde, Arlington, VA
Giuseppe Cecchi, McLean, VA
Bette G. Clements, Arlington, VA
Sheila B. Coates, Chantilly, VA
Kelly R. Curtis, Hampton, VA
(Official representative)
B. Mark Fried, McLean, VA
Joseph A. Heastie, Vienna, VA
Alan J. Kay, McLean, VA
Weldon H. Latham, Bethesda, MD
Edwin W. Lynch, Jr., Lorton, VA
Cathleen A. Magennis, McLean, VA
Helen Hill Miller, Washington, D.C.
Hoan Dinh Nguyen, Arlington, VA
Martha V. Pennino, Vienna, VA
Elizabeth T. Walker, Sacramento, CA

Membership of the Board of Visitors is as of July 1991.

Administration
University President: George W. Johnson, Ph.D.

Executive Vice Presidents
Provost and Vice President for Academic Affairs: Clara M. Lovett, Ph.D.
Executive Vice President for Finance and Planning: Maurice W. Scherrens, J.D., Ed.D.
Executive Vice President for Administration: H. Randall Edwards, Ph.D.
Executive Vice President for Advancement and Planning: Donald A. Danner, M.B.A.

Academic Support Services
Vice Provost/Registrar: Suzanne Swope, Ph.D.
Associate Provost and Dean for Undergraduate Studies: James J. Fletcher, Ph.D.
Special Assistant to the Provost and Director of Minority Student Services: Charles Nathaniel Smith, M.S.
Assistant Dean for Undergraduate Studies and Summer Term (University Scholars Program): Donna R. Bafundo, M.Ed.
Associate Dean, Graduate School: James W. Fonseca, Ph.D.
Dean of Admissions: Patricia M. Riordan, Ed.D.
Director of Academic Advising and Orientation: Karole McKalip, M.Ed.
Director of Career Development Center: Patricia J. Carretta, M.A.
Director of Counseling: Ralph K. Roberts, Ph.D.
Director of Early Identification Program: Hortensia Cadenas, B.A.
Director of Fenwick Library: Charlene S. Hurt, M.L.S.
Director of Student Financial Planning and Resources: Jennifer Douglas, B.A.
Director of Student Records: Richard Bayer, M.A.
Assistant Director of Minority Student Services: Carretta Cooke, M.Ed.

Student Services
Associate Vice President for Administrative Services: Sara C. Looney, Ph.D.
Associate Vice President and Dean for Student Services: Kenneth E. Bumgarner, M.A.
Associate Dean for Student Services: Girard Mulherin, Licentiate
Director, Drug Education Center: Nancy Schulte, L.C.S.W.
Director of Housing and Residential Life: Ronald E. Campbell, M.A.
Director, The Freshman Center: Noreen McGuire, M.Ed.
Health Education Supervisor: Elizabeth Hagaman, M.Ed.
Director, Student Volunteer Center: Nicole West, M.Ed.
Director, Student Program Development Center: Mike Elmore, M.Ed.
Senior International Adviser: Kathy Dawson, B.A.
Director, Student Leadership Development: Adrienne Hillery, M.Ed.
Faculty 1992-93
The faculty list below covers the 1992-93 academic year, and reflects appointments as of the end of the fall 1991 semester.

Ackerman, Helen J., Assistant Vice President for Public Relations. B.A. 1968, University of Western Australia; M.A. 1986, George Mason University.

Acquah, James B., Assistant Professor of Computer Science. B.S., M.A. 1979, Cambridge University; Ph.D. 1990, George Washington University.

Adamkiewicz, Susan Laura, Associate Professor of Biology. A.B. 1962, Stanford University; Ph.D. 1968, University of Virginia.


Adler, Barry E., Assistant Professor of Law. B.S. 1982, Cornell University; J.D. 1985, University of Chicago.


Aiken, Peter, Assistant Professor of Information Systems and Systems Engineering. B.S. 1981, M.S. 1984, Virginia Commonwealth University; Ph.D. 1989, George Mason University.

Allinger, Rita Louise, Professor of Nursing. B.S. 1961, M.S. 1963, Boston University; M.A. 1972, Ph.D. 1974; The Catholic University of America.

Akayonov, Vassily P., Robinson Professor of Russian Literature and Writing. M.D. 1956, Pavlov First Lenin Medical Institute.

Akwule, Raymond U., Assistant Professor of Communication. B.A. 1977, M.A. 1979, University of Iowa; Ph.D. 1985, Howard University.

Albanese, Denise, Assistant Professor of English. B.A. 1978, New York University; Ph.D. 1987, Stanford University.

Alexeev, Michael, Associate Professor of Economics. Ph.D. 1984, Duke University.

Allen, John Ashley, Associate Professor of Psychology. A.B. 1963, Duke University; M.S. 1969, Ph.D. 1971, North Carolina State University.

Allen, Mary, Lecturer in English. B.A. 1962, M.A. 1963, Brigham Young University; Ph.D. 1973, University of Maryland.


Allgood, Kathleen T., Associate Professor of Mathematics. B.A. 1970, George Washington University; M.S. 1974, Ph.D. 1979, University of Maryland.

Ambler, John Alden, Lecturer in Computer Science. B.S./M.E. 1968, University of South Florida; M.S. 1970,
University of Southern California; M.B.A. 1971, Golden State University.

Ammann, Paul E., Assistant Professor of Information and Software Systems Engineering. A.B. 1983, Dartmouth College; M.S. 1985, University of Virginia; Ph.D. 1988, University of Virginia.

Anderson, Evan E., GMU Foundation Professor of Decision Sciences and MIS. B.B.A. 1965, University of Iowa; M.B.A. 1966, University of Wisconsin-Madison; Ph.D. 1970, Cornell University.

Anderson, Karl Eric, Adjunct Associate Professor of Geography. B.S. 1967, Purdue University; M.S. 1969, Ph.D. 1978, Northwestern University.

Anderson, Mark Randolph, Instructor; Assistant Men’s Basketball Coach. B.S. 1976, University of Missouri.


Andrykovitch, George Eugene, Associate Professor of Biology. B.S. 1962, M.S. 1965, University of Pittsburgh; Ph.D. 1968, University of Maryland.


Anthony, Robert A., Professor of Law. B.A. 1953, Yale University; B.A. Juris. 1955, Oxford University; J.D. 1975, Stanford University.

Athale, Ravindra Anant, Associate Professor of Electrical and Computer Engineering. B.S. 1972, Bombay University; M.S. 1974, Indian Institute of Technology; Ph.D. 1980, University of California, San Diego.

Auletta, Richard J., Assistant Professor of Electrical and Computer Engineering. B.E.S. 1980, Johns Hopkins University; M.S. 1981, Duke University; Ph.D. 1987, University of Virginia.

Avruch, Kevin Andrew, Associate Professor of Anthropology. B.A. 1972, University of Chicago; M.A. 1973, Ph.D. 1978, University of California, San Diego.

Bafundo, Donna R., Assistant Professor; Assistant Dean for Undergraduate Studies and Summer Term. B.A. 1966, Trinity College; M.Ed. 1978, George Mason University.

Bailey, Birdie, Assistant Professor of Nursing. B.S.N. 1973, M.S.N. 1975, University of Alabama; Ph.D. 1991, George Mason University.

Bakhash, Shaul, Robinson Professor of History. B.A. 1959, M.A. 1968, Harvard University; Ph.D. 1972, Oxford University.

Bante, Mary-Suzanne, Associate Director of Housing and Residential Life. B.A. 1979, University of Detroit; M.Ed. 1978, Kent State University.

Baraniecki, Anna, Associate Professor of Electrical and Computer Engineering. M.Sc. 1970, Warsaw Technical University, Poland; Ph.D. 1980, University of Windsor, Canada.

Barbee, D. Roger, Lecturer in English. B.A. 1968, Pembroke State University; M.A. 1988, George Mason University.

Barnes, Adrienne M., Assistant Professor; Counselor, Counseling Center. A.B. 1970, Drew University; Ed.M. 1972, Rutgers University; M.A. 1976, Ph.D. 1980, University of Maryland.

Barocas, Ralph, Professor of Psychology. B.A. 1957, Hunter College; M.S. 1960, Ph.D. 1964, Pennsylvania State University.

Barrett, Carolyn, Lecturer in English. B.A. 1962, University of Portland; M.A. 1966, University of Southern California; Ph.D. 1980, University of the Philippines.

Barry, Camille T., Adjunct Assistant Professor of Nursing. B.S.N. 1979, University of Akron, Ohio; M.S.N. 1986, Ph.D. 1990, George Mason University.

Bartholomew, Cheryl G., Associate Professor of Education. B.A. 1965, Ohio Wesleyan University; M.Ed. 1975, Westfield State University; Ph.D. 1980, Syracuse University.


Bateson, Mary Catherine, Robinson Professor of Anthropology and English. B.A. 1960, Radcliffe College; Ph.D. 1963, Harvard University.

Beum, Richard Frederick, Associate Professor of Information and Software Systems Engineering. B.A. 1962, Oberlin College; M.S. 1964, Ph.D. 1969, University of Michigan.

Bausch, Richard C., Professor of English. B.A. 1974, George Mason University; M.F.A. 1975, University of Iowa.


Beale, Guy O., Associate Professor of Electrical and Computer Engineering. B.S. 1967, Virginia Polytechnic Institute and State University; M.S. 1974, Lynchburg College; Ph.D. 1977, University of Virginia.


Behrman, Michael Mitts, Associate Professor of Education. B.S. 1971, M.Ed. 1972, University of Cincinnati; Ed.D. 1978, Teachers College, Columbia University.

Bentzen, Carolyn, Lecturer in Nursing. B.A. 1963, Hasting College; Certificate in Nursing Education 1990, M.S.N. 1990, George Mason University.

Bennett, James T., William P. Snively Professor of Economics. B.S. 1964, M.S. 1966, Ph.D. 1970, Case Western Reserve University.

Berger, Ernest, Assistant Dean and Director of the Executive M.B.A. Program, School of Business Administration. B.S. 1974, West Virginia University.

Bergmann, Johannes Dietrich, Associate Professor of English; Chair, English Department; Associate Professor of American Studies. A.B. 1963, Amherst College; M.A. 1964, Ph.D. 1969, University of Connecticut.
Bergoffen, Debra Beth, Professor of Philosophy; Chair, Department of Philosophy and Religious Studies. A.B. 1962, Syracuse University; M.A. 1966, Ph.D. 1974, Georgetown University.


Berry, Alok K., Associate Professor of Electrical and Computer Engineering. B.S. 1967, M.S. 1969, University of Delhi; M.A. 1981, Ph.D. 1985, University of Missouri.


Beslacj, Amer, Assistant Professor of Mathematics. B.S. 1981, University of Sarajevo; Ph.D. 1986, University of Wisconsin.

Bever, David L., Associate Professor of Health Education. B.S. 1970, University of Dayton; M.A. 1973, Ball State University; Ph.D. 1978, Purdue University.

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