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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
Undergraduate Degrees, Certificates, and Preprofessional Study

Existing or planned for 1994-95

Undergraduate Degrees

(Department offering degree is noted where not obvious.)

Accounting B.S.
Administration of Justice B.S. (Prince William Institute)
Anthropology B.A.
Art B.A.
Biology B.A., B.S.
Chemistry B.A., B.S.
Classical Studies B.A. (Foreign Languages and Literatures Dept.)
Computer Science B.S.
Dance B.A., B.F.A.
Decision Sciences and Management
Information Systems B.S.
Earth Systems Science 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.
Government and Politics B.A.
(Public and International Affairs Dept.)
Health, Fitness, and Recreation Resources B.S.
History B.A.
Individualized Study B.I.S. (Academic Affairs)
International Studies B.A. (Public and International 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.
Philosophy B.A.
Physical Education B.S.Ed.
Physics B.A., B.S.
Psychology B.A., B.S.
Public Administration B.S. (Public and International Affairs Dept.)
Russian Studies B.A. (Foreign Languages and Literatures Dept.)
Social Work B.S.
Sociology B.A.
Speech Communication B.A.
Study of the Americas, B.A.
Systems Engineering B.S.
Theater B.A.
Urban Systems Engineering B.S.

Certificate Programs

Applied Archaeology
Applied Statistics
Cartography
Environmental Management
Gerontology
Operations Research and Engineering
Philosophy and Computer Science
Psychology Technician

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. (The 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)
Cultural Studies Ph.D. (College of Arts and Sciences)
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. (College of Arts and Sciences)
Exercise Science and Health M.S.
Foreign Languages M.A.
Geographic and Cartographic Sciences M.S. (Geography and Earth Systems Science Dept.)
History M.A.
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.
International Transactions M.A.I.T.
Law J.D. (School of Law)
Mathematics M.S.
Music M.A.
Nursing M.S.N., M.B.A., Ph.D.
Operations Research and Management Science M.S.
Psychology M.A., Ph.D.
Public Administration M.P.A. Ph.D. (Public and International 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.
Visual Information Technologies, M.A., M.F.A. (College of Arts and Sciences)

Certificate Programs

Applied Statistics
Command, Control, Communications, and Intelligence (C2I) Systems Engineering
Community College Education (diploma)
Federal Statistics
Gerontology
International Nursing
International Planning
International Technology
International Trade
Nursing Administration
Nursing Education
Software Systems Engineering
Teaching of English as a Second Language
Translation
Academic Calendar
Academic Calendar, 1994-95

Fall Semester 1994

August 29
First day of classes.

September 5
Labor Day; university closed.

September 12
Last day for schedule adjustment and registration.
(All individual section forms must be submitted to registrar.)

September 30
Last day to drop without dean’s permission.

October 10-11
Columbus Day recess (Monday classes and laboratories meet on Wednesday this week only; Wednesday classes do not meet).

October 28
Incomplete work from Spring and Summer 1994 semesters due to instructor.

November 4
Incomplete grades due to registrar.

November 24-27
Thanksgiving recess; university closed.

December 10
Last day of classes.

December 12-13
Reading days.

December 13*-21
Examinations (for times, see Schedule of Classes).
*Exams begin at 4:30 p.m.

Spring Semester 1995

January 13
Winter degree date.

January 23
First day of classes.

February 6
Last day for schedule adjustment and registration.
(All individual section forms must be submitted to registrar.)

February 24
Last day to drop without dean’s permission.

March 12-19
Spring recess.

March 31
Incomplete work from Fall 1994 semester due to instructor.

April 7
Incomplete grades due to registrar.

May 6
Last day of classes.

May 8-9
Reading days.

May 9*-17
Examinations (for times, see Schedule of Classes).
*Exams begin at 4:30 p.m.

May 20
Commencement.

May 30
Memorial Day observed; university closed.
May 31
Summer Term begins.

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 1995
Summer Term runs from May 31 to August 4. More than 750 day and evening classes are scheduled, making it possible to earn up to 14 credits. For details, consult the Schedule of Classes, available in early March.

Testing Calendar for National Exams
On-Campus Testing Calendar for 1993-94
GMAT 10/15, 1/21, 3/18
GRE 10/8, 12/10, 4/8
LSAT 10/1, 12/3, 2/11
MAT the second and fourth Tuesday of the month (except holidays)
TOEFL 7/8, 8/6, 9/9, 10/22, 11/19, 12/9, 1/14, 3/10, 4/22, 5/13


To request MCAT registration booklets, call (319) 337-1276.

To request LSAT registration materials, call (215) 968-1001.
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 more than 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 more than 60 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. Its campus in Prince William County, called the Prince William Institute, offers academic, community and business support programs.

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, College of Nursing and Health Science, and School of Law. GMU offers more than 100 degree programs, including 53 undergraduate, 44 master's, 10 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 79 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 un-
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 707 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, on the Arlington Campus, at Prince William Institute, and the School of Law Library in Arlington, house collections of approximately 900,000 volumes, with annual additions of 20,000 books. Periodical subscriptions total 8,300. 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 fifth 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.

Presently under construction are the University Center and Enterprise Hall. The University Center combines a library facility with the meeting and activity space normally associated with a student union. The building, scheduled for occupancy in fall 1995, provides students a total learning experience through interaction with books, technology, their peers, and faculty. Enterprise Hall is a classroom building that will feature a lecture hall and additional office space for academic departments.

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 computer store, 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, and 7:20 p.m. Non-credit courses are scheduled from 8 a.m. to 4 p.m. Approximately 600 non-credit courses are taught in the Professional Center. More than 16,000 credit and noncredit students are served.

The 200-seat Conference Center hosts an additional 10,000 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.

Prince William Institute

The Prince William Institute (PWI) is George Mason's academic presence in the Prince William County area. The institute serves Prince William, Fauquier, and western Fairfax counties; Manassas and Manassas Park cities; and adjoining areas to the west and south. The institute offers creative programs of instruction, research, and public service developed through a public/private partnership in a new higher education service district in the Prince William County area.

Academic programs in place as of spring 1994 include a school-based master's in education program, a master of public administration program, an accelerated program for a B.S.N., and a B.S. in administration of justice program.

PWI presently occupies 10,000 square feet of space in Sudley North Business Center, 7946 Donegan Drive, Manassas. The telephone number is (703) 330-5967.

Consortium of Universities of the Washington Metropolitan Area

George Mason University is a cooperating member of the Consortium of Universities of the Washington Metropolitan Area. Full participating Consortium members include The American University, The Catholic University of America, Gallaudet University, George Mason University, The George Washington University, Georgetown University, Howard University, Marymount University, Mount Vernon College, Trinity College, University of the District of Columbia, and the University of Maryland-College Park.

Eligible students have the opportunity to benefit from the combined offerings of member institutions and to enroll for courses at any of the participating institutions. Students register and pay tuition at their home institution for all Consortium courses.

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, litigation law, international business law, and regulatory law—that allow students to supplement their general legal education with in-depth study of a specialized area of practice.

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 surface lots is by permit or decal only, Monday through Friday from 7 a.m. to 8 p.m. Visitors are strongly encouraged to park in the Parking Deck located on Mason Drive. 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 Life

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

Facilities

Housing
The university has on-campus housing for approximately 3,000 students. The majority of the freshman class opts 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.

Student Unions
A student union is more than a building. It serves as a unifying force in the life of the university. It is the focus of campus activity. Our two unions serve as the community center of the university. They are a part of the educational program. As such, they serve as a laboratory of citizenship, training students in social responsibility and for leadership. They provide a cultural, social, and recreational program aiming to make free-time activity a cooperative factor with study and education. In all its processes, the unions encourage self-directed activity, giving maximum opportunity for self-realization and for growth in individual social competency and group effectiveness. Our goal is the development of mature persons as well as intellects. The union programs and activities create a coherency between students' academic lives and their lives outside the classroom.

With the amazing growth of the university over the past decade, the unions themselves have undergone tremendous change to meet the expanding needs of the university community. Currently, a new university center is under construction and scheduled to open in the spring of 1995. It will break with tradition, combining a state-of-the-art library and a student union. The building brings together the two crucial elements of the university — student life and academic endeavor. The result of many hours of consultation between faculty, staff, students, and architects, the concept of the university center is unique. No other university in the country has a building designed to achieve similar goals. The university center will symbolize the university's commitment to providing a first-class education in the twenty-first century.

Student Union Building I (SUB I)
SUB I is an 80,000-square-foot building built in 1971. It is home to nearly 200 student organizations NS several administrative offices, and it serves as the center for student life. The following programs are housed in SUB I:

Services: Apple Federal Credit Union, Copy Shoppe/Stamp Pad, George Mason Bank, Mason Jar, Patriot's Locker, Information Desk, and the SUB I Scheduling Office

Food: H.B. Quick's, Rathskeller, Mediterranean Menu Adventure, and Quickstop

Facilities: Gameroom, Meeting Rooms, Patriots Lounge, One Union Place, Typing and Computer Laboratory, and Quiet Study Lounge.

Student Union Building II (SUB II)
SUB II is an architecturally striking 91,000-square-foot building built in 1982. It was enlarged by an
additional 18,000 square feet in 1991. SUB II serves as a conference, meeting, and event center, and houses the bookstore and residential dining services. The following programs and services are housed in SUB II:

**Services:** Information Desk, University Dining Services by Marriott, SUB II Scheduling Office, the University Bookstore, and the university’s computer store

**Food:** Marketplace, Residence Dining Hall, University Room, and the Court Cafe including Taco Bell, Pizza Hut Express, The Sub Connection, Salad Alley, and other fast-food services

**Facilities:** Ballroom and meeting rooms

The last decade of this century continues to be an exciting time for the student unions and the entire George Mason University community. We encourage you to take advantage of the many opportunities available within your student unions.

### 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 1994 Patriot Center events were Disney on Ice, David Copperfield, 10,000 Maniacs, Sting, and Alan Jackson.

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

### Performing Arts Facilities

Free tickets are available to George Mason University students for more than 120 events sponsored annually by the Institute of the Arts. The Center for the Arts is a complex of performance spaces that are the focal point of the university's performing arts programs. The 2,000-seat Concert Hall is host to professional music, dance, opera, and theater productions. TheaterSpace and Black Box Theater provide two of the most versatile performance spaces in the Center for the Arts complex, accommodating many seating and staging configurations. Harris Theater is a proscenium theater seating 500, used for a wide variety of campus events. The complex also includes the Performance Dance Studio, which is used for workshops and dance student works-in-progress.

### Student Support Services

#### 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?, How to Get an Internship, Applying to Graduate/Professional School, Job-Hunting Strategies, Networking, 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.

- **Career Connection**
  Career Connection is a program through which students can contact alumni and friends of George Mason University for career information to help them plan their careers, learn about employer expectations, and job search effectively. The alumni and friends in this network have agreed to share career information in three ways:

  - **Information Interview:** Students arrange to interview Career Connection members in person or by phone.
  - **Externship:** Students arrange to spend one to five days at Career Connection members' work
The experience enables students to learn firsthand about career fields and employers.

**Seminar Speaker:** Students may ask Career Connection members to present career information to student organizations or classes.

**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 full-time study; and the parallel plan, in which students work 15 to 24 hours per week while carrying at least 9 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**

Companies and school systems 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.

**kiNexus**

An easy-to-use, cost-effective electronic resume referral system that matches candidates' qualifications with employer hiring requirements. Students and alumni pick up a diskette from the Career Development Center, enter their resume data, return the diskette to be uploaded, and then wait to hear from employers.

**The Center for New Students**

**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 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 to 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 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 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, management of multiple roles, self-esteem, goals, study skills, anxiety, and depression. Psychiatric consultation and crisis intervention are 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 I, Suite 364.

Learning Services
The Learning Services component 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.

Learning Services recruits and maintains a tutor referral service. Names of tutors approved by Tutorial Services are available for most subjects offered at the university. Students are encouraged to request tutor information early in the semester.

The office is located in SUB I, Room 350, 993-2999.

Self-Development Center
The Self-Development Center provides audiotapes, videotapes, and computer-assisted programs that students can use on their own or with the assistance of a counselor. Students can learn about themselves, polish academic skills, and explore new ways to cope with academic and personal stresses. Programs are available on such topics as managing stress, avoiding procrastination, setting goals, increasing motivation, handling feelings, strengthening relationships, developing effective learning strategies, and many others.

Consultation and Outreach Services
The Counseling Center staff provides consultation services to students and to faculty and staff to assist in their work with students. Counselors provide mental health education training and consultation to faculty on how to assist students with problems that affect the learning process, and how to respond to crisis situations. Consultation on learning styles, adjustment to college, human relations issues, and other mental health topics is also available. The center provides educational programs to the university community on a variety of topics. Presentations on mental health, personal development, and academic skills topics are available. Contact the Counseling Center for requests and additional information.

Black Peer Counseling Program
The Black Peer Counseling Program, located in SUB I, 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.

Multicultural Research and Resource Center
The Multicultural Research and Resource Center (MRRC), located in SUB I, Room 106C, is designed to collect and disseminate information on sources for multicultural training and research. The center responds to requests for multicultural resources available on campus and in the community. Services the center provides include: a clearinghouse of staff available to facilitate diversity and anti-oppression workshops, maintenance of a resources/video library, and coordination of diversity-related committees and information for the entire university community. Contact the MRRC office at 993-4003 for more information.

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 Disability Support Services at 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:

http://catalog.gmu.edu
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.

Student Health Center

The Student Health Center is operated through a partnership between the Office of Student Services and the College of Nursing and Health Science. 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 Health Center is managed by a director who is responsible for the overall operation of the center. The clinic staff includes a full-time physician, nurse practitioners, a registered nurse clinic coordinator, and a receptionist. The insurance program and immunization compliance program are managed by the administrative staff.

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, when the university is in session. An appointment system is in place. Emergencies will be seen as walk-ins. Immunization Clinic hours are Mondays, 9-11:30 a.m., and Wednesdays, 1-3:30 p.m.

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, is 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, 993-2829.

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 993-2827.
Office of International Programs and Services

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

Services consist of the following:

1. Reviewing and verifying documents relative to the issuance of the certificate of eligibility (Form I-20 and Form IAP-66) to international students and scholars.
2. Advising international students and scholars on immigration and visa requirements.
3. Providing orientation programs for newly admitted international students, covering such issues as cross-cultural adjustment, housing, and academic policies.
4. Organizing activities for international students to integrate them into the academic process, the campus student population, and the surrounding community.
5. Conducting intercultural events on campus, such as International Week and other educational programs.

Student Union I, Room 308, 993-2970.

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 993-3322 or contact the individual ministries: Baptist (993-3323 or 425-4522); Campus Crusade for Christ (993-3323); Intervarsity Christian Fellowship (993-3320); Jewish (993-3321 or 301-468-3422); Muslim (993-3323); Orthodox Christian Fellowship (670-0867); Roman Catholic (993-3322 or 425-0022); and United College Ministries (993-3323 or 820-2144).

Minority Student Affairs

Minority Student Affairs is charged with the responsibility of assisting academic and nonacademic units with increasing participation and retention of minority students (African Americans, Asians, Hispanics, and Native Americans). It assists and advises other university offices in initiating, developing, and implementing programs to enhance the matriculation of minority students. The office 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 (racial/ethnic) understanding, and to create an educational atmosphere where minority students will be successful. The director of Minority Student Affairs is a catalyst for university administrators' efforts in monitoring and reporting data regarding issues and the retention of minority students.

University Police

The George Mason University Police Department is a nationally accredited police department with officers sworn in in Arlington and Fairfax counties. University police officers serve on foot, bicycle, and motor patrol 24 hours a day, every day, maintaining constant contact with the university community. The police department offers the following services on a continual basis:

Crime Prevention: 993-2824
Victim/Witness Services: 993-2824
Student Escort Services: 993-4357 (HELP)
For Police Emergencies, call 993-2800.
For Police Assistance, call 993-2810/2811/2812.

University Scholars Center

The University Scholars Center is a special resource facility for more than 100 Mason and Presidential Scholars. The study lounge portion of the center provides an informal meeting place for scholar-faculty interaction and creates a forum for intellectual dialogue among scholars. An adjacent computer resource room serves as a word-processing and computing laboratory for the University Scholars as well as a test site for an information retrieval system for George Mason University. More information on the University Scholars Program, which is administered by the Office of the Provost, may be found in the Office of Academic Affairs section of this catalog.

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 Krug Hall, Room 101, the office is open Monday through Friday from 9 a.m. to 5 p.m.

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.

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 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. More than 300 student athletes carry the banner of George Mason on courts and playing fields 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). In addition, a student-athlete may only use 12 hours of a D in making satisfactory progress throughout his/her entire athletic career.

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; eight NCAA track individual champions—Rob Muzzio (twice), Terri Dendy, Nena Gage, Diane Guthrie (twice), Istvan Bagyula (six times), Abdi Bile (twice), Kim Saddic, and Tony Barton; 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 1985-1992.

http://catalog.gmu.edu
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 invited to attend concerts and recitals given by the Department of Music. Academic credit is available for participation in the university Chorale and Symphonic Chorus. All members of the university community are invited to attend concerts and recitals given by the Department of Music.

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 divisions of Dance and Theater.

Students interested in music may audition to perform in the following: Symphony Orchestra, Symphonic Band, Jazz Ensemble, Pep Band, and various chamber ensembles. No auditions are required for participation in the university 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 interpretation. For the past 18 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 James McCafferty, 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.

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 communication 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, 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) 993-2706/2707.

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

http://catalog.gmu.edu
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.

The Volunteer Center
The Volunteer Center is here to help you help others. We can give you information on volunteering to work with children, the homeless, women’s issues, health care, legal services, and many others. Through volunteering, you can broaden your experience, add to classroom learning, and develop professional skills.

Besides volunteer information, we sponsor many programs throughout the year that pertain to community service and helping others. We are also affiliated with nine different student volunteer organizations. We look forward to seeing you at the center, which is located in SUB I, Room 305, or call us at 993-4009.

Student Leadership 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 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, academics, 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.

The recognized organizations at George Mason operate under an umbrella system, where groups of similar nature are clustered together to create a forum for communication and programming. Each umbrella is headed by an organization that provides governance, representation, support, and communication and allocates fee-funds to its constituent organizations. Newly recognized organizations are given information on how to establish specific criteria and expectations for membership, umbrella group recognition, and funding, the only prerequisite being prior recognition by the university through University Unions and Student Activities. There are advantages for new organizations to be affiliated with an umbrella, such as having a network of similar organizations for support, communication, help in orienting new groups, and opportunities to do joint programming.

George Mason now recognizes 18 social fraternities and ten sororities. Throughout the year, these greek organizations contribute to campus life by sponsoring numerous social and service activities within and around the university community. They encourage their members to meet high academic standards and provide many opportunities for leadership and personal development. To obtain additional information on fraternities or sororities at George Mason, contact University Unions and Student Activities, Student Union I, Rooms 251-252, 993-2909.

When students are ready to use their talents and get involved, the University Unions and Student Activities staff can provide information on joining organizations, managing organizations, or creating new ones. University Unions and Student Activities, on behalf of the university, recognizes and oversees student-run organizations. The staff advises organizations through consultations, workshops, and Infopack, the Student Organizations Manual. In addition, the staff is prepared and willing to assist student organizations in planning and implementing programs in a variety of ways: suggesting contacts, reviewing contracts, writing budgets, or mediating disputes.

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 the general manager, Thompson Hall, Rooms 214 and 216, 993-2940.

Broadsie 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, for more information.

**GMU Alumni Association/Office of Alumni Affairs**
The GMU Alumni Association offers several undergraduate scholarships and student awards and provides for the Beaman Emergency Loan fund. In addition, the association works in conjunction with the Career Development Center and individual academic and administrative departments to provide career development opportunities for students. For more information, call the Office of Alumni Affairs at 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 Leadership Center (993-2900) coordinates an 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 nontransferable 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.

<table>
<thead>
<tr>
<th>Required Minimum</th>
<th>Recommended Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) (2) (3)</td>
</tr>
<tr>
<td></td>
<td>(1) (2) (3)</td>
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<tr>
<td>English</td>
<td>4 4 4</td>
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<td>3 3 3</td>
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<td>Mathematics</td>
<td>3 3 4</td>
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<tr>
<td>Laboratory Science**</td>
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<tr>
<td>Electives</td>
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<tr>
<td>Total</td>
<td>16 16 16</td>
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</table>

* 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 freshman 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 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-
Admission

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 those 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 on a campus of the Virginia Community College System (VCCS), Northern Virginia Community College campus counseling offices maintain supplies of printed transfer information. Other VCCS institutions provide information from a computer database, the Transfer Assistance Profile (TAP), located in VCCS counseling offices throughout the commonwealth.

Credit Earned at Nonaccredited Colleges

Transfer credit is not granted for study in noncollegiate institutions, except in the Bachelor of Individualized Study (BIS) Degree Program. Transfer credits from nonaccredited colleges are tentatively evaluated upon admission to the BIS 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 enroll 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 encourages students to broaden and enrich their education through ap-
proved international programs. Through the Office of International Exchange and Study Abroad Programs, the university assists students who wish to participate in international study programs administered in cooperation with academic departments.

Students interested in studying abroad for a semester, year, or as part of a short term program over the summer or winter breaks should contact the Office of International Exchange and Study Abroad Programs, where a library on opportunities for study abroad is housed. Before departing, students must have programs approved by the International Exchange and Study Abroad Programs Office, by the department chair supervising the major field, and by the appropriate dean. They must also attend an orientation program organized by International Exchange and Study Abroad Programs.

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 applicants 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 or more 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.)

http://catalog.gmu.edu
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 current bank statement verifying that funds have been earmarked for school expenses. Yearly expenses are estimated to be $21,000 (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 (12 credits undergraduate, 9 credits graduate).
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 Programs and 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 $2,000 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 a trans-
fer 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 course work 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 apply a maximum of 18 hours of extended studies course work toward a later undergraduate degree program. 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 Information Center to arrange for course work during the Summer Term.

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 completed 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. A senior citizen may change registration status in any given semester once he or she has initially registered for classes.

Learning in Retirement Institute
The Learning in Retirement Institute at George Mason provides opportunities for older adults to explore intellectual and cultural subjects and to share their experiences and talents. LRI is membership-run. There are no exams, no credits, no grades, and no college degree required. LRI is located at 4210 Roberts Road, Fairfax. For more information, contact (703) 385-1593.

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 priority registration basis. The Summer Term offers more than 750 daytime and evening classes in four sessions from five to eight weeks. Academic departments take advantage of the Summer Term’s unique opportunities to schedule innovative as well as traditional courses. Therefore, many undergraduate students use the Summer Term as a third semester with the option of taking up to 14 credit hours. Enrollment in the Summer Term does not constitute undergraduate admission to a fall or spring term.

EXCEL Program
EXCEL 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 lobby and 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, business, computer science, 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 College of Nursing and Health Science for details). Credit is recorded for grades of C or above, but does not affect 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 102 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 lan-
guage 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 on 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 102, 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

General Guidelines and Student Responsibilities

1. By registering for classes, students accept responsibility for charges for the entire semester.
2. Registration shall not be completed unless all outstanding balances due the university are paid in full.
3. Refer to the Payment Schedule and Tuition Liability charts in the Schedule of Classes for payment due dates and penalties.
4. Payments are due at the Cashier's Office on or before due dates, regardless of postmark if mailed.
5. Failure to receive a reminder bill confirming your charges does not waive the requirement for payment when due. Once priority registration is over, the 4GMU telephone system (option 4) will confirm student tuition/fee charges.
6. The student is responsible for maintaining a current billing address at the Registrar's Office.
7. The entire student registration is canceled if payment or payment arrangements are not made in full by the Cancellation Date (see table in the Schedule of Classes).
8. Non-returning students are responsible for submitting a written withdrawal to the offices of the Registrar, Housing and Residential Life, and Financial Aid. Penalties may apply.
9. Student enrolling in GMU off-campus courses are assessed tuition and fees at the same rates as those for on-campus courses.
10. A few GMU degree programs include academic credits that students must earn at other institutions. Students enrolling for such credits assume all financial responsibility directly with the other institution.

Tuition Charges Per Semester (subject to change)

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<th>Out-of-State</th>
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<td>Full-time (12-17 credit hours) per semester</td>
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<td>$5,334.00</td>
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<tr>
<td>Per-credit-hour (less than 12 or more than 17)</td>
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<td>444.50</td>
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Related Fees

- Application Fee: $25
- New Student Fee: 75
- International Student Health Insurance Fee: N/A to be determined

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 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.

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. Failure to plan for this payment can result in a shortfall in the student's tuition payment, which could result in cancellation of classes.

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 ac-
Students academic credits at other institutions assume all financial responsibility for these arrangements.

Tuition Charges/Refunds for Dropped Courses
Students are required to pay full or partial tuition for courses that they drop after the first week of class. See the Tuition Liability chart on page 2 of the Schedule of Classes. In cases where tuition liability is less than the payment on the student's account, a refund of the overpayment may be requested. A Refund Request form, available in the Office of Students Accounts, Krug Hall, Room 103, must be completed and submitted to that office. Questions should be addressed to (703) 993-2484.

Tuition Liability Scale for Dropped Courses

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<td>2</td>
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<td>3</td>
<td>67%</td>
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** $25 Withdrawal fee if dropping all courses.

On-Campus Housing Costs 1994-95

** Room Rental Charges Per Semester**

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<th>Presidents Park I and II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single rooms</td>
</tr>
<tr>
<td>Double rooms</td>
</tr>
</tbody>
</table>

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

**Meal Plan Charges Per Semester**

<table>
<thead>
<tr>
<th>Meals per week</th>
<th>Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 meals</td>
<td>$880.00</td>
</tr>
<tr>
<td>15 meals</td>
<td>800.00</td>
</tr>
<tr>
<td>10 meals</td>
<td>700.00</td>
</tr>
</tbody>
</table>

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

**Payment Methods**

WHERE:

- **Window**, Cashier's Office, Krug Hall, Room 106, 9 a.m. to 4:30 p.m.
- **Drop Box**, outside Cashier's Office, Krug Hall, Room 107
- **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. Daytime phone number must be provided. Written authorizations only.

**FAX**: FAX Payment Authorization (703) 993-2492.

WHEN:

See Payment Schedule in the Schedule of Classes for deadlines.

**Payment Plan Options**

**Deferred Payment Plan**

A semester payment plan is available through Week 3 of classes for students who need to budget. Minimum contract amount must be equivalent to 6 credit hours at the in-state rate. A payment contract must be completed at the Office of Student Accounts 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. Failure to pay the outstanding balance by due date on contract will result in a $25 late fee, Financial Suspension, and ineligibility to defer payments in future terms.

**Monthly Installment Plan**

Full-time students may budget all or part of their yearly tuition, room, and board expenses in 10 equal monthly installments. A life benefit insurance plan is included. A minimum budget is required, and an annual fee is charged. For information, call Academic Management Services, (800) 556-6684.

**Payment Authorizations**

Third-party authorization or government training vouchers are accepted only through Week 3 of classes and are to be submitted to the Office of Student Accounts.

**Refunds**

Refunds can only be processed if there is an overpayment by the student on the account. A Refund Request form must be completed and submitted to the Office of Students Accounts. Forms may be obtained at Krug Hall, Room 103.

**Financial Penalties**

$25 Penalty Fees (for in-state and out-of-state students)

**Late Fee**

Failure to make any payment on or before the due date results in a late fee of $25.
Withdrawal Fee
A $25 withdrawal fee will be charged all students who withdraw after the Cancellation Date and before the 33% Tuition Liability period (see chart in the Schedule of Classes).

Nonpayment Cancellation Fee
Students who are cancelled from classes for non-payment or insufficient payment of tuition are assessed a $25 fee. Once imposed, this fee is not removed even if the student re-registers.

Returned Check Fee
A $25 returned check fee will be charged for each check returned by the bank unpaid. If the returned check results in an unpaid account, an additional $25 Late Fee will be charged, and the student will be placed on Financial Suspension.

Reinstatement Fee
Students placed on Financial Suspension because of outstanding obligations in excess of $100 are assessed a $25 reinstatement fee.

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.

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.

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's housing charge. Students applying for spring semester may forward their deposits beginning October 1. This is a non-refundable 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 the 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 physically present in Virginia with the present intention of remaining in the state indefinitely.

Domiciliary intent is a part of the definition of domicile. The student seeking the benefit of in-state tuition rates bears the burden of demonstrating such intent existed for at least one year.

See the receptionist in Finley Building for a copy of the complete domicile legislation.

**Change of Domicile Classification**

Out-of-state students who seek reclassification of their domicile status are strongly encouraged to complete a Request for Domicile Reclassification form at least four weeks before tuition payments are due so that a decision can be made before tuition payments must be made. All applications are processed in chronological order as of date they are received.

No requests will be accepted after the first day of classes within the semester for which the reclassification is sought. Out-of-state students with request(s) pending at the time of tuition payments will be billed at the out-of-state rate. Students subsequently determined to be in-state can request reimbursements from the Office of Student Accounts.

The Request for Domicile Reclassification form is available in the Registrar's Office, Krug Hall, Room 102, (703) 993-2441. Questions should be addressed to the Registrar's Office.

**Penalties**

A student, who fraudulently or knowingly provides false information for the purpose of achieving in-state status, may be required to pay retroactively the out-of-state tuition differential of the enrolled term(s) intervening between the fraudulent application and its discovery. The student may also be subject to dismissal or other disciplinary action.

**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 a.m. to 4:30 p.m. For information, call 993-2710.

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**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 work-study employment. Awards are based on financial need, although there are some alternative financial aid resources available for those who may not qualify for need-based financial aid. 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. Financial aid counselors are assigned to students alphabetically, based on students' last names and are available daily on a by-appointment basis.

To apply for financial aid, each year new and currently enrolled students must complete a Free Application for Federal Student Aid (FAFSA). Priority consideration for all sources of financial aid is given to those students whose financial aid applications are on file with the student aid office by March 1. To meet this priority filing date, students should file the FAFSA as soon as possible after January 1. Students applying for financial aid for the first time at George Mason are required to provide financial aid transcripts from all colleges previously attended, even if no aid was received at those schools.

Financial aid for Summer Term is generally limited to those students graduating at the end of the end of the summer or fall terms. Contact the Office of Student Financial Aid for specifics regarding summer financial aid eligibility.

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, in accordance with federal guidelines; and
Federal Programs

Federal Perkins Loan Program

Long-term, 5 percent interest loans from the federally sponsored Perkins Loan Program are available to qualified students who demonstrate significant financial need. Repayment begins nine months after graduation or after the student drops below half-time status. Repayment may be deferred under certain circumstances for students entering graduate school, the Peace Corps, VISTA, or military service. Students must be enrolled at least half-time to qualify for this program. Half-time is defined as six credit hours for both undergraduate and graduate students.

Federal Supplemental Educational Opportunity Grant (FSEOG)

A limited number of direct federal grants are available to undergraduate students who are enrolled at least half-time and who show exceptional financial need.

Federal Work-Study (FWS)

Funds are available on a first-come, first-served basis to provide part-time work opportunities to help meet college expenses. Students must generally be enrolled at least half-time and must demonstrate financial need. FWS may also be available for students during Summer Term.

Federal Pell Grant

Federal Pell Grant funds are available to undergraduate students pursuing their first bachelor's degree who are enrolled in an approved program and who demonstrate exceptional financial need. Eligibility for these grants is determined by the U.S. Department of Education directly from the Free Application for Federal Student Aid (FAFSA).

Federal Family Education Loan Programs (FFELP)

Federal Stafford Student Loan (FSSL)

All undergraduate and graduate students enrolled at least half-time in an approved program are eligible to borrow money under the low-interest FSSL program. Students who demonstrate exceptional financial need are eligible to apply for "subsidized" loans and have the interest that accrues on these loans paid by the federal government while they are in school. Students who do not demonstrate financial need are eligible to borrow "unsubsidized" loans and are responsible for paying or capitalizing the interest that accrues while they are in school. Some students may qualify for Stafford loans that are partly subsidized and partly unsubsidized. The Office of Student Financial Aid will specify students' eligibility under these two programs.

Undergraduates may generally borrow between $2,625 and $5,500 per academic year depending on the student's grade level. Independent undergraduate students may be eligible to borrow an additional $4,000 to $5,000 under the unsubsidized Stafford program. There are cumulative borrowing limits under both programs.

Repayment of the loans begins six months after the student graduates or after the student drops below half-time enrollment status. These loans are made by commercial lenders, using applications available in and processed by the Office of Student Financial Aid.

Federal Parent Loan for Undergraduate Students (FPLUS)

The FPLUS loan is an additional source of financial aid to be used in conjunction with the Federal Stafford Student Loan program. This program can assist middle-income families and others who are unable to meet the costs of education through grants, scholarships, loans, and other financial aid programs. All parents of dependent undergraduate students are eligible to apply for this non-need, credit-based loan.

The FPLUS program has no income ceiling, so anyone may apply to participate. As with all other federal aid programs, students must have a current Free Application for Federal Student Aid (FAFSA) on file to be considered for this program. Detailed information about and applications for this loan program may be obtained from the Office of Student Financial Aid.
Virginia Programs for State Residents

Virginia Undergraduate Scholarship (VAUS/VA) Grant
These scholarship/grant funds are available on a first-come, first-served basis to undergraduate students who are enrolled for at least six credits each semester, who are Virginia residents, and who demonstrate financial need. Priority consideration is given to those students enrolled on a full-time basis. Eligibility for the VAUS/VA Grant is based on information received from the FAFSA.

Virginia College Scholarship Assistance Program (CSAP) Grant
This program uses a combination of federal and state funds to provide additional assistance to students who are enrolled at least half-time, are Virginia residents, and who demonstrate significant financial need. Eligibility for CSAP is based on information received from the FAFSA.

Virginia Work-Study Program (VWS)
VWS is a state-supported program providing part-time employment opportunities for students who are enrolled at least half-time, demonstrate financial need, and are Virginia residents. For further information on this work-study program, contact the Virginia Work-Study Coordinator in the Office of Student Financial Aid.

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 financial need and are available to graduate and undergraduate students. 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 through the College of Nursing and Health Science.

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

Emergency Loan Programs
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 justification, will result in financial suspension. Students financially suspended for nonpayment of an emergency loan are ineligible for any future emergency loans. Application is made through the Office of Student Financial Aid.

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 Aid.

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 personnel, 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 the Fairfax 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 Department of Veterans Affairs (formerly Veterans Administration) with the school certification.

4. Students must request that the veterans' counselor send an enrollment certificate to the VA Regional Office (VARO) each school year (each semester if the students are under half-time, on active duty, or in continuing education). Students must apply separately for Summer Term. 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 the Fairfax 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 (also 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>
</tr>
</thead>
<tbody>
<tr>
<td>Full time</td>
<td>12 hours</td>
</tr>
<tr>
<td>3/4 time</td>
<td>9-11 hours</td>
</tr>
<tr>
<td>1/2 time</td>
<td>6-8 hours</td>
</tr>
<tr>
<td>less than 1/2 time</td>
<td>4-5 hours</td>
</tr>
<tr>
<td>more than 1/4 time</td>
<td>less than 4 hours</td>
</tr>
</tbody>
</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 Department of Veterans Affairs 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 the Fairfax 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 Services Office.

Virginia War Orphans Education Program
The Virginia War Orphans Education 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

http://catalog.gmu.edu
Registration Procedure

The Schedule of Classes, distributed by the Registrar's Office before priority registration each semester, contains written instructions for registration. Courses listed in the Schedule of Classes may be withdrawn if 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.

Unless stated otherwise in the Schedule of Classes, 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; or (5) there is an unresolved financial hold or encumbrance.

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, guest matriculants, and newly admitted graduate students are required to obtain an adviser's approval for registration. Students in the departments of Biology, Electrical and Computer Engineering, Foreign Languages and Literatures, Music, and Physics and Astronomy, in the College of Nursing and Health Science, and in the Institute of the Arts must obtain their adviser's approval for registration each semester. All students are encouraged to consult with their advisers concerning course registration.

Preregistration

Preregistration for the next semester, including the Summer Term, begins after mid-semester and is by priority groups.

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 de-
scribed 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 and available at the Registrar's Office. This form may be submitted at any time. Since such withholding may prohibit the Registrar's Office from providing confirmation of enrollment to prospective employers or even the 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 use the library services 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 using the telephone registration system (4GMU) or 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 $25 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 the Tuition Liability Scale published in this catalog and the Schedule of Classes. 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 the telephone system (4GMU). 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 in person to the Registrar's Office.

Schedule changes are made only during the Schedule Adjustment period, as 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 drop period without academic penalty, but only for nonacademic reasons preventing com-
To be eligible for Consortium enrollment, students must be currently enrolled, in good academic standing, and have attained at least junior status. George Mason University students who wish to retain active status may be registered in Consortium courses. Graduate students must be currently enrolled, in good academic standing, and in a degree-seeking status. Undergraduate students must be currently enrolled, in good academic standing, and have attained at least junior status.

Any academic courses that do not carry credit at the visited institution will not be counted for credit at George Mason University. Courses that do not carry credit at George Mason, but do receive credit at the host institution, will not be given credit at George Mason University.

Registration for Air Force ROTC course work at the University of Maryland—College Park is processed through the Office of the Consortium. Air Force ROTC courses will not be given hour credits at George Mason University.

Auditing courses through the Consortium is not permitted.

George Mason Consortium students pay the George Mason tuition rate to the George Mason Office of Student Accounts. Credits taken through the Consortium are counted toward full/part-time status at George Mason University for purposes of financial aid. Any additional fees are to be paid by the student to the visited institution.

Special inquiries and further information is available through the Office of the Registrar. Registration is processed through the Office of the Registrar by the Consortium coordinator. Schedules and catalogs of participating universities are located in the same office.

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

- contracts
- allocate decision rights
- rewards/punishments
- monitoring/marking

http://catalog.gmu.edu
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. Responsibility for reading the catalog and knowing and fulfilling the requirements of a specific baccalaureate degree rests with the student. To assist in the advising process, the university provides a computerized analysis of academic progress and computerized tracking of approved modifications to a student's degree plan.

Since individual departments establish their own advising processes, students should check with their departments for the appropriate procedures. 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).

See Adviser's Permission to Register in the Registration section for categories of students who may not register until they have seen an adviser and Academic Advising Center section at right.

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.

Results of this advising session should be a matter of record, with any approved modifications being entered into the student's computerized degree plan. Students become responsible for fulfilling this requirement during the semester at the end of which they will have completed 60 or more acceptable hours.

Although an upper-division student who has filed an approved program of study is normally not required to consult again with an academic adviser, it remains the student's responsibility to seek approval for any change to the program, so that the computerized degree plan may be kept up to date. In particular, once a student has completed 60 hours, a change of major requires an extended session with an adviser in the new major and approval of a new program of study before the change is complete.

Those in lower-division status may change majors by filing a Change of Major form with the registrar. These are minimal advising procedures to be followed in all undergraduate segments of the university; individual units may require 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, and veterinary 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 consists of faculty members from appropriate departments within the university who know the admissions requirements and standards of the professional medical science programs, and who will help students apply to professional schools. Students seeking guidance in gaining admission to a professional medical program may write to the Chair, Medical Sciences Advisory Committee, Advising Center, Room 205, Finley Building, George Mason University, Fairfax, Virginia 22030-4444.

Attendance Policies

Students are expected to attend the class periods of the courses for which they register. Although absence alone is not reason for lowering a grade, students are not relieved of the obligation to fulfill course assignments, including those that can only be fulfilled in class. In particular, a student who misses an exam without an excuse may have the course grade lowered. Students who fail to participate (by virtue of extensive absences) in a course in which participation is a factor in evaluation may have the grade lowered.

Final Examination Policies

Final examinations are normally given at the end of all undergraduate courses. In predominantly laboratory courses, examinations may be given in the last regularly scheduled laboratory period. Scheduled final examinations should not exceed two hours and 45 minutes. Changes in location or time of in-class final examinations must be approved by the appropriate department chair and appropriate dean. A professor who is considering the assignment of a take-home examination should inform the students at the beginning of the semester. Such examinations should be distributed by the beginning of the last week of classes so that students can coordinate them with preparation for other examinations. Students should not be required to submit examinations prior to the date of the regularly scheduled examination for a class. Final reexaminations are not permitted.

Absence from Final Examinations

Absence from final examinations will not be excused except for sickness on the day of the examination or for other cause approved by the student’s academic dean. The effect of missing a final examination shall be determined by the weighted value of the examination as stated in the course syllabus provided by the instructor. A student whose absence from an examination is excused may take a special examination within 10 days on a date to be arranged between the student and the instructor.

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 the Registrar 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).

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.

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.
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's permanent address 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.

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 term) 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. In the case of first suspension, the two consecutive periods are extended to three if the student attempts less than 12 credit hours during either of those periods. A first suspension also results from receiving a second probation.

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 term, in which case it is for one semester. A second suspension is for one calendar year, for example, two regular semesters and a summer term. 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; however, a student will be dismissed at the end of that period if the dismissal criteria apply. Two consecutive warnings after returning from a suspension results in a new 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 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
For example, a student who transfers 30 credit hours to George Mason from another institution and has attempted 40 credit hours at George Mason must maintain a minimum level of performance of 1.571 on the courses taken at George Mason.

After being dismissed from the university a student is usually ineligible to reenter.

Effect of Academic Standing on Student Activities

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, or 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.

A student whose eligibility for an activity requires the completion of a semester will have fulfilled that requirement when the student’s publicly scheduled exams are over, unless the student’s continued eligibility depends on the grades received. In the latter case, the student will not become eligible until the end of the semester as defined for probation and suspension purposes.

The Undergraduate Major

Academic Advising

Each undergraduate is urged to see an academic adviser periodically to discuss academic programs, educational goals, and career plans. In consultation with the adviser, each degree student should plan an academic program to meet the general degree requirements and the specific requirements within a major field. Responsibility for reading the catalog and knowing and fulfilling the requirements of a specific baccalaureate degree rests with the student.

Individual departments establish their own advising processes; each student should check with the appropriate department. Students who have not yet decided on a major or who are considering a change of major are advised in the Academic Advising Center.

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 the Registrar.

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.

Minors

Students may elect minor programs of study in addition to their major fields by completing the Minor section of the Declaration of Major form. Minors require between 15 and 21 credit hours of study. At least 6 hours of the minor must be completed at George Mason and no more than 3
hours of D in the minor is accepted. Students interested in a minor should consult the departmental listing to determine whether a minor is offered and its specific requirements. See the Certificates and Interdisciplinary Minors section of this catalog for more information.

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 A</th>
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<td>Philosophy</td>
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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, osteopathy, 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 BIS 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. For degree application, the student needs to present credits that satisfy all the requirements for the second degree with at least 30 hours earned at George Mason. If the first degree was or is being earned at George Mason, at least 30 semester hours of additional GMU credit, which hasn't been applied to the first degree, must be presented.

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 BIS student attempting this recognition is evaluated by the BIS 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 designated in the Schedule of Classes.

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 advisor 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 counsels 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
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 academic 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 of-
office in any organization or activity associated with the university. Ineligibility to participate in any activity representing the university on 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 aids 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 of 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.
All of the programs and activities described in this section of the catalog report directly to the Office of the Provost and Vice President for Academic Affairs.

Individualized Study Program

Administration
Randolph H. Lytton, Assistant Dean for Undergraduate Studies
Krug Hall, Room 213

Bachelor of Individualized Study (BIS)

The BIS 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 BIS 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 BIS program after an information/counseling session with a BIS counselor. Appointments for these sessions may be made by calling (703) 993-2084. The BIS 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 BIS 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 30-semester-hour general education requirement includes 6 hours in English Composition.
(ENGL 101 or 100, and 302, or equivalent). The remaining 24 hours must be distributed among the following academic areas: (1) humanities, (2) social or behavioral sciences, and (3) science or mathematics. At least 6 hours must be taken in each of these areas.

In conjunction with an adviser from the full-time faculty of the university, a BIS student also designs and completes an individualized study concentration relevant to his or her nontraditional educational interest. The integrated, interdisciplinary BIS concentration constitutes the student’s “individualized major.” The concentration 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 concentration is a minimum of 33 semester hours of credit (including BIS 490). At least 18 hours of the concentration must be upper-division course work (300, 400, or 500 level). No more than 6 hours of D grades may be included in the concentration. Courses in the concentration may not be counted toward general education requirements.

As a part of the BIS concentration, the student will complete a 3-semester-hour final project, BIS 490: Bachelor of Individualized Study Project. Normally it is completed in the final 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 BIS program. A grade of C or better in BIS 490 is required to graduate with a BIS degree. The student’s academic adviser and either one or two other faculty members (or other qualified professionals) constitute the evaluation committee for the BIS 490 project.

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 a student additional time to complete the project. The IP grade is automatically changed to a F grade 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 of the semester.

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

- Art, Dance, or Music Therapy
- Aviation Administration
- Children’s Literature and Illustration
- Computer Graphics and Art
- Convention Planning and Management
- Corporate/Community Relations
- Eighteenth Century Medicine
- Family Counseling
- Fire Science Administration
- Government Administration/Communication
- Health Care Administration
- Human Resources Management
- Legal Research: Methods and Applications
- Performing Arts Management
- Pre-law
- Procurement and Contracts Management

Credit for Nontraditional Modes of Learning

The BIS 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 BIS students to take courses at other institutions.

The BIS degree allows a student to receive college credit for learning acquired through a variety of nontraditional methods.

- A maximum of 30 semester hours for experimental learning demonstrated by a portfolio from approved educational institutions
- Credit earned through CLEP, USAFI, and DANTES
- Course equivalency examinations offered by academic departments
- Correspondence courses, television courses, and other nontraditional modes certified by regionally accredited institutions of higher learning
- Certain recognized certificate programs
- Course work taken through the military, government agencies, and some private corporations if such course work is indexed by the American Council on Education

BIS Residency Requirement in Northern Virginia

The BIS program draws upon the educational resources of Northern Virginia, including George Mason University (which awards the BIS degree), Marymount University, Northern Virginia Community College, Strayer College (Northern Virginia campuses), Northern Virginia Graduate Center of Virginia Tech, and Continuing Educa-
tion Center of the University of Virginia. Approved courses completed at any of the above institutions count toward the 30-semester-hour residency requirement of the BIS degree. The 30-semester-hour residency requirement must include 12 hours of advanced-level courses (300 or above) in the BIS concentration.

University Scholars Program

University Scholars
Each year George Mason University awards four-year scholarships to top high school graduates who have shown superior academic achievement, leadership ability, and an exemplary record of school and community service. The Mason and Presidential Scholars reside in a common residence hall and share a University Scholars Center. Together the scholars form a dynamic learning community within the university known as the University Scholars Program, which is administered by the Office of the Provost.

The program draws to George Mason a special caliber of student who is actively involved in all facets of academic and student life. In addition to excelling in their respective academic areas, the scholars have repeatedly emerged in a variety of student leadership positions.

Intellectual dialogue is fostered among scholars, professors, and George Mason administrators through stimulating seminars, discussion groups, cultural activities, and continued active involvement in their home and global communities through service projects, internships on Capitol Hill, and other events and organizations that supplement their academic experiences.

The peer support and stimulating atmosphere of the University Scholars Program reflect George Mason's academic commitment to providing a breadth of study, integration of knowledge, and practical application of classroom learning.

University Courses

University Courses are special interdisciplinary academic offerings that encourage undergraduates to interact with some of George Mason's most prominent scholars and professors. Proposals for university courses are developed by distinguished faculty members, frequently by several acting together. After review and approval by the Faculty Senate Academic Policies Committee, these courses are administered by the Office of the Provost. Because of the interdisciplinary nature of the courses, each one is carefully evaluated for the baccalaureate requirements they fulfill; they can often be applied toward the satisfaction of general-education requirements.

University Seminars
The University Seminars are offered exclusively to students who have demonstrated strong academic performance. They are developed to give high-ability freshmen and advanced-standing students the opportunity to study with a senior professor in a small classroom setting. The Freshman Seminars (UNIV 190) are open to eligible first-year students and are taught exclusively by the Robinson Professors. Qualified students with 30 or more semester hours are invited to participate in the UNIV 390 seminars, which are taught by Robinson Professors and other faculty with the rank of full professor.

Upper-Level University Courses
Upper-level University Courses are open to all students unless specific prerequisites are indicated. They are usually offered only once. The two exceptions are UNIV 301 Great Ideas in Science and UNIV 441 AIDS: Its Impact in Our Society, which are offered at least once a year.

The following are regularly offered University Courses:

UNIV 132 Development of Scientific Thought (3)
UNIV 190 Freshman Seminar (3)
UNIV 301 Great Ideas in Science (3)
UNIV 390 University Seminar (3)
UNIV 441 AIDS: Its Impact in Our Society
College of Arts and Sciences
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 undergraduate 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
Hans Bergmann, Associate Dean for Academic Affairs
Zita Tyer, Associate Dean for Administration
Joseph M. Kanyan, Assistant Dean for Student Academic Affairs
Toni-Michelle Travis, Assistant Dean

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

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>A. General Education</th>
<th>50-62</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communication</td>
<td>a. Written</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>COMM 100, 101, or 102</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>b. Oral</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>English (ENGL 100 or 101)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>c. Foreign Language</td>
<td>0-12</td>
</tr>
</tbody>
</table>

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 the CAS student academic affairs office about a possible waiver of this requirement.

2. Analytical Reasoning | 3 |
Logic (PHIL 173 or 376) or mathematics (except MATH 105, 271, and 272), STAT 250, or DESC 200.

3. Humanities | 12 |
a. Literature | 6 |
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 | 3 |
Art, dance, film (ENGL 332), music, or theater (lecture, studio, ensemble, or private lessons).
c. Philosophy or religious studies | 3 |
A logic course does not satisfy this requirement.

4. Social Science | 12 |
a. Economics, geography, government, history | 6 |
b. Anthropology, psychology, sociology | 6 |

5. Natural Science | 8 |
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 | 6 |
Six credits must be earned in courses devoted to non-Western culture. This requirement is waived for a student who has attended, for four or more years, a native school in a non-Western country. Requests for a waiver should be made through the student academic affairs office.

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 319, 320, 380, 381
- FREN 451
- GEOG 101, 316, 325, 330
- GOVT 332, 333
- MUSI 103
RELI 211, 212, 313, 314, 315, 337, 490
RUSS 353, 354

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

C. Electives ................................................. 16-40
Total minimum semester hours .................. 120
(45 of these must be upper-division hours)

Physical Education Courses
Activity courses offered by the College of Nursing and Health Science (Physical Education and Parks, Recreation, 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 ......................... 40-63

1. English and Literature .................. 12
   a. 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.
   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, 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, engineering, 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.

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, GESS, Mathematical Sciences, Physics, Psychology, and Public and International Affairs.

C. Electives ................................................. 17-42
Total minimum semester hours .................. 120
(45 of these must be upper-division hours)

Physical Education Courses
Activity courses offered by the College of Nursing and Health Science (Physical Education and Parks, Recreation, 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 ENGL 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 College of Nursing and Health Science (Physical Education and Parks, Recreation, 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 121, 130, 150, 151 3
      (equivalent to Literature I)
   b. PAGE 122, 131, 152, 153 3
      (equivalent to Literature II)
   c. PAGE 121, 122, 150, 151, 152, 153 3
      (equivalent to fine arts)
   d. PAGE 130, 131, 150, 151, 152, 153 3
      (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 121, 122, 130, 131, 150, 151 3
      (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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>PAGE 120</td>
<td>PAGE 122</td>
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<tr>
<td>PAGE 121</td>
<td>PAGE 125</td>
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<td>PAGE 130</td>
<td>PAGE 131</td>
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<tr>
<td>PAGE 150</td>
<td>PAGE 152</td>
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<tr>
<td>PAGE 151</td>
<td>PAGE 153</td>
</tr>
<tr>
<td>Elective</td>
<td>Elective(s)</td>
</tr>
<tr>
<td>3-4</td>
<td>3-6</td>
</tr>
<tr>
<td>15-16</td>
<td>14-17</td>
</tr>
</tbody>
</table>

http://catalog.gmu.edu
Physical Education Courses
Activity courses offered by the College of Nursing and Health Science (Physical Education and Parks, Recreation, and Leisure Studies) cannot be counted toward the hours required for a degree in the College of Arts and Sciences.

Teacher Licensure (Certification)
Students who wish to become elementary, middle, or secondary school teachers should consult the sections on licensure (certification) found in the catalog under the Graduate School of Education.

Minors
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
- Art History
- Astronomy
- Biology
- Chemistry
- Classical Studies
- Contemporary Europe
- Film and Media Studies
- Foreign Languages and Literatures
- Global Systems
- Geography
- History
- Linguistics
- Music
- Philosophy
- Physics
- Religious Studies
- Sociology
- Studio Art
- Urban and Suburban Studies
- Women’s Studies

Students may elect a minor by completing the appropriate section of the “Declaration of a Major” forms must be made with, and approved by, the faculty adviser and the director of the program.

Study Abroad
Majors are strongly encouraged to participate (for a summer, a semester, or a year) in a study abroad program related to their regional concentration and to their chosen language. Interested students must work out their plan of study with their faculty adviser and the director of the program. With approval of the faculty adviser and program director, language study abroad can count toward the language requirement for the major.

Page Students
The general education requirements (with the exception of foreign language) for a B.A. degree are satisfied by successful completion of the Program for Alternative General Education (PAGE). See PAGE category in this catalog. Also, contact the PAGE office for sample schedules for Study of the Americas majors.

Art History

Faculty
Professor: Mattusch
Associate Professors: ffolliott, Todd (Chair)
Assistant Professor: Butler
Lecturers: Bolon, Lifschitz, Mills, O’Brien, Poole, Storr

Course Work
The Art History Department offers all course work designated ARTH in the Course Descriptions section of this catalog.

B.A. Degree in Art with a Major in Art History
The major program prepares students for graduate study in art history, as well as for research and professional work. The B.A. in art does not satisfy all requirements for public school teaching.

In addition to the general degree requirements for a B.A. degree, students majoring in art history must complete 39-40 credit hours as follows:
1. Studio Art (ARTS) elective (3-4); 102, 202, or 351; others with permission of the Division of Art Studio in the Institute of the Arts
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 and up to 6 credits in art history internships may be applied toward requirements for the major with prior written approval of the departmental adviser. Students contemplating graduate study in art history should acquire a reading knowledge of French and/or German. Students contemplating museum careers should consider electives from the following: ACCT 201, COMM 330, ENGL 410, 503, MGMT 300, MKTG 300.
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 or minors 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 593, 594, 596, 599. See Course Descriptions section of this catalog.

<table>
<thead>
<tr>
<th>Sample Schedule for Concentration in Art History</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
</tr>
<tr>
<td>ARTH 200</td>
</tr>
<tr>
<td>ARTS elective</td>
</tr>
<tr>
<td>HIST 101</td>
</tr>
<tr>
<td>ENGL 101</td>
</tr>
<tr>
<td>Foreign language</td>
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<tr>
<td><strong>Second Semester</strong></td>
</tr>
<tr>
<td>ARTH 201</td>
</tr>
<tr>
<td>HIST 102</td>
</tr>
<tr>
<td>Mathematics or logic</td>
</tr>
<tr>
<td>NonWestern culture</td>
</tr>
<tr>
<td>Foreign language</td>
</tr>
<tr>
<td><strong>Third Semester</strong></td>
</tr>
<tr>
<td>300-level ARTH elective</td>
</tr>
<tr>
<td>Literature</td>
</tr>
<tr>
<td>Natural science</td>
</tr>
<tr>
<td>ANTH 114</td>
</tr>
<tr>
<td>Foreign language</td>
</tr>
<tr>
<td><strong>Fourth Semester</strong></td>
</tr>
<tr>
<td>300-level ARTH elective</td>
</tr>
<tr>
<td>Oral communication</td>
</tr>
<tr>
<td>Natural science</td>
</tr>
<tr>
<td>300-level ARTH elective</td>
</tr>
<tr>
<td>Foreign language</td>
</tr>
<tr>
<td><strong>Fifth Semester</strong></td>
</tr>
<tr>
<td>300-level ARTH electives</td>
</tr>
<tr>
<td>Literature</td>
</tr>
<tr>
<td>ENGL 302</td>
</tr>
<tr>
<td>Elective (300+ level)</td>
</tr>
<tr>
<td><strong>Sixth Semester</strong></td>
</tr>
<tr>
<td>300-level ARTH electives</td>
</tr>
<tr>
<td>ARTH 393</td>
</tr>
<tr>
<td>ANTH, PSYC, SOC</td>
</tr>
<tr>
<td>Elective (300+ level)</td>
</tr>
<tr>
<td><strong>Seventh Semester</strong></td>
</tr>
<tr>
<td>300-level ARTH elective</td>
</tr>
<tr>
<td>400- or 500-level ARTH elective</td>
</tr>
<tr>
<td>ARTH 393</td>
</tr>
<tr>
<td>Electives (300+ level)</td>
</tr>
<tr>
<td><strong>Eighth Semester</strong></td>
</tr>
<tr>
<td>ARTH 393</td>
</tr>
<tr>
<td>Elective</td>
</tr>
<tr>
<td>PHIL 356</td>
</tr>
<tr>
<td>Electives (300+ level)</td>
</tr>
</tbody>
</table>

**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 historical context.
1. 100- or 200-level ARTH courses (6)
2. 300-level Ancient through Medieval courses (3-6)
3. 300-level Renaissance through the 20th century ARTH courses (3-6)
4. 400-level ARTH course (3)

**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 majors are available in the PAGE office.

**Biology**

**Faculty**
Professors: Emsley, Ernst, Hart, Lawrey, Morowitz (Robinson Professor), Shaffer, Skog, Soyfer (Distinguished University Professor), Stanley, Taub, Willett
Associate Professors: Adamkewicz, Andrykovitch (Chair), Birchard, Bradley, Brown, Heliotis, Jonas, Jones, Kelso, Oates, Rockwood, Royt, Sherald, Torzilli, Wilson
Assistant Professors: Christensen, Walbridge
Affiliate Faculty: Bekken, Cook, Dillon, Jesse, Kass, Leitch, Shoemaker, Sokos, Strassinger, Turner, Willis
Lecturers: Egghart, Redhead

**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 assuring 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 develop exper-
tise 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 postgraduate studies in medicine, dentistry, veterinary medicine, wildlife management, fisheries biology, or marine science. For additional information contact the Biology Department, 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 302 or 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 302 or 383
2. CHEM 211, 212, 313, 314, 315, and 318 or 320
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 300 (2)
   - BIOL 312 (4)

---

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

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>First</td>
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<td>CHEM 211</td>
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### Sample Schedule for B.S. with Major in Biology

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<td>MATH 110 or 113</td>
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<thead>
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<tr>
<td></td>
<td>CHEM 212</td>
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<tr>
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<td>MATH 111 or 114</td>
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<th>Credits</th>
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<th>Semester</th>
<th>Course</th>
<th>Credits</th>
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<td>CHEM 314 and 318 or 320</td>
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<td>ENGL 302</td>
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<td>PHYS 106 or 343</td>
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<td>ENGL 302</td>
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<td>PHYS 107 or 345</td>
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<th>Semester</th>
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<th>Credits</th>
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<td>Eighth</td>
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<tr>
<td></td>
<td>Elective</td>
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</tbody>
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Courses Approved for Undergraduate Biology Major

Credit: GEOL 202, 307, 309; CHEM 335, 563, 564, 565
Specialization in Biotechnology
A selection of courses that provides essential skills to students seeking employment in the field or who wish to include an applied component in their undergraduate training in biology.

In addition to the general requirements for the B.S. degree, the following courses are required:
1. 18 hours in chemistry, including CHEM 211, 212, 313, 314, 315, and 318 or 320.
2. 16 hours in mathematics and physics, including MATH 113, 114, and PHYS 343, 344, 345, and 346.
3. 29-30 hours in biology, including BIOL 213, 300, 302, 303, 304, 311, 383, and either 307 or 377.
4. 18 hours of biotechnology, including BIOL 380, 385, 402, 403, 452, and 482.
5. Recommended electives: CHEM 321, 335, BIOL 312, 552, 553, 556, 563, 564, 568.

Advising
All biology and medical technology majors 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 Licensure (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 licensure (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 a minimum 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 and Interdisciplinary Minors 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 advisor 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 3-4 hour course at the 300, 400, or 500 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 advisors. 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 unable 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, 311, 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 380, 383, 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

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<th>Preprofessional Phase</th>
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<td>MATH 110 or 113</td>
<td>STAT 250</td>
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<td>ENGL 101</td>
<td>MTCH 200</td>
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<td>Third Semester</td>
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<td>CHEM 314 and 318</td>
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<td>Literature</td>
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<td>Social science*</td>
<td>Social science*</td>
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http://catalog.gmu.edu
Fifth Semester  
CHEM 321  5  
ENGL 302  3  
BIOL 311  4  
Elective  3  15

Sixth Semester  
CHEM 452  4  
BIOI 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
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, Davics, Davis (Associate Chair), Hussam, Roth, Schreifels, Slayden
Assistant Professors: Foster, Honeychuck

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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<td>CHEM 212</td>
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<td>ENGL 101</td>
<td>Literature</td>
</tr>
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<td>Elective (e.g., BIOL 213)</td>
<td>Elective (e.g., BIOL 303)</td>
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<td>CHEM 318</td>
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<tr>
<td></td>
<td>15</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:

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<th>Course</th>
<th>Credits</th>
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<td><strong>Total</strong></td>
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In addition to the general requirement for the B.S. degree, candidates must complete all those courses for the B.A. degree plus CHEM 422, 423, 441, and 445. Mathematics must include MATH 113, 114, 213, and 214. 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

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<tr>
<th>Semester</th>
<th>First Semester</th>
<th>Second Semester</th>
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<tr>
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<tr>
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<td>Elective</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
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</tr>
<tr>
<td></td>
<td><strong>15</strong></td>
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</tr>
</tbody>
</table>

**Third Semester**

|                | **MATH 213**                            | **CHEM 313**                             |
|                | **PHYS 343**                            | **CHEM 321**                             |
|                | **CHEM 315**                            | **MATH 214**                             |
|                | **CHEM Elective**                       | **PHYS 345**                             |
|                | **PHYS 344**                            |                                          |
|                | **Total**                               | **Total**                                |
|                | **14-15**                               | **14-15**                                |

**Fourth Semester**

|                | **CHEM 331**                            | **CHEM 332**                             |
|                | **CHEM 422**                            | **CHEM 337**                             |
|                | **CHEM 336**                            | **CHEM 423**                             |
|                | **Literature**                          | **CHEM 320**                             |
|                | **Electives**                           | **ENGL 302**                             |
|                |                                          | **Elective**                             |
|                |                                          | **Total**                                |
|                |                                          | **17**                                   |

**Sixth Semester**

|                | **CHEM 441**                            | **CHEM 445**                             |
|                | **Chemistry elective**                  | **Chemistry elective**                   |
|                | **Electives**                           | **Electives**                            |
|                | **Total**                               | **Total**                                |
|                | **14-15**                               | **14-15**                                |

B.S. Degree with a Major in Earth Systems Science (Environmental Geochemistry)

For a description of the degree see Department of Geography and Earth Systems Sciences.

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 consult with the premedical adviser for chemistry.

Chemistry Club

The Chemistry Club provides a social and informational network for students. It serves the Chemistry Department by sponsoring informational programs and allowing students to work at university 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 Geology, the Department of Chemistry offers interdisciplinary 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. In conjunction with the Institute for Computational Sciences and Informatics, the department offers work leading to a Ph.D. in Computational Sciences with an emphasis in Computational Chemistry. The department also offers work leading to a Ph.D. in Environmental Science and Public Policy. Information about graduate programs may be obtained from the Graduate School catalog and from the Department of Chemistry.

Certificate Program in Environmental Chemistry

The certificate program is designed for students seeking employment in the field of environmental science and technology, and for students who intend to pursue graduate studies in this area. Inquiries should be made to the Certificate Coordinator, Department of Chemistry.
Certificate Requirements
The certificate requires satisfactory completion of 35 semester hours of courses. Students receiving the certificate must hold a baccalaureate degree or be receiving the degree from George Mason University at the time they receive the certificate. Only courses with a C or better are counted toward the certificate program.

The 35 semester hours include:
EVSC 203, 205, 206
CHEM 211, 212, 313, 314, 315, 318, or 320, 321, 331, or 335.

Classical Studies

Faculty
Burns (Philosophy and Religious Studies), Chamberlain (Foreign Languages and Literatures), Davis (Foreign Languages and Literatures), Lytton (History), Mattusch (Art and Art History), Rutledge (English), Wehrle (Philosophy and Religious Studies), Winkler (Foreign Languages and Literatures) (Chair)

B.A. Degree with a Major in Classical Studies
Course work toward a degree in Classical Studies may be pursued in either one of two areas of concentration: a B.A. in Classical Studies with emphasis 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 general 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 division level (numbered 300 or above). Courses required 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, 303, 309 (with approval), and 480;
- 9 hours in classical art, literature, philosophy, European studies, or religious studies from the following: ARTH 102, 111, 321, 322, 323, 333, 399 (with approval), 420; CLAS 250, 260, 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, 260, 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 of 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>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>Classical literature</td>
</tr>
<tr>
<td>Social science B</td>
<td>Social science B</td>
</tr>
<tr>
<td>LATN 101</td>
<td>LATN 102</td>
</tr>
<tr>
<td>Math or logic</td>
<td>Oral communication</td>
</tr>
<tr>
<td>Non-Western culture</td>
<td>Non-Western culture</td>
</tr>
</tbody>
</table>

http://catalog.gmu.edu
Communication

Faculty

Professors: Boileau (Chair), Broome, Decker, Friedley, Manchester, Taylor

Associate Professors: Akwule, Lont, Looney

Assistant Professors: S. Muir, Schulman

Instructors: J. Muir, Tomasic, J. McCafferty

Writer-in-Residence: Puller

Adjunct Professors: Garver, Gaudino, Gladis, Greene, Joffe, Lieb, Kane, Keever, Kirks, M’Bayo, Nwokeafor, O’Keefe, Paglin, Rizvi, Schreiner, Siegel

Lecturers: Braithwaite, Brennan, Burchett, Burke, Chaaaban, Donohue, Hansche, Hillery, Johnston, Kanu, Kehoe, Mangus, Mathison, McNair, L. McCafferty, Schaefer

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 250 (3) (COMM 400 can substitute)
   - COMM 300 (3)
   - COMM 301 (3)
   - COMM 302 (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, 499.

No more than 6 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 advertising, public relations, mass communication, telecommunications, media criticism, international mass communication, interpersonal communication, small group communication, conflict management, intercultural communication, speech writing, public communication, political communication, pre-law, rhetoric, print journalism, broadcast journalism, broadcast performance, radio production, and T.V. production.

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, Student Video Center, 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, 101, or 102.

The general education requirements for COMM majors, except foreign language and COMM 100, 101, or 102 may be satisfied by successful completion of the Plan for Alternative General Educa-
tion (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.

Economics

Faculty
University Professor: Buchanan
Professors: Bennett, Bloch, Crain, Heiner, Moore, Phillips, Rowley, Snively (Emeritus), Tollison, Vanberg, Vaughn, Wagner (Chair), Williams
Associate Professors: Chung, Congleton, Cowen, Grier, Levy, Reid, Roback, Wiest
Assistant Professors: Meyer, Palmer, Ramirez, Thorbecke

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

B.A. Degree with a Major in Economics
In addition to 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 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
3. DESC 200 and 202
4. MATH 113 and 114
5. CS 103 or MIS 201
6. A two-semester sequence in a laboratory science
7. 12 hours in one of the following areas: anthropology, geography, government, history, mathematics (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 12 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 Licensure (Certification)
Students who wish to become elementary, middle, or secondary school teachers should consult the sections on licensure (certification) under the Graduate School of Education. Those interested in secondary school teaching 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. 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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>ECON 103</td>
<td>ECON 104</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>Literature</td>
</tr>
<tr>
<td>MATH 108</td>
<td>Foreign language</td>
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<td>Foreign language</td>
<td>PHIL or RELI</td>
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<tr>
<td>Communication</td>
<td>Non-Western culture</td>
</tr>
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<td></td>
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<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 306</td>
<td>ECON 311</td>
</tr>
<tr>
<td>Literature</td>
<td>ENGL 302</td>
</tr>
<tr>
<td>Natural science</td>
<td>Foreign language</td>
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<td>DESC 202</td>
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<tr>
<td>DESC 200</td>
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http://catalog.gmu.edu
Fifth Semester

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<tr>
<td>Fine or performing arts</td>
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<tr>
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Sixth Semester

<table>
<thead>
<tr>
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<td>ANTH, PSYC, SOCI</td>
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<tr>
<td>Electives</td>
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Seventh Semester

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<tr>
<td>Electives</td>
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Eighth Semester

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<td>Electives</td>
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Sample Schedule for B.S. with Major in Economics

First Semester

<table>
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<th>Credits</th>
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<td>ENGL 101</td>
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</tr>
<tr>
<td>MATH 113</td>
<td>4</td>
</tr>
<tr>
<td>Science</td>
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</tr>
<tr>
<td>Total</td>
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Second Semester

<table>
<thead>
<tr>
<th>Course</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ECON 104</td>
<td>3</td>
</tr>
<tr>
<td>MATH 114</td>
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<tr>
<td>Science</td>
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</tr>
<tr>
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<td>14</td>
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</tbody>
</table>

Third Semester

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>ECON 306</td>
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<tr>
<td>Literature</td>
<td>3</td>
</tr>
<tr>
<td>DESC 200</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
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<td>Total</td>
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Fourth Semester

<table>
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<th>Course</th>
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<td>ECON 311</td>
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<td>ENGL 302</td>
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<td>DESC 202</td>
<td>3</td>
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<tr>
<td>Economics elective</td>
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<td>Elective</td>
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Fifth Semester

<table>
<thead>
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<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Economies elective</td>
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<tr>
<td>ECON 345</td>
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</tr>
<tr>
<td>CS 103 or MIS 201</td>
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<td>Electives</td>
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Sixth Semester

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<td>Electives</td>
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Seventh Semester

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<tbody>
<tr>
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<tr>
<td>Electives</td>
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Eighth Semester

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<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Electives</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

English

Faculty

Professors: Bausch, Baxter, L. Brown, S. Brown, Brunette, D’Andrea (Robinson Professor), Forché, Foster, Gras, Hodges, Irvine, Kelley, Klappert, Melosh, Nadeau, Shreve, Williams

Associate Professors: Bergmann, Cheuse, Foreman, Gallehr, Golden, Goodwin, Holisky, Jann, Jones, Kaplan, Karlson, Keaney, Kuebrich, Lathbury, Mobley, Moylan, O’Connor, Owens, Radner, Rutledge, Story, Sypher, Thaiss, Tichy, Youcom

Assistant Professors: Albanese, Burr, Cruz, Fuchs, Henry, Irving, Kaufmann, Matz, Weinberger

Visiting Assistant Professors: Carr, Clark, Farrington, Leith, Marie, Miller, Powers, Samuelian, Scott, Thompson, Zawacki

Lecturers: Allen, Barrett, Brady, Brown, Buckley-Larocque, Chase, Clements, Cooper, Craver, Crouch, DeNys, Enright, Farley, Fischer, George, Gorski, Grogan-Barone, Hoke, Humbertson, Jacobs, Johnston, Kruck, Levy, Maslanka, Meisel, Montecino, Moody, Oliver, Patrick, Paugh, Pyrek, Raffel, Rubin, Shutika, Simmons, Spiers, Stipe, Swit, Taciuch, Umphrey, Williams

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 302. 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 302, 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 348, 471, 472, 473, 474, 477, 478).
4. One course in language, style, or criticism (ENGL 326, 337, 397, 398, 485, 489, 494, 495, 511, 551, 556, 557, and 592).
5. Three elective English courses above ENGL 302.

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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 302, 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, 396, 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 a concentration in 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 Licensure (Certification)
Students interested in becoming elementary, middle, or secondary school teachers should consult the general requirements for teacher licensure (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, stu-
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>
</thead>
<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>
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<tr>
<td>Third Semester</td>
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<tr>
<td>ENGL (200 level)</td>
<td>ENGL 325</td>
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<td>Non-Western culture</td>
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<td>Non-Western culture, e.g., ANTH 114</td>
<td>Philosophy or religion</td>
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<td>Oral Communication</td>
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<td>ENGL 302</td>
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<td>Advanced English courses</td>
<td>Art, dance, film, or theater</td>
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<tr>
<td>PSYC or SOCI</td>
<td>Elective</td>
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<tr>
<td>Seventh Semester</td>
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<td>Advanced English courses</td>
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<tr>
<td>Electives (300+ level)</td>
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</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: Aguerra, 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, Martinez-Lage, Rabin, Wekerle, Williams

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

Course Work

This department offers all course work designated CL, CLAS, FREN, FRLN, GERM, 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 advisers 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, 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.

Certificate in Translation
The Department of Foreign Languages and Literatures offers a program leading to a graduate certificate in translation. For details, see the catalog section on Certificates and Interdisciplinary Minors.

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 30 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 30 hours required in the major must include the following:
1. One advanced language course (FREN 350, 351, 352, 355, 357, 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 be complete 30 semester hours in German courses at the 300 level or above. GERM 340 and either GERM 301 or 302 are required. No more than six hours of courses taught in English may be applied to the major. If these are selected from German section of the Course Descriptions, no advance approval is required. Students need to consult the German faculty about other courses that may apply.

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 and who have earned grades of B or better in Elementary and Intermediate German. 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 30 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 30 hours required in the major must include the following:

1. Four advanced language courses (RUSS 380, 381, 480, and either 401 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 former Soviet Union. Short study tours to the former Soviet Union 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 30 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 30 hours required in the major must include the following:

1. SPAN 300 Reading Skills Development (SPAN 300)
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. One course in Hispanic civilization (SPAN 461 or 466).
4. Three literature courses (SPAN 311 and two of the following: SPAN 483, 484, 485, 486).

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, Japanese, 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 Introduction to Translation
- 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 Japanese

JAPA 309 Intensive Japanese III (6)
JAPA 310 Intensive Japanese IV (6)
HIST 356 Modern Japan (3)
JAPA 391 Japanese in the Business World I (3)

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Requirements for the Minor in Russian
Three of the following (9 hours):
- RUSS 302 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 Post-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 300 Reading Skills Development
- 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 483, 484 The Literature of Spain I, II
- SPAN 485, 486 The Literature of Spanish America I, II
One Spanish elective at the 300 level or higher (3 hours)

Geography and Earth Systems Science

Faculty
Professors: Haynes (Director, The Institute of Public Policy), Hazen (Robinson Professor), Stough
Associate Professors: Andrews, Diecchio (Director, Earth Systems Science), Fonseca (Director, Prince William Institute), Harrington, Haack, J. Wood (Chair)

Assistant Professors: Beach, Crampton, Macfarlane, Wong
Instructor: Rundstrom
Affiliate Professors: Mechan, Shipley, Stephenson, Wheeler
Adjunct Professors: Bertka, C. Brown, S. Cohen, DeCola, Dowsett, L. Edwards, H. Harris, Jellison, McDougall, Neitheisel, Nord, J. Thomas, A. Walker, Zinn
Adjunct Lecturers: Howard, Larsen, Light, Mayers, P. Mobley, Rennick, Rhodes

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 Licensure (Certification)
Students interested in becoming elementary, middle, or secondary school teachers should consult the requirements for teacher licensure (certification) listed in this catalog under Graduate School of Education. See the department's secondary education adviser for more information.

Geography
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, 300, 310, and 415. Geography students may include 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 and Interdisciplinary Minors.

Certificate Program in Cartography
The Certificate in Cartography is administered by the department. See description under Certificates and Interdisciplinary Minors.

Earth Systems Science
Faculty: C. Brown, Diecchio, Dowsett, Foster, Haack, H. Harris, Hazen, Heliotis, Jellison, R. Jones, Kelso, Macfarlane, Mose, Palkovich, Shipley

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. Core science including MATH 113, 114; CHEM 211, 212; PHYS 250, 350, 351 or PHYS 343, 344, 345, 346; GEOL 101, 102; BIOL 103, 104 or BIOL 213, 303, 304; BIOL/GEOL 309; GEOG 309 (prerequisite: GEOG 102 or POI); BIOL 377.
2. One of the following required specialty tracks:
   Geology
   GEOG 203; GEOL 301, 302, 303, 304, 308, 317.
   (Field camp is recommended and may be substituted for GEOG 203 and GEOL 303.)

   Environmental Geochemistry
   GEOL 205 or ENSI 205; GEOL 203 or ENSI 203; CHEM 313, 314, 315, 318, 321, 335.

   Earth and Space Science (undergraduate content preparation for secondary teaching)
   ASTR 105, 106; UNIV 301; GEOL 203; 9 credits of approved geology courses

   Geoarchaeology
   GEOG 203; GEOL 302, 304, 317; ANTH 420, 425; Archaeological Field School.

Minimum course requirements for B.S. in Earth Systems Science
Core science (see above) ........................................... 49-54
Specialty track (see above) ......................................... 22-25
ENGL 101, 302 .......................................................... 6
Literature (at the 200-400 level) ...................................... 6
Electives outside natural science and math .......................... 6
Special electives from anthropology, economics, geography, government, history, linguistics, psychology, and sociology ................ 6
General electives .......................................................... 16-25
Total ........................................................................ 120

Sample Schedule for B.S. in Earth Systems Science

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>ENGL 101</td>
<td>Literature</td>
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<td>GEOG 102</td>
<td>CAS elective</td>
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<td>CHEM 211</td>
<td>CHEM 212</td>
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<td>BIOL 103</td>
<td>BIOL 104</td>
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<td>Literature</td>
<td>CAS elective</td>
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<td>General elective</td>
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<tr>
<td>PHYS 343, 344</td>
<td>PHYS 345, 346</td>
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<td>BIOL/GEOL 309</td>
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<td>General elective</td>
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<tr>
<td>Track electives</td>
<td>Track electives</td>
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<tr>
<td>General electives</td>
<td>General electives</td>
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</tbody>
</table>

Geology

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 including: GEOG 203, GEOL 101, 102, 301, 302, 303, 304, 308, 317 (Field camp is recommended and may be substituted for GEOG 203 and GEOL 303);
2. MATH 110, 111, or 113;
3. CHEM 211 and 212;
4. a computer science course;
5. 12 credits of degree-related course work in a coherent program designed in coordination with an adviser and approved by the department chair.
Minimum requirements for the B.A. in Geology

Geology/Geography ........................................... 33
Specialty track ........................................... 12
MATH 110, 111, or 113 ..................................... 3
CHEM 211 and 212 ........................................... 8
Computer science ........................................... 3
ENGL 101, 302 .................................................. 6
COMM 100, 101, 102 ......................................... 3
Foreign language ........................................... 0-12
Humanities .................................................... 12
Social science ............................................... 12
Non-Western culture ....................................... 6
General electives ........................................... 10
Total ............................................................. 120

Sample Schedule for B.A. in Geology

First Semester
ENGL 101 3
Literature 3
MATH 3
Foreign language 3
Non-Western culture 3 15

Second Semester
Literature 3
Social science 3
Communication 3
Foreign language 3
General elective 3 15

Third Semester
GEOL 101 4
CHEM 211 4
Foreign language 3
Social science 3 14

Fourth Semester
GEOL 102 4
CHEM 212 4
Foreign language 3
General elective 3 14

Fifth Semester
GEOL 302 3
GEOL 317 3
Non-Western culture 3
Track elective 3 16

Sixth Semester
GEOL 308 4
GEOL 304 4
GEOG 203 3
Computer science 3
Track elective 3 17

Seventh Semester
GEOL 303 3
Track elective 3
Social science 3
Philosophy/Religion 3
General elective 3 15

Eighth Semester
GEOL 301 4
Track elective 4
Social science 3
Fine arts 3 14

Minor in Geology
A minor in geology requires 18 semester credit hours including GEOL 101, 102, and 302, plus two of the following courses: GEOL 202, 301, 303 (prerequisite GEOG 203), 304, 308, 309, 313, 317, 403, or 417.

History

Faculty
Professors: Bakhash (Robinson Professor), J. R. Censer, Diner, Lovett, Pacheco, Rosenzweig, Wade, Wilkins (Robinson Professor)
Associate Professors: Deshmukh (Chair), Dinan, Gleissner, Harsh, Henriques, Holt, Jensen, Lytton, Saeed, J. Stewart, Soder, Walker
Assistant Professors: J. T. Censer, Cohen, Copelman, Hawkes, Mitchell
Lecturers: Ambacher, Angel, Bailey, Butowsky, Herman, 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 approved upper-division courses outside the major field. See department for permission.

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.

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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 Licensure (Certification)
History majors and minors 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 licensure (certification) under that school’s listing in the catalog.

Graduation With Distinction and Recognition
A student graduates with distinction and with recognition of a distinguished senior project if, in addition to the student’s meeting the criteria for graduation with distinction, a department committee determines that the student’s research project in HIST 499 merits recognition.

Sample Schedule for B.A. in History

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<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>HIST (100 or 200 level)</td>
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<tr>
<td>Foreign language</td>
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<td>Social science (Group B)</td>
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<td>Fine art</td>
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<td>Non-Western culture</td>
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<tr>
<td>History elective*</td>
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<tr>
<td>Oral communication</td>
<td>3</td>
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<tr>
<td>Elective*</td>
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</tr>
<tr>
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<td>Foreign language</td>
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<tr>
<td>Natural science</td>
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<td>Literature</td>
<td>3</td>
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<tr>
<td>Non-Western culture</td>
<td>3</td>
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<tr>
<td>Philosophy or religious studies</td>
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<tr>
<td>HIST 300*</td>
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<tr>
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<td>3</td>
</tr>
<tr>
<td>Elective*</td>
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<tr>
<td>Elective</td>
<td>3</td>
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<tr>
<td>Electives</td>
<td>6</td>
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<tr>
<td>Electives*</td>
<td>15</td>
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<tr>
<td>Total</td>
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<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
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<tbody>
<tr>
<td>HIST 499 (or history elective)*</td>
<td>3</td>
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<tr>
<td>History elective*</td>
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<tr>
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<tr>
<td>Electives</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
</tr>
</tbody>
</table>

*45-hour upper-division (300 or 400 level) course work graduation requirement.

Mathematical Sciences

Faculty
Professors: Levy (Chair), Saperstone, Struppa
Associate Professors: Alligood, Beslagic, Colonna, Fischer, Gabel, Kiley, Kulesza, B. Lawrence, J. Lawrence, Lim, Lin, Morris, Sachs, Sauer, Shapiro, Singman, Zoltek
Assistant Professors: Kan, Loustaunau, Walnut
Lecturers: Lawson, Lieberman, Morse, Paraloglu
Visiting Lecturers: O'Beirne, Youngflesh

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. Graduating seniors are required to have an exit interview and to take an assessment exam.

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, 290, and 322 plus 12 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:

A. Mathematics Core Curriculum (28 semester credits): MATH 113, 114, 125, 215, 216, 290, 315, and 322
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 213 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.

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

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 (MATH 105 does not fulfill the CAS B.A. analytical reasoning requirement). 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 exception of foreign language) for the B.A. degree are satisfied by successful completion of the Plan for Alternative General Education (PAG E). See PAGE category in this catalog, and see PAG E office for sample schedule for majors in mathematics.

**Sample Schedule for B.A. in Mathematics**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>ENGL 101</td>
<td>Literature</td>
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<tr>
<td>FRLN 101</td>
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<tr>
<td>MATH 113</td>
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<tr>
<td>Natural Science</td>
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<tr>
<td>MATH 125</td>
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<tr>
<th>Third Semester</th>
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<tr>
<td>MATH 215</td>
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<td>MATH 290</td>
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<tr>
<td>FRLN 201</td>
<td>Electives</td>
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<tr>
<td>CS 112</td>
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<tr>
<td>Literature</td>
<td>17</td>
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<th>Fifth Semester</th>
<th>Sixth Semester</th>
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<td>MATH (above 310)</td>
<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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<th>Seventh Semester</th>
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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 (MATH 105 does not fulfill the CAS B.A. analytical reasoning requirement). 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 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 mathematics.

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**Sample Schedule for B.S. in Mathematics**

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<tr>
<td>CS 112</td>
<td>15</td>
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</tbody>
</table>
### Fifth Semester
- **MATH 315**
- **MATH 321**
- **MATH 325**
- **ENGL 302**
- Elective

### Sixth Semester
- **MATH 316**
- **MATH 322**
- **MATH 351**
- Electives

### Seventh Semester
- **MATH 413**
- **MATH 3**
- Electives

### Eighth Semester
- **MATH 414**
- **MATH 3**
- Electives

The above sample schedules are meant for illustrative purposes only; some courses listed are not required, only suggested. Electives should be chosen to satisfy distribution requirements and the requirement 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 appropriate replacement in the first semester.

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### Music

#### Faculty

**Professors:** Burton, di Bonaventura, Gabriel, Maiello, G. Smith, J. Smith

**Associate Professors:** Brawley, Engebretson, Hill, Kanyan (Interim Chair), Miller

**Assistant Professor:** Giles

**Lecturers:** Adams, Combs, Kredel, Maley, McCarthy, Newman, Schultz, Vails

**Applied Music Faculty:**

**Accompanying,** Edward Newman (see listing under Piano).

**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; acting principal clarinetist, Kennedy Center Opera House Orchestra.


**Composition,** Stephen Burton, Professor. M.M., Peabody Conservatory.

Sam di Bonaventura (see listing under Violin).

Glenn Smith, 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 associate conductor, Minnesota Chorale.

Arnald 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,** Judith Lapple, Adjunct Assistant Professor. B.M., Eastman School of Music; M.M., Northeast Louisiana University; principal flutist, U.S. Air Force Band.

Thomas Perazzoli, Adjunct Associate Professor. Philadelphia Musical Academy; flutist, National Symphony Orchestra.

**Guitar (Classical),** Jeffrey Meyerriecks, 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.

**Harp,** Jeanne Chalifoux, Adjunct Associate Professor. Artist Diploma, Curtis Institute of Music; former harpist, National Gallery Orchestra and National Symphony Orchestra.

Horn. Edwin Thayer, Adjunct Associate Professor. B.M., M.M., University of Illinois; principal hornist, National Symphony Orchestra.

David Whaley, Adjunct Associate Professor. B.M.E., Drake University; M.M., D.M.A., University of Illinois; hornist, National Symphony Orchestra.

Koto. Kyoko Okamoto, Adjunct Assistant Professor. Bachelor in Languages, Kyoto University of Foreign Studies; Toho Kinshu Kai (Koto School).

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.

William Neil (see listing under Harpsichord)

Percussion. Kenneth Habison, Adjunct Associate Professor. B.M., Eastman School; M.M., The Catholic University of America; percussionist, National Symphony Orchestra.

Piano. Craig W. Combs, Adjunct Assistant Professor. B.M., Shenandoah Conservatory; M.M., D.M.A., Eastman School of Music; clinician, special programs director, and performing artist.

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.

Margaret Otwell, Adjunct Assistant Professor. B.M., The Catholic University of America; M.M., D.M.A., University of Maryland; solo performing and recording artist and chamber musician; Director, Chamber Artists of Washington.

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; trumpet, 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 gamba 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; violinist, National Symphony Orchestra.


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.
Kathryn Heardon, Adjunct Assistant Professor. 
B.M., St. Norbert College; M.M., D.M.A., Eastman School of Music; soloist in choral and instrumental ensembles and opera; jazz vocalist.

Myra Merritt, Adjunct Assistant Professor. 
B.M.E., Peabody Conservatory; M.M., The Catholic University of America; Metropolitan Opera artist; international opera performer and recording artist.

Patricia Miller, Associate Professor. B.M., Boston University; M.M., New England Conservatory; 
Artists' Diploma, Accademia 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.

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 licensure (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).

A fundamentals of music test will be given during the first week of classes to all students enrolled in MUSI 115 (Harmony I). This test will consist of the following: standard musical notation in treble and bass clefs; key signatures; all intervals up to a perfect octave; and all major, natural minor, harmonic minor, and melodic minor scales (ascending and descending). The test must be passed in order to continue in MUSI 115.

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.
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**

- 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 371 and 372)
- Major Instrument or Voice (Private Music Instruction): 8
- Ensemble: *7

*Voice majors must earn seven credits in University Chorale, Sympathetic Chorus, and/or Chamber Singers. Orchestral string majors must earn seven credits in Symphony Orchestra. Wind and percussion majors must earn seven credits in Symphony Orchestra, Symphony Band, and/or Wind Ensemble. Piano, organ, harpsichord, and guitar majors must earn at least four credits in large ensembles: University Chorale, Symphonic Chorus, Chamber Singers, Symphony Orchestra, Symphonic Band, and/or Wind Ensemble.

**B.M. Degree**

A total of 130 semester hours is required for the Bachelor of Music degree. The requirements by area are as follows:

**General Education**

See general education requirements for B.M. degree in the *College of Arts and Sciences* section of the catalog.

**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 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 371 and 372): 2
- Major Instrument or Voice (Private Music Instruction): 12
- Ensemble: *8

**Music Concentration**

To earn a B.M. degree, a music concentration must be selected from one of the following categories: composition, performance, music history and literature, or music education.

**Free Electives**

19

**Total**

130

**Concentrations in Music (Bachelor of Music)**

**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 — 11
- Composition
- Composition Recital — 1
- Orchestration — 3
- Introduction to Electronic Music — 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):

**Concentration in Keyboard Performance (total of 21 semester hours)**

- Major Instrument (Private Music Instruction) — 8
- Junior Recital — 1
- Senior Recital — 1
- Keyboard Literature — 3
- Keyboard Pedagogy — 3
- Improvisation — 1
- Ensembles — 2
- Music Elective — 2

**Concentration in Vocal Performance (total of 21 semester hours, plus 9 semester hours of French, German, Italian, or any combination of these)**

- Private Voice (Private Music Instruction) — 8
- Junior Recital — 1
- Senior Recital — 1

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Undergraduate Catalog 1994-1995
George Mason University

College of Arts and Sciences

Performance Seminar for Singers .
and Accompanists I & II
Vocal Pedagogy . . . .
Advanced Conducti ng
Improvisation . . . . .
Ensembles

4

2

2
1
2

Concentration in Winds/Strings/Percussion Performance (total of21 semester lwurs)
Major Instrument (Private
Music Instruction)
Junior Recital
Senior Recital
Orchestration .
Advanced Conducting
Instrumental Pedagogy
and Literature .
Improvisation . . .. . .
Ensembles . . . . . . .

8

1
1
3

Requirements by area:

2

3

1
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 .
Theory Elective
Independent Study

3. Earn no grade lower than C in music courses
needed for graduation
4. Maintain a satisfactory level of musical performance and interpersonal relationships as determined by a yearly screening procedure
conducted by the music education faculty
5. Upon completion of all other courses, do 15
weeks of full-time student teaching. (Applications for placement, subject to approval of the
music education faculty, arc submitted to the
Office of Teacher Education at the beginning
of the prior semester.)

12
3

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Concentration In Music Educa tion
Virginia Licensure (Certifica tion) to Teach
The Music Education degree program is approved
by the Virginia State Department of Ed ucation
and administered through the Graduate School of
Education, which is accredited by the ational
Counci l for the Accreditation of Teacher Education (NCATE). Minimum scores on the ational
Teachers Examination (Core Battery and Music
Specialty area tests) must be achieved before state
certification can be granted.
A total of 130 semester hours is required for the
bachelor of music with a concentration in music
ed ucation.
To complete the concentration in music education, a student must satisfy the following requirements:
1. Complete all course work in the program sequence
2. Maintain an overall GPA of2.8 in all course
work done at GMU and in course work done at
all institutions bf higher learning combined.

Semnter Houra

General Education . . .

. . . . . . 33

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E GL 101 and 302
Literature . . . . . . . .
HIST 121 or 122 . . . . .
Social and/or behavioral science .
Communication . . . .
atural science . . . .
Mathematics or Logic
Dance (activity class)

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HEAL110 . . . . . . .

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Basic Musicianship . . . . • . . . . . . . . 58
Harmony I, ll, Ill, IV . . .
Keyboard Harmony . . . .
Sight Singing and Ear Training I, II .
SurveyofWorld Music . . . . . . . .
Historical, Theoretical, and Analytical
Study of Music I, II, lll, IV
Class Composition and Arranging I .
General Conducting . . . .
Class Piano I, li . . . . . . . .
Major Instrument or Voice .
(Private Music Instruction)
Ensemble . . . . . . . . . . .

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Music Education Concentration . . .
Secondary Instruments or Voice
Advanced Conducting
Improvisation .
Music Methods . . .
Music electives . . .

21

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Additional Courses . . .
lntro to Early Childhood and Middle .. 3
Education (EDUC 300) or lntro to
Secondary Education (EDUC 522)
Human Growth and Development . . 3
(EDUC 302) or Psychological
Foundations of Adolescent Learning
and Dev. (EDUC539)
Educationally Diverse Populations: . . . 3
Handicapped, Gifted, Multicultural
(EDUC 301) or Pluralism and

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Exceptionality in U.S. Education (EDUC 529) ........................................... 3
Computer science or Intro to ................................................................. 3
Electronic Music (MUSI 415) ................................................................. 6

**Student Teaching (EDUC 418)** ......................................................... 6
Total ......................................................................................................... 130

*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 must earn eight credits in University Chorale, Symphonic Chorus, and/or Chamber Singers. Orchestral string majors must earn eight credits in Symphony Orchestra. Wind and percussion majors must earn eight credits in Symphony Orchestra, Symphonic Band, and/or Wind Ensemble. Piano, harpsichord, organ, and guitar majors must earn at least four credits in large ensembles: University Chorale, Symphonic Chorus, Chamber Singers, Symphony Orchestra, Symphonic Band, and/or Wind Ensemble.

†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 eight required ensemble credits must be earned in Symphonic Band, Wind Ensemble, 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 eight required ensemble credits must be earned in University Chorale, Symphonic Chorus, and/or Chamber Singers.

‡MUSI 461 and 463 or MUSI 464 and 466

### Sample Schedule for Bachelor of Music

#### First Semester
- **ENGL 101** ................................................................. 3
- Foreign language 101 ......................................................... 3
- Social science ................................................................. 3
- MUSI 115 ................................................................. 3
- MUSI 171 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1

#### Second Semester
- Literature (English or foreign languages and literatures) ............. 3
- MUSI 215 ................................................................. 3
- MUSI 114 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1

#### Third Semester
- Natural science/mathematics/computer science ............................ 3
- MUSI 215 ................................................................. 3
- MUSI 114 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Literature (English or foreign languages and literatures) ............. 3
- MUSI 215 ................................................................. 3
- MUSI 114 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Music concentration .......................................................... 3

#### Fourth Semester
- Literature (English or foreign languages and literatures) ............. 3
- MUSI 215 ................................................................. 3
- MUSI 114 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Music concentration .......................................................... 3
- Social science ................................................................. 3
- MUSI 335 ................................................................. 3
- MUSI 319 ................................................................. 3
- MUSI 391 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Elective ................................................................. 3

#### Fifth Semester
- **ENGL 302** ................................................................. 3
- Mathematics or logic ............................................................ 3
- Philosophy or religious studies ................................................. 3
- MUSI (HTA) ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1

#### Sixth Semester
- Non-Western culture ............................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Elective ................................................................. 10

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### Sample Schedule for B.A. with a Major in Music

#### First Semester
- **ENGL 101** ................................................................. 3
- Foreign language 101 ......................................................... 3
- Social science ................................................................. 3
- MUSI 115 ................................................................. 3
- MUSI 171 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1

#### Second Semester
- Literature (English or foreign languages and literatures) ............. 3
- MUSI 215 ................................................................. 3
- MUSI 114 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1

#### Third Semester
- Natural science/mathematics/computer science ............................ 3
- MUSI 215 ................................................................. 3
- MUSI 114 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Literature (English or foreign languages and literatures) ............. 3
- MUSI 215 ................................................................. 3
- MUSI 114 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Music concentration .......................................................... 3

#### Fourth Semester
- Literature (English or foreign languages and literatures) ............. 3
- MUSI 215 ................................................................. 3
- MUSI 114 ................................................................. 3
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Major instrument or voice (private music instruction) .............. 1
- Ensemble ................................................................. 1
- Music concentration .......................................................... 3
### College of Arts and Sciences

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSI 435</td>
<td>MUSI 436</td>
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<tr>
<td>Major instrument or voice</td>
<td>Major instrument or voice</td>
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<tr>
<td>(private music instrument)</td>
<td>(private music instruction)</td>
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<tr>
<td>Ensemble</td>
<td>Ensemble</td>
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<td>Music concentration</td>
<td>Music concentration</td>
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<tr>
<td>Electives</td>
<td>Electives</td>
</tr>
<tr>
<td></td>
<td>17</td>
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</table>

<table>
<thead>
<tr>
<th>Sample Schedule for B.M. with Concentration in Music Education (Virginia Licensure [Certification] to Teach Music)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
</tr>
<tr>
<td>ENGL 101</td>
</tr>
<tr>
<td>Social or behavioral science</td>
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<tr>
<td>Mathematics</td>
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<td>MUSI 115</td>
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<td>MUSI 171</td>
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<td>Secondary instrument</td>
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<tr>
<td>Major instrument</td>
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<td>Ensemble</td>
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</tr>
<tr>
<td><strong>Second Semester</strong></td>
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<tr>
<td>ENGL 171</td>
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<tr>
<td>Social or behavioral science</td>
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<td>Mathematics</td>
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<td>MUSI 215</td>
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<tr>
<td>MUSI 335</td>
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<tr>
<td>Secondary instrument</td>
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<tr>
<td>Major instrument</td>
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<tr>
<td>Ensemble</td>
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<td></td>
</tr>
</tbody>
</table>

| **Third Semester**                                      |
| EDUC 302 or 539                                      | Literature  |
| MUSI 215                                      | Literature  |
| MUSI 114                                      | Literature  |
| MUSI 335                                      | Literature  |
| Secondary instrument                          | Major instrument |
| Major instrument                              | Major instrument |
| Ensemble                                     | Ensemble     |
|                                              | 16            |

| **Fourth Semester**                                    |
| EDUC 300 or 522                                      | Literature  |
| MUSI 435                                      | Literature  |
| MUSI 319                                      | Literature  |
| MUSI 391                                      | Literature  |
| MUSI 379 or 390                                  | Major instrument |
| Secondary instrument                          | Secondary instrument |
| Major instrument                              | Secondary instrument |
| Ensemble                                     | Ensemble     |
|                                              | 16            |

| **Fifth Semester**                                    |
| ENGL 302                                      | Literature  |
| MUSI 215                                      | Literature  |
| MUSI 319                                      | Literature  |
| MUSI 391                                      | Literature  |
| MUSI 435                                      | Literature  |
| Secondary instrument                          | Major instrument |
| Major instrument                              | Major instrument |
| Ensemble                                     | Ensemble     |
|                                              | 16            |

| **Sixth Semester**                                    |
| EDUC 301 or 529                                      | Student Teaching |
| MUSI 415 or computer science                         | (EDUC 418)     |
| Dance (activity class)                               |                 |
| Music electives                                     | 6              |

| **Seventh Semester**                                  |
| EDUC 301 or 529                                      | Student Teaching |
| MUSI 415 or computer science                         | (EDUC 418)     |
| Dance (activity class)                               |                 |
| Music electives                                     | 17             |

| **Eighth Semester**                                  |
| Student Teaching                                    |                 |
| (EDUC 418)                                         |                 |
| Dance (activity class)                              |                 |
| Music electives                                     | 6              |

### PAGE (Plan for Alternative General Education)

**Faculty**

Story (Director), Ailes, Albanese, Bergmann, Black, Bolstein, Brandenburg, Brawley, Brear, Broome, B. Brown, L. Brown, Burns, Censer, Chen, Clark, Davies, De Nys, Dick, Deshmukh, di Bonaventura, Doyle, Dumont, Ehrlich, Emsley, Evans, Feeg, Fitzgerald, Foreman, Francescato, Gaffney, Gardiner, Gessner, Gilbert, Golomb, Gras, Hauss, Hecht, Hodges, Holley-Wilcox, Holman, Hung, Irvine, Jacob, Jacobs, James, Jann, Jenkins, Johnson, Jones, Kaplan, Karlson, Keane, Kelso, Kolk, Kuechrich, Lankford, Levy, Lin, Mandes, Melosh, Metcalf, Miller, Mones-Hattal, Mose, Mushrush, Nambar, Nash, Neuschatz, O'Brien, O'Connor, Owens, Rader, Radner, Raffel, Regan, Ricouart, Rosenblum, Rosenzweig, Rothbart, Rubenstein, Ruth, Rutledge, Schrass, Schreiner, Seligman, Shutika, Siff, Slayden, Smith, Sporer, Strupper, Sypher, Taylor, Thaiss, Travis, Trefil, Uman, Verheyen, Williams, Wilson, Youcom, Zoltak

**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

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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: Burns, De Nys, Fletcher (Associate Provost), Froman (Chair), Holman, Jordan, McDermott, Ro, Rothbart, Yance (Emeritus Associate Professor)

Assistant Professors: Nguyen, Paden, San Juan, Wehrle
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: Phenomenology
   - 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 Introduction to Symbolic Logic
   - PHIL 301 History of Western Philosophy (Ancient)

Lecturers: E. Caudill, D. Gregory, M. Gregory, Mackin, Schneider, Skousgaard, Shosky, 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 students 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 (with grades of C or better). 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:
PHIL 303 History of Western Philosophy (Modern)
PHIL 313 Philosophy of Religion
RELI 420 Seminar in Religious Studies 
or RELI 490 Comparative Religions

Students must also submit a minimum of nine credits from among the following courses (at least three credits must be in an Eastern tradition, and at least three credits must be in a Western tradition):
RELI 313 Hindu Religion and Philosophy
RELI 314 Chinese Philosophies and Religious Traditions
RELI 315 The Buddhist Tradition
RELI 337 Mysticism: East and West
RELI 352 Judaism Between the Old and New Testaments
RELI 370 Judaism: Life and Thought
RELI 371 History of Western Christian Thought (I)
RELI 372 History of Western Christian Thought (II)
RELI 374 Islamic Thought
RELI 376/377 Special Topics in Religious Thought

Students must take six additional credits in Religious Studies or Philosophy.

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-Economics Double Major
Students interested in pursuing the specially designed cooperative double major in philosophy and economics must fulfill all requirements for each major. They may count up to six credits from the following courses toward both majors:
ECON 380 Comparative Economic Systems
ECON 403 Austrian Economics
ECON 410 Public Choice
ECON 412 Game Theory and Economics of Institutions
ECON 481 The Development of Economic Thought

Students must satisfy requirements (4) of the economics major by taking 12 credits in philosophy. At least six of these must come from the following list:
PHIL 305 Business Ethics
PHIL 311 Philosophy of Law
PHIL 315 Philosophy of History
PHIL 325 Karl Marx’s Social and Political Thought
PHIL 326 Contemporary Theories of Justice
PHIL 337 Twentieth-Century Continental Thought: Phenomenology
PHIL 340 Hermeneutic Philosophy
PHIL 357 Philosophy of the Social Sciences
PHIL 373 Theory of Knowledge

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

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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
   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
- PHIL 373 Theory of Knowledge
- PHIL 374 Philosophy of Mind
- PHIL 531 Freud and Philosophy
- PHIL 574 Current Issues in Philosophy of Psychology

**Psychology**
- PSYC 220 Personality Theory
- PSYC 360 Theories and Systems of Psychology
- PSYC 365 History of Psychology
- PSYC 372 Physiological Psychology: Neuropsychology
- PSYC 506 Theories of Personality
- PSYC/ENGL 581 Survey of Psycholinguistics

Sample Schedule for Philosophy Majors

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>Natural science</td>
<td>4</td>
</tr>
<tr>
<td>English composition</td>
<td>3</td>
</tr>
<tr>
<td>Foreign language</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 100, 111, or 173</td>
<td>3</td>
</tr>
<tr>
<td>Social science</td>
<td>3</td>
</tr>
<tr>
<td>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.</td>
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</table>

Physics and Astronomy

**Faculty**

**Professors:** Blaisten-Baroja, Dworzecka, Ehrlich, Ellsworth, Kafatos, Lankford, Lieb (Chair), Mielczarek, Trefil (Robinson Professor)

**Associate Professors:** Ceperley, Evans, Satija

**Assistant Professor:** Becker, Wallin

**Visiting Assistant Professor:** Kowalski

**Instructor:** Giebultowicz, John

**Course Work**

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

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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 must include at least five credits of physics and be elected from the following list below or approved in advance by the Physics Department: PHYS 306, 307, 328, 408, 417, 428, 510, 511, 512, 513, 530, 532, 535, 540, 542, 575; ECE 301, 333, 430, 431, 433, 442, 460; MATH 446 and 447; CHEM 331.

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 12 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 510, 511, 512, 540 and ASTR 530. 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 510, ECE 442, MATH 446 and 447. In addition, the student should complete a senior project (PHYS 408) on a problem that involves 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 select four courses from the following: PHYS 428, ASTR 530, 532, 535, 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 courses from PHYS 303, 306, 307, 361, 401, 428 and 305 or 513.

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, 428, and 530.
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 Licensure (Certification)

Students who want to become elementary, middle, or secondary school teachers should consult the sections on licensure (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.

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 and 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 premed 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, 344, 345, 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>
</thead>
<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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<table>
<thead>
<tr>
<th>Third Semester</th>
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<tbody>
<tr>
<td>PHYS 350</td>
<td>3 PHYS 352</td>
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<tr>
<td>PHYS 351</td>
<td>2 PHYS 353</td>
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<tr>
<td>MATH 213</td>
<td>2 MATH 214</td>
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<tr>
<td>Literature</td>
<td>3 Literature</td>
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<tr>
<td>Electives</td>
<td>3 Computer science</td>
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<td>PHYS 305</td>
<td>3 PHYS 307</td>
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<td>PHYS/Math elective</td>
<td>3 PHYS 361</td>
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<td>ENGL 302</td>
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</tr>
<tr>
<td>PHYS 407</td>
<td>1 PHYS 512</td>
</tr>
<tr>
<td>PHYS 416</td>
<td>3 Elective</td>
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<tr>
<td>PHYS 510</td>
<td>3 Elective</td>
</tr>
<tr>
<td>Mathematics elective</td>
<td>3 Physics elective</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
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<tr>
<td>16</td>
<td>15</td>
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Psychology

Faculty

University Professor: Fleishman

Professors: Barocas, Boneau, Mandes (Associate Dean), Pasnak, R. Smith, Tyer (Associate Dean)

Associate Professors: Allen, Blaha, Boehm-Davis (Assistant Dean), Buffardi, Denham, Erdwins, Flinn (Chair), Friedman, Gerton, Gessner, Holt, Lehman, Maddux, Moretz, Mumford, Riskind, Rugel, Sanford, Tangney, Wahl, Zaccaro

Assistant Professors: Hershey, Short

Visiting Assistant Professors: Chrosniak, V. Smith, Wanshura

Adjunct Professors: Claiborn, Cobb, Hunt, Kurke, Weisman, Wyggs, Vekker

Lecturers: Chollar, Foehlinger, Feuerbach, Goodman, Jenkins, Kimberling, Manning, Mutchler, Shepanik, Smith-Marchese, Stanhope, 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 at the 300-400 level. 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, plus 6 additional semester hours of natural science from astronomy, biology, chemistry, geology, physics, and GEOG 102 and 309.
3. 6 semester hours of mathematics, selected from MATH 108, 110, 111, 113, 114 and 213
4. CS 103
5. 12 semester hours of social/behavioral science (other than psychology) and fine arts/religious studies/philosophy (other than PHIL 173 and 376). Courses must include a minimum of 6 hours in social/behavioral science and 3 in fine arts/religious studies/philosophy.
6. ENGL 101, 302, and either ENGL 410 or a third laboratory course in psychology selected from PSYC 304, 309, 323, and 373.
7. 6 semester hours of literature

Information for All Majors in Psychology

A grade of D in any of the eight (nine for B.S. students) required psychology courses 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, and that a grade of C or better in PSYC 305 is a prerequisite to PSYC 465.

All psychology 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 may be counted from PSYC 421, 422, 548, 549;
2. A maximum of 6 hours may be counted from PSYC 260, 350, and 460;
3. No more than 9 hours can be taken from 1 and 2 above without written permission of the department chair.
4. PSYC 330 may not be taken for credit by psychology majors

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 Certificates and Interdisciplinary Minors 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 PSYC 100, 213, 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.

Psychology-Philosophy Double Major

For students who pursue a double major in psychology and philosophy, the Psychology Department accepts up to six hours of selected philosophy courses toward psychology electives. Please see the Philosophy and Religious Studies section of this catalog for details.

Sample Schedule for B.A. Psychology Majors

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>ENGL 101</td>
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</tr>
<tr>
<td>PSYC 100</td>
<td>3 Non-Western culture</td>
</tr>
<tr>
<td>Natural science</td>
<td>3 PSYC 211, 231</td>
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<tr>
<td>Elective</td>
<td>4 Natural science</td>
</tr>
<tr>
<td></td>
<td>3 Philosophy or religious studies</td>
</tr>
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<td></td>
<td>16</td>
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<tr>
<td>Literature</td>
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<tr>
<td>Math (110 suggested)</td>
<td>PSYC 300</td>
</tr>
<tr>
<td>PSYC 325</td>
<td>3 Foreign language</td>
</tr>
<tr>
<td>Foreign language</td>
<td>3 PSYC 372</td>
</tr>
<tr>
<td>Fine arts</td>
<td>3 Non-Western culture</td>
</tr>
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<tr>
<td>ENGL 302</td>
<td>3 Foreign language</td>
</tr>
<tr>
<td>Oral communication</td>
<td>3 PSYC (300-400)</td>
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<tr>
<td>Foreign language</td>
<td>3 ECON/GOVT/GEOG/HIST</td>
</tr>
<tr>
<td>PSYC 305</td>
<td>4 Electives (300/400)</td>
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http://catalog.gmu.edu
Seventh Semester | Eighth Semester
---|---
ECON/GOVT/BLOG/HIST 3 | PSYC (300/400) 6
PSYC 300/400 3 | Electives 9
PSYC 465 3 | 6
Electives (300/400) 6 | 15
15

Note: Students must select electives so that a total of 45 upper-division hours are earned.

Sample Schedule for B.S. Psychology Majors

First Semester | Second Semester
---|---
ENGL 101 3 | PSYC 211, 231 6
PSYC 100 3 | BIO 104 4
Biol 103 4 | MATH 3-4
MATH (110 suggested) 3-4 | 13-14
13-14

Second Semester | Fourth Semester
---|---
ENGL 101 3 | Literature 3
PSYC 100 3 | Behavioral, natural, 3
PSYC 300 4 | or social science 6
PSYC 321 3 | Fine arts/religious studies/philosophy 3
Fine arts/religious studies/philosophy 3 | 15
15

Third Semester | Sixth Semester
---|---
PSYC 325 3 | PSYC 304, 309, 323, or 372-3 4
Literature 3 | Natural science 3
Behavioral, natural, 3 | Electives (300/400) 6
or social science 4 | ENGL 410 3
CS 103 3 | 16
Fine arts/religious studies/philosophy 3 | 16

Fifth Semester | Seventh Semester
---|---
ENGL 302 3 | PSYC (300/400 level) 7
PSYC 305 4 | PSYC 300 3
Natural science 4 | Elective (300/400) 7
Electives 6 | 9
17

Seventh Semester | Eighth Semester
---|---
PSYC (300/400 level) 3 | PSYC (300/400) 9
PSYC 372 (if not taken 3 | Elective (300/400) 7
sixth semester) | 3
PSYC 465 3 | 16
Elective 3 | 16

Note: Approval of program of studies is required by the department before or during the junior year.

Teacher Licensure (Certification)

Students who want to become elementary, middle, or secondary school teachers should consult the sections on licensure (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 and International Affairs

Faculty

Robinson Professors: Heclor, Paden
Professors: Clark, Cole, Dawisha, Gortner, Pfiffner, White

Associate Professors: Brown, Conlan, Dudley, Friedlander, Hart-Nibbrig, Katz, Knight, Mahler, Hung Nguyen, Sacco, Travis (Assistant Dean)
Assistant Professors: Gifford, Harbour, McPerson, Regan, Rosenblatt, M. Wan
Research Professor: Gibbons

Adjunct Professors: Hauss, Horan, McIntyre, Petersen, Tucker

Lecturer: Spengler

Administrative Faculty: Czarda, Doyle, First, Rossell

Joint Appointments with the Institute of Public Policy: Harrington, Haynes, Kash, Lipset, Perry, Stough

Joint Appointments with the Institute for Conflict Analysis and Resolution: Mitchell, Rubenstein, Sandole

Course Work

This department offers all course work designated GOVT 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 government and politics, international relations, and public administration.

Teacher Licensure (Certification)

Students who wish to become elementary, middle, or secondary school teachers should consult the sections on licensure (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:

http://catalog.gmu.edu
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, 430, 431, 444, 445, 446, 449
   - GOVT 480 internship or 490 seminar for one of the upper-division courses
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. Only GOVT passed with a grade of C or better may be used to fulfill major requirements.

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, 343s, 440s. GOVT 480 or 490 may be substituted for two courses 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 ANTH, COMM, ECON, EUST, FREN, GEOG, GERM, HIST, JAPA, LAS, PHIL, RELI, RUSS, SOCI, SPAN, and UNIV.
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 are required for the B.A. degree, 45 of which must be at the 300 and 400 level. Only GOVT passed with a grade of C or better may be used to fulfill major requirements.

B.S. Degree with a Major in Administration of Justice

This interinstitutional and interdisciplinary program requires a minimum of 128 semester hours of coursework.

Students who 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; 6 credits in literature;
   - 9 credits in history, with at least 3 credits at the 300 level or above;
   - 9 credits from any two of: PHIL, ANTH, PSYC, or SOCI (not PHIL 173 or 376); 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. 15 credit hours of core requirements:
   - GOVT 103, 132 or 133, 204, 241, and 250.
3. 21 credit hours of advanced government courses including GOVT 355, 356, and 451 (stu-
Minor in Global Systems

This minor in global systems consists of 21 credit hours of non-region-specific courses that deal with global connections or transactions. It is ideal for majors in area studies, business, economics, foreign languages and literatures, geography, government, history, international studies, marketing, and other disciplines taking a global view of the world. The minor requires:

A. GOVT 149 Global Awareness
B. Two of the following:
   GEOG 101 Major World Regions
   GOVT 132 Introduction to International Politics
   HIST 130 History of the Modern Global System
C. Two of the following:
   GEOG 301 Political Geography
   GOVT 244 America in the Global System
      (Prereq. GOVT 132)
   GOVT 349 The Global System Perspective
      (Prereq. GOVT 132 or 133)
D. Two of the following:
   ECON 360 Economics of Developing Areas
      (Prereq. ECON 103 and 104 or POI)
   ECON 390 International Economics
      (Prereq. 306 and 311 or POI)
   GEOG 304 Population Geography
   GEOG 305 Economic Geography
   GOVT 336 Political Development and Change
   GOVT 340 Advanced International Relations
   MKTG 407 International Business
      (Prereq. MKTG 301; MGMT 301 or 302; and FNAN 301)

Certain relevant UNIV or other special topics courses may also meet requirements in category C on a case by case basis as determined by the program coordinator. Note that all course prerequisites must be met prior to enrollment.

For more information, see the program coordinator Robert Clark, Department of Public and International Affairs, Robinson Hall, Room A201.

Russian Studies

Faculty

Aksyonov (Robinson Professor, Foreign Languages and Literatures), Christensen (Foreign Languages and Literatures), Hecht (Foreign Languages and Literatures), Jensen (History), Katz (Public and International Affairs), Lavoie (Economics), Levine (Foreign Languages and Literatures, Program Chair), Spain (Foreign Language and Literatures), Wade (History)

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

Two principal directions are possible within this degree program: Russian Studies as one element of a double major, or Russian Studies as a single degree program. In the first option, students must fulfill all requirements of the Russian Studies program as noted below. Students must also fulfill requirements of the second major. Obvious combinations with 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)

8. GEOG 330 or GOVT 338 or 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 and International 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 Russian Studies

(Single Major with a Concentration in Language and Literature)

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<tbody>
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<td>ENGL 103</td>
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<tr>
<td>RUSS 103</td>
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<td>COMM 100</td>
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<td>ARTH 120</td>
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<td>SOCI 101</td>
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<tbody>
<tr>
<td>RUSS 201</td>
<td>3</td>
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<tr>
<td>BIOL 103</td>
<td>4</td>
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<tr>
<td>GEOG 330</td>
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<tr>
<td>GOVT 132</td>
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<td>RUSS 326</td>
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<tbody>
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<tr>
<td>RUSS 310</td>
<td>3 RUSS 354</td>
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<tr>
<td>ENGL 302</td>
<td>3 RUSS 381</td>
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<td>HIST 328</td>
<td>3 RUSS 311</td>
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<tr>
<td>RUSS 380</td>
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<td>3 RUSS 410</td>
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<tr>
<td>RUSS 303</td>
<td>3 RUSS 415</td>
</tr>
<tr>
<td>RUSS 480</td>
<td>3 Elective</td>
</tr>
<tr>
<td>RUSS 407</td>
<td>3 RUSS 300</td>
</tr>
<tr>
<td>RUSS 401</td>
<td>3 RUSS 481</td>
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Program on Social and Organizational Learning

Faculty

Professors: Johnson (Koch Professor of Economics)

Associate Professors: Cox, High (on leave 93-94), Lavoie (Chair)

Assistant Professors: Ellig, Joseph, Rifkin

Research Professors: Baetjer, Coppin

Course Work

This department offers all course work designated LRNG in the Course Descriptions sections of this catalog.

The Program on Social and Organizational Learning

The Program on Social and Organizational Learning is an interdisciplinary department in the College of Arts and Sciences. The program’s slate of courses is designed to serve graduate students and advanced undergraduates in a variety of fields. These fields include economics, telecommunications, software engineering, international transactions, public affairs, and sociology. The program offers no undergraduate degree. The program’s courses address social theory and software engineering as well as practical management and subtle questions in the philosophy of knowledge. In teaching and research, the faculty attack one question, albeit a big one: how do learning processes work in human society? The methodological slant is interpretive, emphasizing ethnographic and archival approaches to empirical work. Theorizing is grounded in problem-solving. What results are courses that examine the role of knowledge, mar-
kets, and information technology in social institutions and organizations.

### Sociology and Anthropology

#### Faculty
**Professors:** Ayruhr (Anthropology), Bateson (Robinson Professor, Anthropology), Black (Anthropology), Borkman (Sociology), Dennis (Sociology), Dietz (Sociology), Dumont (Robinson Professor, Anthropology), Scimeca (Sociology), Stone (Sociology, Chair), Williams (Anthropology)

**Associate Professors:** Colvin (Sociology), Golomb (Anthropology), Horton (Sociology), Jacobs (Sociology), Lancaster (Anthropology), Palkovich (Anthropology), Potter (Anthropology, Dean), Rader (Sociology), Rosenblum (Sociology), Tavani (Sociology)

**Assistant Professors:** Guagnano (Sociology), Hanrahan (Sociology)

**Lecturer:** 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 326 (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 and Interdisciplinary Minors.

##### 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>Literature</td>
</tr>
<tr>
<td>Natural science</td>
<td>Natural science</td>
</tr>
<tr>
<td>ANTH 114, 135</td>
<td>ANTH 120</td>
</tr>
<tr>
<td>Psychology, sociology*</td>
<td>Analytic reasoning*</td>
</tr>
<tr>
<td></td>
<td>Economics, geography, government, history*</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral communication</td>
<td>Philosophy or religious studies*</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Economics, geography, government, history*</td>
<td>Literature</td>
</tr>
<tr>
<td>Psychology, sociology*</td>
<td>Anthropology electives</td>
</tr>
<tr>
<td>Anthropology elective</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 302</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Foreign language</td>
<td>ANTH 340 (or SOCI 311)</td>
</tr>
<tr>
<td>Anthropology elective</td>
<td>Anthropology electives</td>
</tr>
<tr>
<td>ANTH 380 (or ENGL 326)</td>
<td>9</td>
</tr>
<tr>
<td>Fine Arts*</td>
<td>Anthropology elective</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology electives</td>
<td>ANTH 492</td>
</tr>
<tr>
<td>ANTH 490</td>
<td>Anthropology electives</td>
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<tr>
<td>12</td>
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<td>15</td>
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</tr>
</tbody>
</table>

*Come to the Anthropology office for guidance about electives.

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 Licensure (Certification)

Students who want to become secondary school teachers should consult the sections on licensure (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.

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>SOCI (300-400)</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>Literature</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Natural science</td>
<td>Natural science</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
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<tr>
<td></td>
<td>13</td>
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</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCI (300-400)</td>
<td>SOCI (300-400)</td>
</tr>
<tr>
<td>Oral communication</td>
<td>SOCI 221</td>
</tr>
<tr>
<td>Foreign language</td>
<td>ENGL 302</td>
</tr>
<tr>
<td>Analytical reasoning</td>
<td>ANTH 114</td>
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<tr>
<td>Elective</td>
<td>Foreign language</td>
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<td></td>
<td>13</td>
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</table>

<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCI (300-400)</td>
<td>SOCI (300-400)</td>
</tr>
<tr>
<td>Elective</td>
<td>SOCI (300-400)</td>
</tr>
<tr>
<td>SOCI 303</td>
<td>Fine arts</td>
</tr>
<tr>
<td>ANTH 332</td>
<td>Economics, government,</td>
</tr>
<tr>
<td>Philosophy or</td>
<td>geography, or history elective</td>
</tr>
<tr>
<td>religious studies</td>
<td>Elective</td>
</tr>
<tr>
<td></td>
<td>16</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
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<tbody>
<tr>
<td>SOCI (300-400)</td>
<td>SOCI 412</td>
</tr>
<tr>
<td>Economics, government,</td>
<td>SOCI (300-400)</td>
</tr>
<tr>
<td>geography, or history</td>
<td>Electives</td>
</tr>
<tr>
<td>Electives</td>
<td>15</td>
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</tbody>
</table>

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.

Study of the Americas

Faculty


Course Work

The Center for the Study of the Americas faculty offers all course work designated STAM in the Course Descriptions section of this catalogue, and STAM 690 listed in the Graduate Catalog.

Requirements for B.A. Degree in the Study of the Americas

The Center for the Study of the Americas undergraduate major focuses on the diverse yet connected regions, societies, cultures, and peoples of the Americas. The major culminates in the conferral of the B.A. degree in the Study of the Americas (with a designated regional concentration in Canadian, Latin American and Caribbean, United States, or Comparative Western Hemisphere Studies).

As an interdisciplinary program, the Center for the Study of the Americas strongly encourages its students to pursue a double major: combining a major in the Study of the Americas with a major from one of the departments that cooperates closely with the program (Anthropology, Art History, Biology, Communication, Economics, English, Foreign Languages and Literatures, Geography and Earth Systems Science, History, Philosophy and Religious Studies, Psychology, Public and International Affairs, Sociology, and Anthropology, and Theater). The center also encourages its students to pursue one of the interdisciplinary minors available within the College of Arts and Sciences (CAS), including African American Studies, Film and Media Studies, Urban and Suburban Studies, Women's Studies. Students can usually fulfill the requirements for these options with the minimum 120 hours required for all CAS degrees.
Because of its highly individualized plan of study, the center requires its majors to work closely with a designated faculty adviser. New majors should meet as soon as possible with the program director to arrange for an adviser. Majors should then meet as soon as possible with their advisers to choose their regional concentration and plan their integrated course of study.

The Study of the Americas major requires a minimum of 120 hours of university course work. All students must satisfy requirements for the B.A. degree at the university and requirements for a major in the Study of the Americas. The major requires 36 hours divided as follows:

1. STAM 303 and 304 (6 hours): a two-semester introduction to the history of the Americas and the methodologies of studying the Americas.

2. Two history courses (6 hours) related to the student's regional concentration:
   a. Canadian concentration: HIST 379, and one course chosen with approval of the faculty adviser.
   d. Comparative Western Hemisphere concentration: 6 hours chosen with approval of the faculty adviser (possible courses include HIST 121, 122, 271, 271, 379, or other courses approved by the faculty adviser).

3. One foreign language course (3 hours) beyond the level required for the degree requirement. The language should relate to the student's regional concentration and must be chosen with the approval of the faculty adviser. A foreign language and literature course in translation may be used to satisfy this requirement with the approval of the faculty adviser.

4. Four Center for the Study of the Americas (STAM) courses or their equivalents (with approval of the faculty adviser) (12 hours) in the student's regional concentration. All four courses must be at the 300 level or above.

5. Two Center for the Study of the Americas (STAM) elective courses or their equivalents (with approval of the faculty adviser) (6 hours) in an area other than the student's regional concentration. Both courses must be at the 300 level or above.

6. Senior Seminar (STAM 410) (3 hours): a senior research project related to the student's area of interest within the regional concentration; the project will be directed by a faculty mentor chosen by the student in consultation with the faculty adviser.

Within each regional concentration, the student, in consultation with the faculty adviser, is encouraged to develop an area of interest that connects the four courses. Possible interest areas include cultural studies; ecological studies; postcolonial studies; visual studies; folklore and folk life; ethnography and everyday life; fine arts of the Americas; literature of the Americas; popular culture in the Americas; history and art; history and literature; history and politics; historic preservation; politics and culture; politics and economics; politics and government; politics and mass media; political activism and movements; gender, sexuality, society, and culture; class, society, and culture; film and media studies; urban and suburban studies; African American studies; Appalachian studies; Native American studies; women's studies.

Internships
Majors are encouraged to avail themselves of at least three credits in internship work in a project that is related to their regional concentration (and which will apply to the four course concentration). Internships are possible with Congress and local governments, community organizations, environmental organizations, foundations, government and nongovernment agencies, human rights organizations, international business organizations, labor unions, legal organizations, libraries, media organizations, museums, political parties, public interest organizations, publications, and religious organizations.

An internship semester is also possible: three credits will apply to the four-course concentration; the rest will count for elective credit. Specific arrangements must be made with, and approved by, the faculty adviser and the director of the program.

Study Abroad
Majors are also encouraged to participate (for a summer, a semester, or a year) in a study abroad program related to their regional concentration. Interested students must work out their plan of study abroad with their faculty adviser and the director of the program.

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 PAGE category in this catalogue. Also, contact the PAGE office for sample schedules for Study of the Americas majors.
Institute of the Arts
Institute of the Arts

"The nineties is the decade of the arts at George Mason. In a rapidly changing world, the arts provide a common ground, an expression of our shared humanity. Students should graduate with an appreciation of what it is to be human, what it is to know and appreciate their own culture and that of others. We want the arts to permeate the education of all undergraduates, not just that of arts majors."

George W. Johnson
President, George Mason University

The Institute of the Arts was established in August 1990 to implement George Mason University’s long-term commitment to the arts. The institute has adopted a three-fold mission:

• to make the arts an intrinsic part of all students’ university experience;
• to develop audiences within and outside the university that are knowledgeable and passionate about the arts and broadly representative of Washington, D.C.’s diverse communities; and
• to support artists and new works, with emphasis on multicultural and global perspectives.

The Institute of the Arts (IOA) searches for innovative ways to involve all students in the artistic process, professional performances, and arts-based, nontraditional curricula. IOA makes the arts a pervasive presence in the lives of students regardless of age, ethnic background, or academic specialization.

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.

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.

Academic Programs

Currently, the Institute of the Arts houses three academic divisions, Art Studio (B.A.), Dance (B.A., B.F.A.) and Theater (B.A.). These majors have strong academic backgrounds and have their discipline programs taught by professional artists. They also offer undergraduate minors in each division. Students interested in the minor option should consult the appropriate section of the catalog.

Entering freshman are strongly encouraged to complete their general education program by pursuing the PAGE curriculum because of the PAGE program’s strong emphasis upon interdisciplinary studies in the arts.

IOA also offers a series of interdisciplinary courses that carry the institute’s prefix (ARIN). These courses are listed in the back of this catalog under Arts Institute. ARIN courses are open to all undergraduates and serve as electives for students within and outside of the institute’s degree programs.

Administration

Sarah Lawless, Director
Evans Mandes, Associate Dean for Academic and Student Affairs
Mary Hammond, Division Director, Art Studio
Judy Allen, Division Director, Dance
Rick Davis, Artistic Director, Theater of the First Amendment, and Division Director, Theater

Core Faculty


http://catalog.gmu.edu
Art Studio

Faculty
Associate Professors: Clapsaddle, Hammond (Director), Kravitz
Lecturers: Antholt, Figura, Jones, Kendall-Hull

Course Work
The Art Studio Division offers all course work designated ARTS in the Course Descriptions section of this catalog.

B.A. Degree with a Major in Art Studio
The major program in art studio prepares students for graduate study in studio art, as well as for research and professional work in art. The B.A. in art does not satisfy all requirements for public school teaching.

Sample Schedule for Art Studio

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTS 202</td>
<td>ARTS 203</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>Communication</td>
</tr>
<tr>
<td>Foreign language</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Math or logic</td>
<td>Philosophy or religious studies</td>
</tr>
<tr>
<td></td>
<td>Third Semester</td>
</tr>
<tr>
<td>ARTS 300 level</td>
<td>ARTS 300 level</td>
</tr>
<tr>
<td>ARTH 201 or 300 level</td>
<td>Foreign language</td>
</tr>
<tr>
<td>Literature</td>
<td>Literature</td>
</tr>
<tr>
<td>PSYC, ANTH, or SOCI</td>
<td>PSYC, ANTH, or SOCI</td>
</tr>
<tr>
<td></td>
<td>Sixth Semester</td>
</tr>
<tr>
<td>ARTS 300 level</td>
<td>ARTS 300 or 400 level</td>
</tr>
<tr>
<td>Natural science</td>
<td>Natural science</td>
</tr>
<tr>
<td>History or economics</td>
<td>History or economics</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>Non-Western culture</td>
</tr>
<tr>
<td></td>
<td>Seventh Semester</td>
</tr>
<tr>
<td>ARTS 300 or 400 level</td>
<td>ARTS 300 or 400 level</td>
</tr>
<tr>
<td>Electives (300+ level)</td>
<td>Electives (300+ level)</td>
</tr>
<tr>
<td>Elective (Internship)</td>
<td>Electives (ARIN, dance, film, music, theater)</td>
</tr>
</tbody>
</table>

Major in Art Studio
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 division may be presented for credit toward the art studio major with division approval. Check with a division adviser.

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

Minor in Art Studio
The minor in art studio 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 division offers both M.A. and M.F.A. degrees in computer imaging within the Visual Information Technologies (VIT) program, as well as courses that support other graduate programs. Information about graduate programs may be obtained from the Graduate Catalog and from the VIT program director.

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 studio majors are available in the PAGE office.

Dance

Faculty
University Professor: Allen (Director)
Associate Professors: Miller, Murphey
Assistant Professor: Studd
Lecturers: DePont, Fleitell, Lees, Levin, Micholotti, Pierson, Price, Riley, Williamson, Yevell

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 B.F.A. 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 Division of Dance. 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 admission 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**

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>A. General Education</th>
<th>Orientation to Dance Production</th>
<th>Int./Adv. Modern Dance Technique</th>
<th>Int./Adv. Ballet Technique</th>
<th>Dance Improvisation</th>
<th>Dance Composition I</th>
<th>Dance Composition II</th>
<th>Dance History I</th>
<th>Dance History II</th>
<th>Rhythmic Analysis</th>
<th>Dynamic Alignment</th>
<th>Teaching Principles and Methods</th>
<th>Dance Performance</th>
<th>Choreography</th>
<th>Advanced Dance Production</th>
<th>Dance Production Lab</th>
<th>Elementary Labanotation</th>
<th>C. Dance Concentration Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>44</td>
<td>1. English Composition</td>
<td>18</td>
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<tr>
<td></td>
<td>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.</td>
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<td></td>
<td>Any course in literature at the 200 level in English, the 300 level or above in foreign languages and literatures, or PHIL 253.</td>
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<td>3. Natural Science</td>
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<td></td>
<td>Chosen from astronomy, biology, physics, chemistry, and geology.</td>
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<td>4. Social Science</td>
<td>9</td>
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<td>3</td>
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<td>3</td>
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<td>3</td>
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<td>4</td>
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<td>15</td>
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<tr>
<td></td>
<td>Three to six credits from ECON, GOVT, HIST, or GEOG</td>
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<td></td>
<td>Three to six credits from ANTH, PSYC, SOCI, AMST 205, or AMST 302</td>
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http://catalog.gmu.edu
Composition IV
Residency Workshop
Intermediate Labanotation
Choreography
Special Topics
Music Accompaniment for Dance
Intermediate Modern Technique
Advanced Modern Technique
Intermediate Ballet Technique
Advanced Ballet Technique
No more than 9 hours of Intermediate Modern, Advanced Modern, Intermediate Ballet, or Advanced Ballet may be counted toward the Dance Concentration elective credits.

D. Non-Dance Electives .......... 6
Total .......... 131

Bachelor of Fine Arts—Dance
Sample Schedule

First Semester
ENGL 101 3
MUSI 101 3
DANC 170 1
DANC 114 3
Dance technique 6

Second Semester
ENGL 101 3
MUSI 101 3
DANC 170 1
DANC 114 3
Dance technique 6

Third Semester
ENGL 101 3
MUSI 101 3
DANC 170 1
DANC 114 3
Dance technique 6

Fourth Semester
ENGL 101 3
MUSI 101 3
DANC 170 1
DANC 114 3
Dance technique 6

Fifth Semester
ENGL 101 3
MUSI 101 3
DANC 170 1
DANC 114 3
Dance technique 6

Sixth Semester
ENGL 101 3
MUSI 101 3
DANC 170 1
DANC 114 3
Dance technique 6

Seventh Semester
ENGL 101 3
MUSI 101 3
DANC 170 1
Dance technique 6
Dance elective 6
DANC 370 1

B.A. Degree with a Major in Dance
The B.A. 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 educational experiences while pursuing a liberal arts degree.

In addition to general degree requirements for a B.A. degree, dance majors must complete a minimum of 44 hours in dance. A total of 120 semester hours is required for the B.A. degree with a major in dance.

Degree Requirements

A. General Education ............... 62
  1. Communication .................. 21
     a. Written ...................... 6
     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, and 302 fulfill degree requirements.
     b. Oral ......................... 3
        COMM 100, 101, 110, 120, or 130
     c. Foreign Language ........... 0-12
        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 the Institute of the Arts about a possible waiver of this requirement.
  2. Analytical Reasoning .............. 3
     Logic (PHIL 173 or 376) or Mathematics (STAT 250 or DESC 200)
  3. Humanities ....................... 15
     a. Literature ................... 6
     Any literature course at the 200 level in English, the 300 level or above in foreign languages and literatures, or PHIL 253.
     b. Fine Arts ..................... 6
        Courses designated by MUSI, THR, and ARTS.
     c. Philosophy or Religion ........ 3
        A logic course does not satisfy this requirement.
  4. Social Science ..................... 9
     a. Three to six credit hours in economics, geography, government, or history.
     b. Three to six hours in AMST 205, AMST 302, anthropology, psychology, or sociology.
  5. Natural Science .................... 8
     Astronomy, biology, chemistry, geology, or physics.
  6. Non-Western culture .............. 6

http://catalog.gmu.edu
Six credits must be earned in courses devoted to non-Western culture. This requirement is waived for the 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's office of the Institute of the Arts. 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, 214, 215, 337, 490 |
| RUSS 353, 354 |

**B. Major Requirements**

- Modern Dance Techniques .......... 6
  (intermediate or advanced level)
- Ballet Technique ............ 3
  (intermediate or advanced level)
- 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 ........ 2
- Dance Elective ............ 3
- Orientation to Dance Production ... 1
- Dance Production Lab .... 1
- Elementary Labanotation ... 4

**C. Electives** ........... 14

**Total Minimum Semester Hours** .......... 120

---

**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>3</td>
</tr>
<tr>
<td>Foreign language</td>
<td>3</td>
</tr>
<tr>
<td>Social science</td>
<td>3</td>
</tr>
<tr>
<td>DANC 170</td>
<td>3</td>
</tr>
<tr>
<td>DANC 114</td>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literature</td>
<td>3</td>
</tr>
<tr>
<td>Fine arts</td>
<td>3</td>
</tr>
<tr>
<td>Foreign language</td>
<td>3</td>
</tr>
<tr>
<td>DANC 251</td>
<td>3</td>
</tr>
<tr>
<td>DANC 252</td>
<td>3</td>
</tr>
<tr>
<td>Dance technique</td>
<td>3</td>
</tr>
</tbody>
</table>

**Fifth Semester**

- Natural science ............. 4
- Social science ............ 3
- DANC 210 ............... 3
- DANC 390 ........... 3
- Dance technique ....... 3

**Sixth Semester**

- Communication ............ 3
- Non-Western culture .... 3
- DANC 393 ........... 4
- General elective ....... 5
- DANC 370 ........... 1

**Seventh Semester**

- Communication ............ 3
- Non-Western culture .... 3
- DANC 393 ........... 4

**Eighth Semester**

- Philosophy or religion .... 3
- Electives ............. 6
- DANC 454 ........... 3
- DANC 370 ........... 1

**Minor in Dance**

The minor in dance consists of 21 credits, selected from any combination of dance courses. The plan of study for the dance minor is designed by both the student and the dance faculty member, and must then be approved by the entire dance faculty. The dance faculty approval for minors in dance will take into consideration the student's major area of interest, a combination of technique and theory courses, and a range of upper- and lower-level courses.

**Theater**

**Faculty**

- Robinson Professor: D'Andrea
- Associate Professor: Davis (Director)
- Assistant Professors: Austin, Gero, Johnsen-Neshati, Raybuck
- Lecturers: Cohen, Donaldson, Glosson, Hutcheson, McDonald, O'Connell, Waller

The Theater Division of the Institute of the Arts 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 division'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 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. TFA productions regularly employ student assistants in stage management, directing, dramaturgy, technical crews, and production/company management. Students are eligible to audition for roles or understudy assignments in TFA productions.

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 TFA productions.

Degree Requirements

General Education .................................. 44-56

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. Language ...................................... 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. Students are reminded that the English Department offers proficiency exams for credit and exemption from this requirement.
   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, STAT 250, DESC 200, 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 100, SOCI 101, or AMST 205 .................................................. 3

5. Natural Science .................................... 8

   A two-semester laboratory science sequence in astronomy, biology, chemistry, geology, or physics.

B. Core 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 30-39 additional hours.

   Theater Core (and Minor in Theater)
   THR 150, 151 Drama, Stage, and Society I and II ........................................... 6
   THR 200 Play Production Practicum (.5 ea, repeated 4x) ........................................ 2
   THR 210 Acting I .................................. 3
   THR 230 Introduction to Technical Theater I ..................................................... 3
   THR 350 Script Analysis .......................... 3

C. Core 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 310 Acting II,
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 (THR 320, 321, and 420, 421) is open by audition only. Auditions are held at the beginning of each semester and by appointment. Prerequisites: THR 300 (Voice and Speech Fundamentals), THR 303 (Movement for the Actor I), and THR 310 (Acting II). Prerequisites may be waived by permission of the ensemble director if evidence is presented of satisfactory preparation for advanced work in these subject areas.

THR 301 Voice for the Performer (3)
THR 304 Movement for the Actor II (3)
THR 320, 321 Acting Ensemble I (6)
THR 322 Alexander Technique/
Stage Combat (3)
THR 420, 421 Acting Ensemble II (6)
THR 422 Stage Make-up/Stage Clothing (3)
THR 423 Audition Techniques: Stage
and Camera (3)
Elective
One course from the following:
THR 340 Directing II, THR 351 Dramatic Theory

Total ......................... 30-39

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 a departmental or institute course with the 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 licensure (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 or Publicity offices 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
- Management
- Marketing

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 Kluyver, Dean
Richard L. Coffinberger, Associate Dean for Undergraduate Programs and Student Affairs
Jon English, Associate Dean for Graduate Programs and Faculty Affairs
Sandra Mitchell, Director of Graduate Admissions
Pete League, Director of Graduate Placement and Career Development
Peggy Crawford, Director of Executive M.B.A. Program
Joan Weintraub, Associate Director of Executive M.B.A. Program
Lloyd M. DeBoer, Distinguished Professor of Business Administration
E. Penelope Webb, Director of Academic Administration and Student Support Services
Christine K. Penas, Acting Associate Director of Academic Administration and Student Support Services

Course Work
The School of Business Administration offers all course work designated ACCT, 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 under Academic Policies for information concerning the literacy requirement, English composition requirement, core requirements, 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 to 21 credit hours (with grades of C or better) required for the specific major, BULE 401, MKTG 407, 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 Ds may be applied to the major.

<table>
<thead>
<tr>
<th>Degree Requirements</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Education Requirements</strong></td>
<td>51</td>
</tr>
<tr>
<td>Language Arts and Culture</td>
<td>18</td>
</tr>
<tr>
<td>English composition</td>
<td>6</td>
</tr>
<tr>
<td>(ENGL 100 or 101 and 302)*</td>
<td></td>
</tr>
<tr>
<td>Speech communication</td>
<td>3</td>
</tr>
<tr>
<td>(COMM 100, 101, or 260)</td>
<td></td>
</tr>
<tr>
<td>Literature and humanities</td>
<td>9</td>
</tr>
<tr>
<td>(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.)</td>
<td></td>
</tr>
<tr>
<td>Social Science</td>
<td>21</td>
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<tr>
<td>Principles of Economics</td>
<td>6</td>
</tr>
<tr>
<td>(ECON 103, 104)*</td>
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<tr>
<td>Economics (upper-level, including</td>
<td>6</td>
</tr>
<tr>
<td>ECON 306 or 310)</td>
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<tr>
<td>History, government, or geography</td>
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<tr>
<td>psychology, sociology, and/or</td>
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<tr>
<td>anthropology</td>
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<td>General Sciences</td>
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<td>Mathematics (MATH 108 or 113)*</td>
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<td>Laboratory sciences (astronomy,</td>
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<tr>
<td>biology, chemistry, geology, physics)</td>
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<tr>
<td>Computer science (CS 161)</td>
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<td><strong>Business Administration Core Courses</strong></td>
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<tr>
<td>Accounting (ACCT 201, 202)*</td>
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<tr>
<td>Applied Statistical Analysis</td>
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<tr>
<td>(DESC 200, 202)*</td>
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<tr>
<td>Computer-Based MIS (MIS 201)*</td>
<td>3</td>
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<tr>
<td>Decision Models (DESC 301)</td>
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<tr>
<td>Business Legal Studies</td>
<td>6</td>
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<tr>
<td>(BULE 301, 401)</td>
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<tr>
<td>Finance (FNAN 301)</td>
<td>3</td>
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<tr>
<td>International Business (MKTG 407)</td>
<td>3</td>
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<td>Management (MGMT 302)</td>
<td>3</td>
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<tr>
<td>Marketing (MKTG 301)</td>
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</tr>
<tr>
<td>Business Strategy and Policy</td>
<td>3</td>
</tr>
<tr>
<td>(MGMT 498 must be taken in the final semester.)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>122</td>
</tr>
</tbody>
</table>

*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 into a Major in the School of Business Administration**

A student interested in pursuing a major in accounting, general business administration, decision sciences and management information systems, finance, management, or marketing must make a separate application for admission 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 into 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 are 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 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 to 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.

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**Pre-Business Administration Students**

Sample schedules for pre-business administration students are available in Robinson Hall, Room B402. 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 available upon acceptance to a major in the School of Business Administration.

**Dean's Admission Program**

The school recognizes outstanding academic performance in high school by extending offers for the Dean's Admission Program to talented freshmen candidates. The guidelines for consideration for the program are:

- competitive high school GPA and class rank;  
- strong performance on the SAT or ACT; and  
- evidence of rigorous high school academic program demonstrated through a challenging course selection.

Upon admission to the program, the student is accepted directly into the SBA, bypassing the formal application and evaluation process. To maintain full status as a Dean's Admission Student, a GPA of 3.0 must be maintained.

**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: Brown, Heller (Chair), Godfrey (GMU Foundation Professor of Accounting), Samuels
Associate Professors: Buchanan, Cao, Cheung, Coffinberger, Millsbaugh
Assistant Professors: Eyler, Gopalakrishnan, Harr, Quarles, Wilkie, Young
Visiting Associate Professor: Holt
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 Collegiate 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 (21 credit hours): ACCT 311, 312, 331, 332, 351, 431, and 461.

Instructing 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), Dutta, Haynes, Ruth
Associate Professor: Das, Richmond
Assistant Professors: Boiney, Chen, Dewan, Michael, Min, Tetzlaff, Xu
Instructor: Schank
Lecturers: Alexander, Burgess, Carlson, Eskew, Gilbert, Kildane, McCullers, Overdahl, Press, Rhode, Schrader, Trigerio

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.

http://catalog.gmu.edu
Finance

Faculty
Professors: Crockett (Chair), Ferri (GMU Foundation Professor of Finance), Hanweck
Associate Professors: Crawford, Hysom, Johnston, Sugrue
Assistant Professors: Hogan, Kieschner, Yau
Instructor: Erickson

Degree Requirements
The Finance Department 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.

Management

Faculty
Professors: English, Fulmer (Chair), Kovach, Pearce (Eakin Endowed Chair in Strategic Management)
Associate Professors: Fagenson
Assistant Professor: Robbins
Instructors: Drury, Kramer, Schulte
Executive-in-Residence: Creelman

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 better in each course. Beyond MGMT 302, students are required to take the following:

Required: 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.

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 better 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.

Marketing

Faculty
Professors: Buzzel (Distinguished Professor of Marketing), Kernan (George Mason University Foundation Professor of Behavioral Analysis), McCrohan, Tongren
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.
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**
Gustavo A. Mellander, Dean
Martin E. Ford, Associate Dean
Clark Dobson, Assistant Dean
Mary Anne Lecos, Director of Teacher Education

**Faculty**
Profs: Bowen (Dean Emeritus), Chickering, Dede, Gilstrap, Isenberg, Jacob, Martin, Mellander, Seligman, Sockett, Spikell, Wallace, Williams

Assoc Professors: Bartholomew, Behrmann, Bonfadini, Collier, Dobson, Duck, Dunklee, Dzama, Given, Jones, Lecos, Lepard, Levy, Rosegrant, Smith, C. Thomas, W. Thomas, Valdez-Pierce, White

Assistant Professor: Sterling, Wang

Administrative Faculty: Anderson, Mosier

**Course Work**
The Graduate School of Education enrolls students preparing for specific professions. The school offers all course work designated EDCI, EDIT, EDRD, EDSE, EDAS, EGDC, 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 Licensure (Certification)**
The Graduate School of Education is responsible for professional courses, special standards, and licensure (certification) recommendation for students desiring to complete requirements for licensure (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 licensure (certification) in areas other than physical education and music education.

The following restructured undergraduate teacher education programs are now available for students:

- **Music Education** (Nursery, Kindergarten (NK)–Grade 12)
  - Instrumental
  - Vocal/Choral
  (Consult the Department of Music)

- **Physical Education** (with Health Education endorsement) NK–Grade 12
  (Consult the College of Nursing and Health Science)

The following restructured, graduate-level teacher education programs are now available for students:

- **Early Childhood Education** (Nursery, Kindergarten–Grade 3)
Middle Education (Grades 4-8)
Secondary Education (Grades 8-12)

English
English as a Second Language
Foreign Languages
   French
   German
   Latin
   Russian
   Russian Studies
   Spanish
Mathematics
Sciences
   Biology
   Chemistry
   Earth and Space Sciences
   Physics
Social Studies
   Economics*
   Geography*
   Government
   History
   History/Social Studies
   Psychology*
   Sociology*
Speech Communication*

*Add-on endorsement only

Special Education (NK-Grade 12)
   Early Childhood Special Education (ECSE)
   Emotional Disabilities (ED)
   Emotional Disabilities/Learning Disabilities (ED/LD)
   Learning Disabilities (LD)
   Severe Disabilities (SD)

English as a Second Language (NK-Grade 12 or add-on endorsement)

Academic Policies and Degree Requirements

Academic policies and degree requirements for graduate licensure (certification) programs and additional requirements to earn the M.Ed. degree are described in the Graduate Catalog and program handbooks available from the Office of Teacher Education.

The graduate work for licensure (certification) may be completed in no less than one year of full-time study or two years of part-time study. Certain courses in the licensure (certification) programs may be taken by undergraduates.

Persons seeking initial teacher licensure (certification) in Virginia must achieve specified minimum scores on the National Teachers Examinations (NTE). Information on these tests can be obtained from the Office of Teacher Education.

Licensure (Certification) for Early Childhood/Middle Education

Undergraduates who wish to become a licensed (certified) teacher in early childhood (NK-3) or middle education (4-8) must first obtain a B.A./B.S. in the arts/sciences (or the equivalent). They may apply during the senior year to be admitted to the Graduate School for professional study as a post-baccalaureate student.

Students seeking early childhood education licensure (certification) may major in any of the arts/sciences. Students seeking middle education licensure (certification) should major in a discipline taught in the middle grades (English, a social science, mathematics, or a natural science) and have a second concentration of 15 hours in another of these disciplines. Consult the licensure (certification) specialist in the Office of Teacher Education for detailed information.

General education and prerequisite professional courses must be successfully completed prior to beginning the graduate-level licensure (certification) program.

1. General Education Requirements . . . . . 51

   A. English and Communication . . . . . . 15
      ENGL 101, 302; ENGL 205, 206, or 253; any other 200-level literature course; COMM 100 or 220

   B. Social Science . . . . . . . . . . . . . . 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 natural science disciplines.)

   E. Mathematics . . . . . . . . . . . . . . 9
      MATH 106, 271, 272; or PHIL 173 (logic)

   F. Fine Arts/Philosophy . . . . . . . . 6
      ARTS 102 or ARTH 101; MUSI 101 or 100

2. Prerequisite Professional Courses . . . . . 9

   EDUC 300: Introduction to Teaching
   EDUC 301: Educationally Diverse Populations: Handicapped, Gifted, Multicultural
   EDUC 302: Human Growth and Development
3. Graduate Professional Courses  . . 30-43
Consult the Office of Teacher Education for detailed information about the full-time Professional Development School model or the part-time Flexible Alternative model for licensure (certification). The number of required semester hours varies by model.

Licensure (Certification) for Secondary Education
The Secondary Education Program has three components:

1. Courses in the teaching discipline (as developed by the College of Arts and Sciences and the Graduate School of Education.)

Recommended majors for teacher licensure (certification) include biology, chemistry, English, French, German, geology, government, history, Latin, mathematics, physics, and Spanish. However, these majors are not necessary for Secondary Education licensure (certification). Consult the licensure (certification) specialist in the Office of Teacher Education for information about course requirements for specific disciplines.

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 Science ................. 12
   HIST 121 and non-Western culture and the balance from: history, anthropology, sociology, economics, government, geography, psychology
C. Health or 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 Requirements
Students who wish to be licensed (certified) in a secondary school discipline must complete a graduate-level, 27-hour certification program in education. Undergraduates may take up to 6 hours of professional courses for Reserve Graduate Credit.

Recommended courses are:
   EDUC 522: Introduction to Secondary Education
   EDUC 539: Psychological Foundations of Adolescent Learning and Development
   EDUC 529: Pluralism and Exceptionality in U.S. Education

All students must have an approved plan of study prepared by the licensure (certification) specialist in the Office of Teacher Education. Students should consult with the secondary education adviser in the department discipline as well as the appropriate discipline adviser in the Graduate School of Education. Students interested in licensure (certification) should also consult the Office of Teacher Education and the Graduate Catalog for secondary education admission requirements, licensure (certification) requirements, and the additional courses needed to earn an M.Ed.

Licensure (Certification) for Special Education
Consult the licensure (certification) specialist in the Office of Teacher Education and Graduate Catalog for information about specific programs listed above and the additional courses needed for an M.Ed. in Special Education. Undergraduates may take up to 6 semester hours of graduate-level courses for Reserve Graduate Credit.

1. General Education Requirements .... 46
   Same as those listed above for Secondary Education.

2. Prerequisite Professional Courses ... 9
   EDUC 300: Introduction to Teaching
   or EDUC 522: Introduction to Secondary Education
   EDUC 301: Educationally Diverse Populations
   or EDUC 529: Pluralism and Exceptionality in U.S. Education
   EDUC 302: Human Growth and Development
   or EDUC 539: Psychological Foundations of Adolescent Learning and Development

3. Graduate Professional Courses . . 42-57
Consult the Office of Teacher Education for detailed information about the number of semester hours required for each specific endorsement area: Learning Disabilities (LD); Emotional Disturbances (ED); Emotional Disabilities/Learning Disabilities ED/LD; Severe Disabilities (SD); or Early Childhood Special Education (ECSE).
School of Information Technology and Engineering
School of Information Technology and Engineering

Departments

- Applied and Engineering Statistics
- Computer Science
- Electrical and Computer Engineering
- Information and Software Systems Engineering
- Operations Research and Engineering
- 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 11 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. Six master’s degree programs are available: computer science, electrical engineering, information systems, operations research and management science, software systems engineering, statistical sciences, and 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 (BIS) 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
W. Murray Black, Interim Associate Dean
Terrance Ryan, Assistant 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, geography, 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.

Applied and Engineering Statistics

Faculty
Professors: Gantz, Gentle, Greenberg, D. Miller, Wegman
Associate Professors: Bolstein, Carr, Habib, J. Miller, C. Sutton
Adjunct Professors: Davis, Le, Sirgany, Tortora

Course Work
Statistical methods and methods for data analysis are crucial for research in and for the exploitation of the natural sciences, the social sciences, business, nursing, education, and engineering. The department offers a variety of introductory courses as well as more advanced course work in specialized statistical methodology and applications. The focus of the department’s offerings is applied with special emphasis on computing, federal and survey statistics, and engineering applications of statistics and data analysis.

Introductory courses are targeted for a wide variety of undergraduates including undergraduates in the College of Arts and Sciences and the College of Nursing and Health Science, as well as those in the School of Information Technology and Engineering. The STAT 250/350 sequence is targeted for general audiences while the STAT 344/354 sequence is targeted for technical and scientific audiences. STAT 362 is designed as a projects course in the use of computer statistical packages.

Although the department does not yet offer an undergraduate degree in statistics, a variety of advance courses are available for inclusion in other degree programs. The department offers courses with the designator STAT, listed in the Course Descriptions section of the catalog.

Certificate Program
The department offers a certificate program in statistics. For more information, see Certificates and Interdisciplinary Minors section of this catalog.

Computer Science

Faculty
Professors: Denning (Chair), Hamburger, Menasce, Michalski, Rine, Sood, Wechsler
Visiting Professor: Ashany
Associate Professors: DeJong, Frieder, Norris, Pullen, Quammen, Tecuci, Wang
Assistant Professors: Acquah, Carver, Tanner
Visiting Assistant Professor: Setia
Affiliate Professor: Gerstner
Adjunct Professors: Egan, Logan, Nordstrom
Lecturers: Bechtold, Cox, Deppe, Erwin, Maddox, Marshall, O’Grady, Pierce

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.

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, 203, 213; either OR 481 or MATH 446; either 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; and any CS course numbered above 300. Students may need to choose electives to satisfy the prerequisites of these courses.

4. Natural Sciences: 12 credits in natural science courses intended for scientists and engineers. STAT 354 and PHIL 371 can also be counted toward this requirement if not used as "CS-related." Two of the courses for this requirement must have laboratory components and must constitute a sequence.

<table>
<thead>
<tr>
<th>Sample Schedule for B.S. in Computer Science</th>
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<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td><strong>Second Semester</strong></td>
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<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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<tr>
<td>Elective</td>
<td>Elective</td>
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<td><strong>14</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

| **Third Semester**                          | **Fourth Semester** |
| CS 265                                      | CS 365             |
| MATH 213                                    | MATH 125           |
| ECE 301                                     | ENGL 302           |
| Literature                                  | Electives          |
| **15**                                      | **15**             |

| **Fifth Semester**                          | **Sixth Semester** |
| CS 330                                      | CS 440             |
| CS 421                                      | CS 480             |
| MATH 203                                    | STAT 344           |
| Humanities or social sciences               | CS-related elective|
| Elective                                    | Humanities or social sciences |
| **15**                                      | **15**             |

**Seventh Semester**

| CS 471                                      | CS 450             |
| CS 483                                      | CS 490             |
| MATH 446                                    | CS-related electives |
| CS-related elective                         | Electives          |
| Humanities or social sciences               | **15**             |

**Eighth Semester**

| **15**                                      | **15**             |

**Sample Schedule for PAGE Student, Computer Science Major**

| **First Semester**                          | **Second Semester** |
| PAGE 120                                    | MATH 113           |
| PAGE 122                                    | PAGE 123           |
| PAGE 130                                    | PAGE 131           |
| PAGE 150/151                                | PAGE 152/153       |
| CS 112                                      | CS 211             |
| **16**                                      | **15**             |

| **Third Semester**                          | **Fourth Semester** |
| PAGE 227                                    | PAGE 228           |
| PAGE 230                                    | PAGE 252           |
| PAGE 250/251                                | PAGE 253           |
| MATH 114                                    | MATH 213           |
| CS 265                                      | CS 365             |
| **16**                                      | **16**             |

**Change of Major**

Students requesting a change of major to computer science must have a GPA of at least 2.75 and have successfully completed MATH 113 and either MATH 114 or MATH 125.

**Advanced Placement and Credit by Examination**

Some students may receive credit for CS 112, 211, or 265 by passing departmentally administered examinations. In addition, a score of 3 on the Advanced Placement (AP) CS examination will qualify the student for credit in CS 112. An AP score of 4, together with demonstrated competence in the programming language used in CS 211, will qualify for credit in that course.

**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.
Electrical and Computer Engineering

Faculty
Professors: Black, Cook (Chair), Gertler, Levis, Manitius, Mulpuri, Tabak, Van Trees
Associate Professors: Athale, Baraniecki, Beale, Berry, Ceperley, Chang, Ephraim, Haney, Hintz, Ioannou, Jabbari, Schaefer, W. Sutton
Assistant Professors: Auletta, Cole, Olurotimi, Orsak, Paris
Adjunct Professors: Gorman, Gurfein, Hartman, Mazel

Course Work
This department offers courses with the designator 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 full-time, part-time, or co-op basis. In any case, the program must be approved by an academic adviser. Sample schedules for students in electrical engineering choosing the program are available in the ECE office or PAGE office.

The demanding electrical engineering curriculum requires 129 total credit hours. Students may wish to consider an extra semester or two for the purpose of lightening the course load (particularly those with part-time employment), or participating in cooperative education with local industry.

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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<tbody>
<tr>
<td>MATH 113</td>
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<td>CHEM 251</td>
<td>CS 211</td>
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<tr>
<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>ENGR 191</td>
<td>Humanities or social science</td>
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<tr>
<th>Third Semester</th>
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<tbody>
<tr>
<td>PHYS 350</td>
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<td>PHYS 351</td>
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<td>MATH 213</td>
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<td>ECE 285</td>
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<td>ENGR 210</td>
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<td>Humanities or social science</td>
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<th>Fourth Semester</th>
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<td>PHYS 352</td>
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<td>PHYS 353</td>
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<td>MATH 214</td>
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<td>ECE 286</td>
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<tr>
<td>MATH 203</td>
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<td>Literature</td>
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<tr>
<th>Fifth Semester</th>
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<tbody>
<tr>
<td>ECE 331</td>
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<td>ECE 332</td>
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<td>ECE 360</td>
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<td>ECE 306</td>
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<td>ENGL 302</td>
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<th>Sixth Semester</th>
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<tbody>
<tr>
<td>ECE 333</td>
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<td>ECE 334</td>
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<td>ECE 360</td>
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<tr>
<td>ECE 445</td>
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<tr>
<td>STAT 344 or MATH 351</td>
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<td>ECE 361</td>
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<tr>
<th>Seventh Semester</th>
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<tr>
<td>ECE 421</td>
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<td>ECE 433</td>
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<td>ENGR 390</td>
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<tr>
<td>ECE 460</td>
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<tr>
<td>ECE 429, 434, 435, 449, 461, or 469</td>
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<tr>
<td>ECE 431</td>
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<td>ECE 492</td>
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<tr>
<th>Eighth Semester</th>
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<tbody>
<tr>
<td>ECE 491</td>
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<tr>
<td>ECE 429, 434, 435, 449, 461</td>
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<tr>
<td>ECE technical electives</td>
</tr>
<tr>
<td>ECE 493</td>
</tr>
<tr>
<td>Humanities or social science</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. At least six credit hours of humanities/social sciences must be in the disciplines of sociology, psychology, anthropology, economics, history, geography, or government.

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: Dede, Gomaa, Jajodia, Kerschberg (Chair), Palmer, Rine, Sage, Sibley
Associate Professors: Baum, Motro, Sanden, Sandhu
Assistant Professors: Ammann, Brodsky, Brouse, Offutt, Wang
Adjunct Professors: Armour, Carlson, Davis, Fletcher, Hanratty, Long, McDermott, Napolillo, Nguyen, Nidiffer, Wexelblat

Course Work
The Information and Software Systems Engineering Department offers courses with the designer INFS in the Course Descriptions section of this catalog. Although there is presently no undergraduate 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 Engineering

Faculty
Professors: Adelman, Friesz, Greenberg, Harris (Chair), Hoffman, D. Miller, Schum
Research Professor: Polyak
Associate Professors: Nash, Sofer
Adjunct Professor: Fischer

Course Work
Operations research and engineering efforts at George Mason University principally involve the theoretical and empirical sciences of managerial and operational processes. Courses include the traditions of mathematical optimization and random processes, with special stress on computational solutions using contemporary hardware and software. Models are needed for a variety of decision-making purposes in business, industry, and government to describe different environments and to relate alternative courses of action to performance. Thus, the courses in operations research and engineering focus on the quantitative modeling and analysis of complex systems.

Although the department does not offer an undergraduate degree in operations research, a variety of courses are available for inclusion in other degree programs.

This department offers courses with the designators OR in the Course Descriptions section of this catalog.

Certificate Programs
The department offers a certificate program in operations research to students whose undergraduate majors are computer science, decision sciences, mathematics, or systems engineering. For more information, see the catalog section on Certificates and Interdisciplinary Minors.

Systems Engineering

Faculty
Professors: Friesz, Houck, Levis (Chair), Michalski, Palmer, Rossini, Ryan, Sage, Van Trees
Research Professor: Brown
Associate Professors: Buede, Chang, Laskey, Lehner, Rathbone, White
Assistant Professor: Pachowicz
Research Assistant Professor: Fields
Adjunct Professors: Dea, Kilical, O'Connell, Scanlon
Research Instructors: Stanford, Wagenhals

Course Work
The Systems Engineering Department offers courses with the designators SYSI' 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
Systems engineering is concerned with the design, production, and maintenance of reliable systems within cost and time constraints. Systems engi-
Systems Engineering

Engineers apply an appropriate combination of theories and tools, carried out through the use of a suitable methodology and a set of system management procedures, to address real-world problems that are often of large scale and scope. Systems engineering activities vary from requirements definition or specification to the conceptual and functional development of systems. Efforts are focused on architectural concerns, on behavioral factors as they affect the human-machine interaction, and the design of decision support systems, and on system performance and evaluation.

In dealing with the various phases of the system life cycle, the systems engineer's perspective is different from that of a product engineer or technology developer. Whereas the product engineer deals with details, the systems engineer takes a "top down" perspective dealing with details only as needed to guarantee successful implementation. Whereas the product engineer deals with system internals, the systems engineer also addresses the external view of the system through the system's interface to other systems, users, and managers.

Our educational program reflects the systems engineer's unique perspective on the system life cycle. The core systems engineering curriculum provides a basic methodological foundation. A senior design project provides hands-on experience applying the methodological tools. Students gain technical depth by selecting a concentration track. Concentration areas include information systems engineering, decision support systems engineering, digital systems engineering, systems and control engineering, communication systems, mathematical systems, and engineering science. With the help of their adviser, students may also construct their own concentration areas.

B.S. Degree in Urban Systems Engineering

Urban systems engineering is the study of land, transportation, water, energy, and telecommunications systems from a civil engineering perspective as well as from social, political, economic, and environmental perspectives. The focus is on how these systems are conceived, developed, designed, built, operated, maintained, and reviewed 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 assigned faculty advisers; they 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

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 113</td>
<td>4 MATH 114</td>
</tr>
<tr>
<td>CHEM 251</td>
<td>4 CS 211</td>
</tr>
<tr>
<td>CS 112</td>
<td>4 PHYS 250</td>
</tr>
<tr>
<td>ENGR 107</td>
<td>2 ECON 103</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>3 PSYC 100</td>
</tr>
</tbody>
</table>
| Environmental perspectives. The focus is on how these systems are conceived, developed, designed, built, operated, maintained, and reviewed 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.

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</tr>
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<tbody>
<tr>
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<td>4 MATH 114</td>
</tr>
<tr>
<td>CHEM 251</td>
<td>4 CS 211</td>
</tr>
<tr>
<td>CS 112</td>
<td>4 PHYS 250</td>
</tr>
<tr>
<td>ENGR 107</td>
<td>2 ECON 103</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>3 PSYC 100</td>
</tr>
<tr>
<td>THIRD SEMESTER</td>
<td>FORTH SEMESTER</td>
</tr>
<tr>
<td>PHYS 350</td>
<td>3 MATH 203</td>
</tr>
<tr>
<td>PHYS 351</td>
<td>2 MATH 214</td>
</tr>
<tr>
<td>MATH 213</td>
<td>3 SYST 202</td>
</tr>
<tr>
<td>SYST 201</td>
<td>3 ENGR 390</td>
</tr>
<tr>
<td>ENGR 210</td>
<td>3 SYST 203</td>
</tr>
<tr>
<td>Literature</td>
<td>3 Literature</td>
</tr>
<tr>
<td>FIFTH SEMESTER</td>
<td>SIXTH SEMESTER</td>
</tr>
<tr>
<td>STAT 344</td>
<td>3 STAT 354</td>
</tr>
<tr>
<td>Technical electives</td>
<td>6 OR 442</td>
</tr>
<tr>
<td>OR 441</td>
<td>3 SYST 302</td>
</tr>
<tr>
<td>SYST 301</td>
<td>3 SYST 419</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>3 Humanities or social science</td>
</tr>
<tr>
<td></td>
<td>Technical elective</td>
</tr>
<tr>
<td>SEVENTH SEMESTER</td>
<td>EIGHTH SEMESTER</td>
</tr>
<tr>
<td>SYST 451</td>
<td>3 SYST 430</td>
</tr>
<tr>
<td>SYST 470</td>
<td>2 SYST 495</td>
</tr>
<tr>
<td>SYST 490</td>
<td>3 Technical electives</td>
</tr>
<tr>
<td>CS 421</td>
<td>3</td>
</tr>
<tr>
<td>Humanities or social science</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technical elective</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

http://catalog.gmu.edu
Suggested elective 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.

### Sample Schedule for Undergraduate Urban Systems Engineering Majors

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 113</td>
<td>4 MATH 114</td>
</tr>
<tr>
<td>CHEM 251</td>
<td>4 PHYS 250</td>
</tr>
<tr>
<td>CS 112</td>
<td>4 ENGR 193</td>
</tr>
<tr>
<td>ENGR 107</td>
<td>2 ECON 103</td>
</tr>
<tr>
<td>ENGL 101</td>
<td>3 PSYC 100</td>
</tr>
<tr>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 350</td>
<td>3 MATH 214</td>
</tr>
<tr>
<td>PHYS 351</td>
<td>2 USE 300</td>
</tr>
<tr>
<td>MATH 213</td>
<td>3 USE 310</td>
</tr>
<tr>
<td>ECE 285</td>
<td>3 USE 110</td>
</tr>
<tr>
<td>ENGR 210</td>
<td>3 ECON 104</td>
</tr>
<tr>
<td>ENGR 355</td>
<td>3 Literature</td>
</tr>
<tr>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE 301</td>
<td>USE 405</td>
</tr>
<tr>
<td>STAT 344</td>
<td>3 ENGR 390</td>
</tr>
<tr>
<td>USE 340</td>
<td>3 USE 359</td>
</tr>
<tr>
<td>USE 465</td>
<td>3 ENGR 307</td>
</tr>
<tr>
<td>ENGR 310</td>
<td>3 USE 467</td>
</tr>
<tr>
<td>Literature</td>
<td>3 ENGL 302</td>
</tr>
<tr>
<td></td>
<td>18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>USE 400</td>
<td>USE 490</td>
</tr>
<tr>
<td>USE 463</td>
<td>USE 416</td>
</tr>
<tr>
<td>USE 451</td>
<td>Technical electives</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Humanities elective</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

Urban systems engineering electives may be chosen from USE 452, USE 453, 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.
College of Nursing and Health Science
The College of Nursing and Health Science was formed in 1993 and brings together programs in Nursing, Social Work, Physical Education, and Health, Fitness, and Recreation Resources. The mission of the college is to prepare professionals equipped to provide leadership, care, and services related to wellness and quality of life through promotion of physical, social, and environmental health. Graduates practice in a variety of roles in settings that are constantly changing, complex, and multicultural. The college is a resource in health promotion to the university as well as to the citizens of the commonwealth of Virginia.

Administration
Rita M. Carty, Dean
Myra H. Fisher, Assistant Dean for Administration
Catherine Malloy, Associate Dean for Academic Programs, Nursing
Richard E. Miller, Assistant Dean for Student Affairs, Health Science
Georgine M. Redmond, Assistant Dean for Student Affairs, Nursing

Faculty
Professors: Ailinger, Butler, Carty (Dean), Connelly, Dear, Goodale, Johnson-Brown, Liu, Malloy (Associate Dean), Raskin, Ruhling, Silva, Walker, Wiggins
Adjunct Professor: Cooper, Henry, Ziai
Associate Professors: Bever, Douglas, Gaffney, Feeg, Hale, Harper, Jenkins, Kaseman, Metcalf, Miller (Assistant Dean) Moore, Noble, Redmond, Roche, Schack, Sorrell, Trainor, Vail, Wright
Adjunct Associate Professors: DeLeon, Johnson, Norton, Wakefield
Assistant Professors: Bailey, Boland, Boyd, Brenkus, Choi, Cianci, Conti, Davis, Fisher (Assistant Dean), Hall-Long, Laird, Mill, Normile, Roberts, Rudowski, Slaght, Williams, Wu

Adjunct Assistant Professor: Barry
Instructors: Bogard, Durham, Miklancie, Rice, Rigney, Williams
Lecturers: Brown, Hunt, Kodadek, Maddox, Molloy, Roth

Certificate Programs in Gerontology
The College of Nursing and Health Science administers graduate and undergraduate certificate programs in gerontology. See the Certificates and Interdisciplinary Minors section of this catalog for details about the undergraduate certificate program and the Graduate Catalog for details about the graduate certificate program.

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.

Attendance at the first meeting of all nursing courses (lecture, on-campus laboratory, and agency laboratory) is mandatory. Those who do not appear for nursing courses are dropped from the class (lecture, on-campus laboratory, and agency laboratory).

The program is accredited by the Virginia State Board of Nursing and the National League for Nursing.

PAGE Students
Most general education requirements within the nursing and health science programs may be met through George Mason University's Plan for Al-
ternative General Education (PAGE). Additional courses are required to meet all general education requirements while the students are enrolled in the PAGE program. Check with the college or the PAGE office for more information.

Nursing Continuing Education
The Nursing Program offers opportunities for credit and noncredit courses of interest to nurses and health care providers. When planning and presenting continuing education programs, the College of Nursing and Health Science 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 College of Nursing and Health Science and the Office of Student Services.

Course Work
The College of Nursing and Health Science offers all course work designated HEAL, NURS, PHED, PRLS, and SOCW in the Course Descriptions section of this catalog.

Nursing (B.S.N.)
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 and licensed practical nurses takes into account the needs of the working R.N. and L.P.N. Students interested in these pathways must contact the Nursing Program prior to admission. All pathways lead to completion of the objectives of the undergraduate program.
Clinical nursing begins at the junior 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>Language Arts and Culture</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101, 302 (3 hours humanities)</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 (3 credits must be PHIL 151 or 309)</td>
<td>6</td>
</tr>
<tr>
<td>Art (appreciation, history, criticism, or theory)</td>
<td></td>
</tr>
<tr>
<td>Music (appreciation, history, criticism, or theory)</td>
<td></td>
</tr>
<tr>
<td>Literature (at 200 level or above, does not include ENGL 101, 302)</td>
<td></td>
</tr>
<tr>
<td>Philosophy, language, religion, or humanities</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social and Behavioral Sciences</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociology or Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>Psychology (PSYC 100 and 211)</td>
<td>6</td>
</tr>
<tr>
<td>(Any psychology for RNs and LPNs)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural Sciences and Mathematics</th>
<th>22-23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science (Biology, Chemistry, Physics)</td>
<td>3-4</td>
</tr>
<tr>
<td>Biology (BIOL 124, 125)</td>
<td>8</td>
</tr>
<tr>
<td>or BIOL 228</td>
<td></td>
</tr>
<tr>
<td>Microbiology (BIOL 302)</td>
<td>4</td>
</tr>
<tr>
<td>Statistics (STAT 250, PSYC 300, or SOCI 221)</td>
<td>3-4</td>
</tr>
<tr>
<td>Normal Nutrition (HEAL 330)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nursing Major</th>
<th>58-60</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Physical Education Activities</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(recommended as part of elective hours)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electives</th>
<th>13-15</th>
</tr>
</thead>
<tbody>
<tr>
<td>(No more than three hours of nursing electives may be used to satisfy this requirement.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

Special Requirements

Fees and Expenses
Fees and expenses specific to the nursing program are as follows: Laboratory equipment kit, standardized testing fee, uniforms, stethoscope, pin, books, course materials, transportation to and
from agencies, CPR certification, fee for review of health forms, immunizations, and any other additional fees as mandated by clinical agencies (i.e., clinical background check).

Nursing students are required to obtain a health examination and immunizations prior to registration for their first clinical course. Students must complete the entire Hepatitis B immunization series in accordance with current United States Public Health Service recommendations prior to entering the first clinical setting. The cost of the immunizations is the responsibility of the student. Student immunization records will be monitored at the George Mason University Student Health Center, which charges a small fee for this service.

Clinical agencies sometimes require additional records and documentation, such as criminal history records, prior to student participation. Any cost is the responsibility of the student.

Student assignments will be based on the learning needs of the student without regard to the HIV or HBV status of the patient. Failure to comply with the practice of universal precautions and blood-borne pathogen safety will result in dismissal from the nursing program.

No student or faculty member shall be discriminated against or denied admission to the Nursing Program for the sole reason that the student or faculty member has been exposed to, infected, or diagnosed with HIV or HBV.

In the event that a student has a clinical experience/practicum exposure to body fluids of a patient, procedures and appropriate incident reports are to be completed according to institutional and nursing policies.

Information related to exposure or infection shall be confidential, and dissemination of such information shall be based on the need to know criteria that appertain generally in health care situations. A complete and detailed HIV/HBV policy is available in the College of Nursing and Health Science Student Affairs Office, Robinson Hall, Room A382.

Students are 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 Nursing Program assumes no financial responsibility for the health care of students. An accident and health insurance plan is available through the university.

A junior student must have CPR certification before entering NURS 331 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 Nursing Program 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

If you are interested in pursuing a major in nursing, you must make an additional and separate application for junior standing to the Nursing Program.

To be eligible to apply for junior standing, students must complete the 45 hours of required general education, which applies to the degree by the end of the Spring Semester.

Students must earn a C or better in Psychology (6); Sociology or Anthropology (3); BIOL 124 (4), BIOL 125 (4), or BIOL 228 (6); BIOL 302 (4); and Science (Chemistry, Biology, Physics) (3-4).

Admission to the Nursing Program is competitive. It is based on a minimum GPA of 3.0 in the 45 hours of general education (wherever taken) required for the degree (exclusive of electives). The acceptable GPA may increase each year based on the number of spaces available in the Nursing Program.

Students will be accepted for junior standing each fall. The application deadline is March 15. Students will be notified of their status by June 1.

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 3.0 in the general education or PAGE courses that apply to the degree.

Permission to register for NURS 330, 331, 332, and 333 requires prior acceptance into junior standing in nursing.

Full-time nursing requires carrying a heavy schedule; therefore, outside obligations should be limited to ensure success.
Additional Academic Grade Standards

Progression
Satisfactory retention within the nursing program is dependent upon evidence of scholarship, health, and personal stability for nursing as judged by the faculty. Progress is tracked through frequent examinations, reports, and conferences with the student. Every effort is made through regularly scheduled advising to provide guidance and assistance. When advisable, the college can request that the student withdraw without having been placed on probation. Students may appeal this decision through the Associate Dean for Academic Programs.

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. A student who fails to earn a C or better in the repeated course is dismissed from the university's nursing program.

Upon earning a grade of C or better in the repeated course, the student may resume progress in the sequence of required courses.

Earning a grade of less than C in a second nursing school course, results in suspension from the nursing program.

No more than two nursing courses may be repeated. Failure to produce a satisfactory grade of C or better in the nursing courses repeated after suspension, or in any later nursing courses, results in dismissal 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.

Health Science Programs
The undergraduate health science programs at George Mason University prepare students in a variety of academic fields. For example, the B.S.Ed. in Physical Education prepares students for a career in teaching (K-12) in either public or private schools; the B.S. in Health, Fitness, and Recreation Resources prepares students for supervisory and management careers in private and public recreation, health education, park systems, and fitness and health promotion agencies; and the B.S. in Social Work prepares students for beginning generalist professional practice in social work.

Physical Education (B.S.Ed.)
This degree prepares students for a career in teaching.

Teacher Licensure (Certification)
In Physical Education with Endorsement
In Health Education

Degree Requirements
The degree requires a minimum of 122 total credit hours with the final semester devoted to student teaching. To enroll in student teaching, students must have a 2.50 or higher G.P.A. in the major.

Semester Hours

Language Arts and Culture

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English: ENGL 101 and 302</td>
<td>6</td>
</tr>
<tr>
<td>Oral Communication: COMM 100</td>
<td>3</td>
</tr>
<tr>
<td>Literature (200-level)</td>
<td>3</td>
</tr>
<tr>
<td>Humanities: art, music, theater, or philosophy (except logic)</td>
<td></td>
</tr>
</tbody>
</table>

Behavioral and Social Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 121 or 122</td>
<td>3</td>
</tr>
<tr>
<td>Select 9 hours from the following: anthropology, economics, geography,</td>
<td>9</td>
</tr>
<tr>
<td>government, history, sociology, psychology (must be from 3 different</td>
<td></td>
</tr>
<tr>
<td>fields)</td>
<td></td>
</tr>
</tbody>
</table>

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 124, 125 (8) or BIOL 228 (6)*</td>
<td></td>
</tr>
<tr>
<td>MATH (3) or CS (3)</td>
<td></td>
</tr>
<tr>
<td>HEAL 110 (3), 111 (3), 205 (3)</td>
<td></td>
</tr>
<tr>
<td>PRLS 316 (3)</td>
<td></td>
</tr>
</tbody>
</table>

Core Total

|                                                                 | 50-52 |

* Prerequisite is BIOL 103 (4)

Professional Sequence

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHED 300, 303, 304, 306, 365, 373, 375, 403, 450</td>
<td></td>
</tr>
<tr>
<td>HEAL 220, 305, 310, 325, 330</td>
<td></td>
</tr>
<tr>
<td>PRLS 410, 415, 460</td>
<td></td>
</tr>
</tbody>
</table>

Methods:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 302 and either EDUC 300 or 522</td>
<td>21</td>
</tr>
<tr>
<td>PHED 415</td>
<td></td>
</tr>
</tbody>
</table>

Total Hours

|                                                                 | 122-124 |

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George Mason University

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Teacher Licensure (Certification)

This program in teacher education is accredited and approved by the National Council for Accreditation of Teacher Education and the Virginia State Department of Education. To be considered for certification, 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 G.P.A. of 2.50 for the most recently completed 60 hours of collegiate work and for the professional G.P.A.
3. For the professional G.P.A. the student must have completed or be in the process of completing:
   a. EDUC 302 and either 300 or 522; BIOL 124 and 125 or BIOL 228; PHED 300 and 303
   b. PHED 373, 375
4. Physical 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 must be reported when applying for student teaching.

Student Teaching Admission

1. Student teacher applications are available from the Office of Teacher Education (Graduate School of Education, Robinson Hall).
2. Students must maintain a G.P.A. of 2.50 or above following admission to the teacher education program.
3. Students must apply for student teaching prior to their last semester.
4. Students should have completed all required coursework for the degree prior to their student teaching semester.

Sample Schedule for B.S.Ed. in Physical Education and Health Endorsement

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>ENGL (200-level literature)</td>
</tr>
<tr>
<td>COMM 100</td>
<td>Choice of ANTH, ECON, GEOG, GOVT, HIST, SOCI, PSYC</td>
</tr>
<tr>
<td>Humanities (Art, music, theater, or philosophy)</td>
<td>3</td>
</tr>
<tr>
<td>HIST 121</td>
<td>MATH or CS 103</td>
</tr>
<tr>
<td>Choice of ANTH, ECON, GEOG, GOVT, HIST, SOCI, PSYC</td>
<td>HEAL 110</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>BIOL 124 (or BIOL 228)</td>
<td>BIOL 125 (or BIOL 228)</td>
</tr>
<tr>
<td>HEAL 220</td>
<td>HEAL 205</td>
</tr>
<tr>
<td>PHED 303</td>
<td>PHED 304</td>
</tr>
<tr>
<td>HEAL 300</td>
<td>PHED 306</td>
</tr>
<tr>
<td>HEAL 111</td>
<td>PRLS 316</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth Semester</th>
<th>Sixth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAL 325</td>
<td>HEAL 302</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>PHED 300</td>
</tr>
<tr>
<td>PHED 300</td>
<td>PRLS 415</td>
</tr>
<tr>
<td>PRLS 450</td>
<td>PHED 450</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAL 305</td>
<td>HEAL 305</td>
</tr>
<tr>
<td>PHED 403</td>
<td>PHED 403</td>
</tr>
<tr>
<td>PRLS 410</td>
<td>PRLS 415</td>
</tr>
<tr>
<td>PHED 450</td>
<td>PHED 450</td>
</tr>
<tr>
<td>EDUC 300 or 522</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health, Fitness, and Recreation Resources (B.S.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This degree prepares students for supervisory and management careers in private and public recreation, health education, park systems, and fitness and health promotion agencies. Students must select one of two Professional Specializations: Recreation Resources Management (19 hours) or Health Promotion/Exercise Science (18 hours).</td>
</tr>
</tbody>
</table>

Students may also complete a minor or one of two certificate programs: Certificate in Environmental Management (27 hours) or Certificate in Gerontology (24 hours). See the catalog section on Certificates and Interdisciplinary Minors for requirements for both certificates. Students interested in the Environmental Management certificate should take BIOL 213 and either 303 or 304; students interested in the Gerontology certificate should take BIOL 124 and 125 or BIOL 228. Courses designated HEAL, PHED, and PRLS are offered by program faculty.

Degree Requirements

The degree requires either a minimum of 120 hours (Health Promotion/Exercise Science Specialization) or 121 hours (Recreation Resources Management Specialization) with the final semester devoted to an internship (15 hours).

<table>
<thead>
<tr>
<th>Language Arts and Culture</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101 and 302</td>
<td>6</td>
</tr>
<tr>
<td>Oral Communication:</td>
<td></td>
</tr>
<tr>
<td>COMM 100</td>
<td>3</td>
</tr>
<tr>
<td>Literature (200-level)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social and Behavioral Science</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 100 (3), SOCI 101 (3), GOVT 103 (3), ECON 103 (3), GOVT 241 (3)</td>
<td></td>
</tr>
<tr>
<td>SOCI 221 (4)</td>
<td></td>
</tr>
</tbody>
</table>

| Science | 11-13 |
BIOL 103 and 104, or 124 and 125*,
or 213 and either 303 or 304 .......... 8
CS 103 .................................. 3
* Health Promotion/Exercise Science specialist
requirement; student can substitute BIOL 228 (6)
and BIOL 103 (4)

Required Courses .......................... 30
HEAL 205, 220, 323, 450 ............ 12
PHED 303 ................................. 3
PRLS 310, 410, 415, 450, 460 ...... 15

Professional Specializations
Recreation Resources Management .... 19
PRLS 210, 317, 402, 405,
501, 526 .................................. 19

or

Health Promotion/Exercise Science .... 18
HEAL 330, 430 ............................. 6
Social/Psychological Aspects
of Health and Fitness .................. 3
PHED 300, 304, 450 .................... 9

Internship .................................. 15
Electives ................................. 15
Total Hours ............................... 120-122

Sample Schedule for B.S. in Health, Fitness,
and Recreation Resources—Recreation
Resources Management Specialization

First Semester .......................... Second Semester ..........................
ENGL 101 .................................. 3
COMM 100 .................................. 3
ECON 103 .................................. 3
SOCI 101 .................................. 3
PRLS 210 .................................. 3

Third Semester .......................... Fourth Semester ..........................
BIOL 124 (or BIOL 228) .............. 4
HEAL 220 .................................. 3
PHED 303 .................................. 3
HEAL 205 .................................. 3
Elective .................................... 3

Fifth Semester ..........................
HEAL 330 ..................................
PHED 300 ..................................
PRLS 415 ..................................
Electives .................................

Sixth Semester ..........................
HEAL 430 ..................................
PHED 410 ..................................
PRLS 450 ..................................
Electives .................................

Seventh Semester ........................
HEAL 430 ..................................
PRLS 410 ..................................
PHED 450 ..................................
Electives .................................

Social Work (B.S.)
The social work program prepares students for beginning generalist professional practice in social
work at the baccalaureate level 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. SOC 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: Eng­
lish composition; English literature; philoso­
phy/religion
4. 3 semester hours of history, economics, or gov­
ernment
5. GOVT 204
6. BIOL 103, 104
7. 3 semester hours in mathematics
8. 3 semester hours in economics

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

1. Completed at least 45 credits with a G.P.A. 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.

The Social Work program can be completed in the final four semesters. Students who must 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 455, 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.

### Sample Schedule for B.S. in Social Work

<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/economics/gov't</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>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>English or American</td>
<td>PSYC 231 or SOCI 308</td>
</tr>
<tr>
<td>Literature</td>
<td>English or American</td>
</tr>
<tr>
<td>BIOL 103</td>
<td>Literature</td>
</tr>
<tr>
<td>Economics</td>
<td>BIOL 104</td>
</tr>
<tr>
<td>Electives</td>
<td>Electives</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>SOCW 324</td>
</tr>
<tr>
<td>SOCW 323*</td>
<td>SOCW 352</td>
</tr>
<tr>
<td>SOCW 351*</td>
<td>SOCW 358</td>
</tr>
<tr>
<td>SOCW 357*</td>
<td>SOCI 221</td>
</tr>
<tr>
<td>ENGL 302</td>
<td>or PSYC 300***</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Seventh Semester</th>
<th>Eighth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCW 453 or 453**</td>
<td>SOCW 454</td>
</tr>
<tr>
<td>SOCW 471</td>
<td>Social work elective</td>
</tr>
<tr>
<td>Social work elective</td>
<td>SOCW 499 (optional)</td>
</tr>
<tr>
<td>Elective</td>
<td>Electives</td>
</tr>
<tr>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

*The social work program can be completed in the final four semesters. Students who must 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 455, 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.

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Certificates and Interdisciplinary Minors
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 to 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 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 advisor.

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.

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Certificate Program in Applied Statistics
The Department of Applied and Engineering Statistics offers a certificate program to undergraduate degree programs in computer science, systems engineering, electrical engineering, or mathematics. Undergraduates majoring in other discipline areas may be admitted to the certificate program at the discretion of the department.

Because the demand for people with interdisciplinary training, which includes a background in statistics and data analysis, is great in the Washington metropolitan area, this program expands the career options available to students. Inquiries should be directed to the Department of Applied and Engineering Statistics. Students who plan to work toward the certificate should seek advice from the department.

Program Requirements
This certificate requires 24 semester hours, consisting of STAT 344, 354, and 362, along with five courses chosen from STAT 363, 381, 382, 455, 457, 463, 498, 499 and OR 435, 442, 481.

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 computer-aided 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 25 semester hours. 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. As an entry-level requirement, 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 at least 27 hours of course work with the help of the certificate director. 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 director.

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, 353, 550, 577; GEOG 102, 309; GEOL 205, 313, 317, 403, 405; USE 350
5. Environmental Methods (1 course): DESC 301, 352; GEOG 310, 411, 412, 416; GECA 550, 553, 579, 580, 585; USE 340

The 25 hours required in the certificate program must include GEOG 102, 103, 300, 310, 311 or 411, 412, 416 or GECA 579, and GECA 553.

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 Environmental Management Certificate Director, Department of Biology, 993-1050.

Program Requirements
The certificate program in environmental management consists of a minimum 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. As an entry-level requirement, 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 at least 27 hours of course work with the help of the certificate director. 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 director.

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, 353, 550, 577; GEOG 102, 309; GEOL 205, 313, 317, 403, 405; USE 350
5. Environmental Methods (1 course): DESC 301, 352; GEOG 310, 411, 412, 416; GECA 550, 553, 579, 580, 585; USE 340

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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.
5. Undergraduates must complete at least 12 semester hours of course work at the 300 level and above, and may not include more than 12 semester hours of 100-level courses.
6. Post-baccalaureate students must complete at least 12 semester hours of course work at the 500 level or above.

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 College of Nursing and Health Science. Four academic units participate in the program: Graduate School of Education, College of Nursing and Health Science, Department of Psychology, and Department of Sociology and Anthropology. A Gerontology Certificate Committee determines program policy and curriculum.

Academic advising and an application form are available from the College of Nursing and Health Science.

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; PSYC 325, 326, 423; PUAD 502; SOCI 350, 390, 599; SOCW 300, 351, 352; Reading and Research in Gerontology from any department

Certificate Program in Operations Research and Engineering
The Department of Operations Research and Engineering offers a certificate program to students enrolled in the computer science, decision sciences, mathematics, or systems engineering undergraduate degree programs. The certificate augments the standard curricula with material on the computational aspects of operations research. Since the demand for people trained in the computational aspects of operations research is great in the Washington, D.C., area, this program expands the career options available to students.

Inquiries should be directed to the Operations Research and Engineering Department. Students who plan to work toward one of these certificates should seek advising from the department.

Course Requirements
STAT 344, STAT 362 or 381, OR 435, OR 442, OR 441, ENGR 311 or MATH 305 or MATH 313, and two courses chosen from DESC/OR 451, OR 481, OR 498, OR 499, STAT 354, and STAT 382.

Certificate Program in Philosophy and Computer Science
The philosophy/computer science certificate is designed to acquaint students with areas of overlap between philosophy (including logic) and computer science: e.g., the philosophical and logical foundations of computer science, ethical issues relevant to technology in general and computer science in particular, and the use of computational models in dealing with some traditional philosophical problems.

The program is designed so that it can be integrated into both computer science and philosophy major programs and probably the majors of some of the other sciences as well. Students pursuing this program must take several required courses in philosophy, computer science, and math, as well as six additional credits from a list of philosophy electives. The relevant courses are as follows:

Course Requirements
PHIL 312 Philosophy of Technology
PHIL 372 Philosophical Methods
PHIL 376 Symbolic Logic
PHIL 574 Current Issues in Philosophy of Psychology
(when the topic is relevant, this may also be taken as PHIL 421-424 Seminar in Philosophy.)
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, or nursing or BIS majors with a psychology-related focus. Application to the program must be made at any time during the academic year after the student’s completion of prior course work. Completion of prior course work is based on the student’s demonstration of 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 university 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 Programs
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 J. 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, or nursing or BIS majors with a psychology-related focus. Application to the program must be made at any time during the academic year after the student’s completion of prior course work. Completion of prior course work is based on the student’s demonstration of 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 university 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.
Certificates and Interdisciplinary Minors

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)
or
GERM 318 Translation of Texts (3)
GERM 576 Advanced Translation (3)
GERM 580 Contemporary German Culture and Society (3)
FRLN 590 Internship and Seminar (3)
A translation project is required for completion of the program.

Interdisciplinary Minors
Listed below are the interdisciplinary minors currently offered by the university, along with the specific requirements for each. Students who are interested in minoring in a specific discipline should consult the discipline section of the catalog to determine if a minor is offered and, if so, the specific requirements.

African American Studies
Faculty
Carr, Clark, Dennis, Diner, Fuchs, Golden, Horton, McFerson, Miller, Mobley (Coordinator), Paden, Stewart, Travis, Warner, Wilkins, Williams

Requirements for the Minor in African American Studies
The African American Studies minor is an interdisciplinary field of study that examines the cultural, historical, economic, and political dimensions and experiences of people of African descent in America, the Caribbean, Africa, and around the world. It introduces students to methodologies for examining the complex dynamics of race, class, gender, and ethnicity in America, and it enables them to develop critical and analytical approaches to address contemporary issues in African American life and culture.

The minor in African American Studies requires a minimum of 21 hours of related course work, which includes 12 required hours and nine elective hours from various disciplines in the College of Arts and Sciences. Prerequisites for each course are listed in parentheses.

Required Courses
AFAM 200 Introduction to African American Studies
AFAM 495 Senior Seminar in African Studies
(方言 200, ENGL 368, HIST 336, and approval by program coordinator)
ENGL 370 or 371 Foundations of African American Literature or African American Literature of the 20th Century
HIST 335 or 336 The African American Experience in the United States: African Background to 1885 or 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 Seminar in Social Issues; 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 the coordinator of the minor in African American Studies.
Contemporary Europe

Faculty
Brunette, Clark, Deshmukh, Dinan, Foster, Katz (Coordinator), Levine, Paden, Rutledge, Verheyen

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 permission of instructor)
HIST 390/GOVT 490 Post-War Europe: The European Community

Elective Courses
ECON 380 Comparative Economic Systems (ECON 103 and 104 or permission of instructor)
ENGL 437 Twentieth-Century Continental Fiction
EUST 450/ENGL 408 The Twentieth Century in Europe (EUST 300 or permission of instructor)
GEOG 320 Geography of Europe (6 hours GEOG and/or EUST or permission of instructor)
GERM 302 Germany Today (60 hours or permission of instructor)
GOVT 338 Government and Politics of the Former Soviet Union (GOVT 132 and 133 or permission of instructor)
GOVT 445 Soviet/Russian Foreign Policy (GOVT 132 and 133 or permission of instructor)
HIST 314 History of Germany (6 hours of HIST or permission of instructor)
HIST 322 Modern Britain (6 hours of HIST or permission of instructor)
HIST 436 European Society and Culture (6 hours of HIST or permission of instructor)
HIST 441 France Since the Revolution (6 hours of HIST or permission of instructor)
HIST 443 History of Spain and Portugal (6 hours of HIST or permission of instructor)
RUSS 354 Contemporary Soviet Life (60 hours or permission of instructor)

Other courses as approved by the coordinator of the minor in Contemporary Europe.

Film and Media Studies

Faculty
Brunette (Co-Coordinator, English), Foreman (English), Fuchs (Co-Coordinator, English), Lont (Communication), Schumman (Communication).

We are inundated on a daily basis with mass culture, especially as purveyed through the media. The effects of this inundation are enormous and often unconscious. The Film and Media Studies (FAMS) program aims to develop in students a more informed awareness of this culture's representations, as well as its ideological tendencies, its relation to traditional "high" culture, and its inevitable effects on social interactions.

The FAMS program's basic components are offered through the English and Communication departments, with other courses available through the Department of Foreign Languages and Literatures. This 18-credit minor is designed to introduce and explore mass culture in its visual manifestations. The program offers students the tools with which to read a variety of texts, including film, television, video, news media, and architecture.

The FAMS program offers diverse perspectives on mass media in the belief that such juxtapositions will be more productive than any single approach. Committed to interdisciplinary studies, the program addresses the increasing complexity and multiplicity of visual cultures.

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 first level consists of two required courses that serve as prerequisites for all advanced work in the minor:
ENGL 332 Introduction to Film
COMM 380 Media Criticism

On the second level, students choose a minimum of two courses (6 credits) from the following four regularly offered courses:
ENGL 421 Film History
ENGL 422 Film Theory
COMM 302 Foundations of Mass Communication
ENGL 493 Special Topics on Popular Culture

On the third level, the students select two courses according to their specific interests (unless they have taken more than two at the second level). Note that practical courses concentrating on production are available at this level.
Linguistics

Linguistics is the scientific study of language. 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, Jacob, Jones (Coordinator), 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

Clapsaddle, Clark, Couture, Diner, Dumont, ffolliot, Fonseca, Gifford, Hart-Nibbrig, Haynes, Horton, Hysom, Mattusch, Potter, Rosenzweig, Ryan, Stough, Todd, 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 History: ARTH 311, 315
Department of Economics: ECON 350
Department of Geography and Earth Systems Science: GEOG 306, 357, 406; USST 390, 490
Department of History: HIST 416, 417, 418
Department of Public and International Affairs: GOVT 309, 357, 365
Department of Sociology and Anthropology: SOCI 332, 373
School of Business Administration: BULE 304, FNAN 351
School of Information Technology and Engineering: USE 300, 400

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 Literatures), 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), Taylor (Communication), Todd (Art History), Travis (Public Affairs), Williams (Graduate School of Education), Yocom (English)

Course Work
The Women’s Studies faculty offers all course work 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.
# 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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Computer Name</th>
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<tbody>
<tr>
<td>Accounting</td>
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<td>USE</td>
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<tr>
<td>Women's Studies</td>
<td>WMST</td>
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</table>

## Semester Notation

At the end of the course description, a semester notation informs the reader of the semester in which the course is usually taught. For example, fall (f) means that the course is usually only taught in the fall semester; fall, summer (f, sum) means the course is taught fall and summer only; a fall, spring (f, s) means the course is offered on an irregular basis at the discretion of the department or school, irregular (ir) follows the description. Although circumstances may cause a unit to deviate occasionally from these notations, students...
Accounting (ACCT) 161

should use this information to plan their programs of study.

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. Degree status is defined as formal admission to the university as a degree-seeking student.

201 Financial Accounting (3:3:0). Survey of financial accounting. The accounting model, transaction analysis, and the accounting cycle are introduced. Special attention is directed to statement preparation. f,s,summer

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. f,s,summer

300 Accounting for Nonbusiness Majors (3:3:0). The accounting model, the accounting cycle, financial statement analysis, product costing systems, budgets, and cost-volume-profit analysis directed to the users of accounting information. This course may not be taken for credit by business majors.

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. f,s,summer

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. f,s,summer

331 Intermediate Accounting I (3:3:0). Prerequisite: ACCT 202. Preparation of financial statements, including related supplemental disclosures and detailed analysis of the components of financial statement. Consideration of concepts underlying financial accounting and application of professional accounting standards. f,s,summer

332 Intermediate Accounting II (3:3:0). Prerequisite: ACCT 331 and degree status. Continuation of ACCT 331. f,s,summer

351 Federal Taxation (3:3:0). Prerequisite: ACCT 311 and degree status. Introduction to federal income taxation of individuals. Examination of tax laws and procedures through the use of illustrative examples and problems. f, s, summer


431 Advanced Financial Accounting (3:3:0). Prerequisite: ACCT 332 and degree status. Preparation of consolidated financial statements, partnership accounting, international accounting, and other financial accounting topics. f, s, summer


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 at-
test function and auditor's report. Includes an examina-
tion of auditing standards and procedures, the impact of internal controls, professional ethics and responsibili-
ties, and an introduction to statistical auditing and the audit of computerized accounting systems. f, s, sum

471 Governmental and Nonprofit Accounting
(3:3:0). Prerequisite: ACCT 332 and degree status. Intro-
duction to the theory and practice of accounting and fi-
nancial reporting for governmental and nonprofit organiza-
tions, including federal, state, and local govern-
ments, colleges and universities, hospitals, voluntary
health and welfare agencies, and other nonprofit enti-
ties.

491 Accounting Seminar (3:3:0). Prerequisite: 90
hours, ACCT 332, and degree status. Discussion of se-
lected current topics in the theory and practice of ac-
counting and auditing.

492 Field Experience in Accounting (3:3:0). Prer-
quise: Senior standing and degree status. Faculty-gov-
erned 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 com-
pany.

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 stu-
dent must receive written approval of chair before regis-
tration. Written report required. May be repeated to a
maximum of six hours if topics vary.

Anthropology (ANTH)

Sociology and Anthropology

114 Introduction to Cultural Anthropology (3:3:0).
Introduction to the branch of anthropology that de-
scribes people living in societies today, and that seeks to
explain human behavior and various aspects of primari-
ly non-Western culture and society. For non-Western
credit.

120 Introduction to Archaeology (3:3:0). Introduc-
tion to survey of anthropological archaeology. Develop-
ment and use of contemporary theory and field and lab
methods.

135 Human Evolution and Prehistory (3:3:0). Ex-
ploration of human origins and nature; of primate social
groups and behavior; of fossil evidence for human evo-
lution and for the evolution of culture and human soci-
ety; of natural and sexual selection, race and
intelligence, aggression, and other topics.

299 Independent Study (1-3:0:0). Prerequisite:
ANTH 114 or permission of instructor. Individual study
in anthropology on topic organized in advance by stu-
dent and instructor.

300 Civilizations (3:3:0). Prerequisite: 60 hours,
ANTH 114, or permission of instructor. Cross-cultural
and trans-temporal examination of complex societies
and civilizations. Exploration of developmental schema
for rise, articulation, spread and decline of historic and
contemporary civilizations. For non-Western credit.

301 Native North Americans (3:3:0). Prerequisite: 60
hours, ANTH 114, or permission of instructor. Explora-
tion of contemporary native North American cultures
and of selected aspects of Indian-white historical rela-
tions. Emphasis on cultural persistence as well as
change. For non-Western credit.

302 Peoples and Cultures of Latin America (3:3:0).
Prerequisite: 60 hours, ANTH 114, or permission of in-
structor. Examination of contemporary Latin American
cultures and of selected aspects of historical record.

303 Peoples and Cultures of Selected Regions
(3:3:0). Prerequisite: ANTH 114, 60 hours, or permission
of instructor. Examination of contemporary cultures of a
specific region, e.g., India, South America.

304 Peoples and Cultures of the Pacific (3:3:0).
Prer-
quise: ANTH 114, 60 hours, or permission of instruc-
tor. Survey of twentieth century Melanesian, Polynesian,
and Micronesian cultures. Case studies of interplay be-
tween contemporary cultural systems and island ecol-
ogy. For non-Western credit.

305 Hunter-Gatherer Societies (3:3:0). Prerequisite:
60 hours, 6 hours of anthropology including ANTH 120 or
permission of instructor. Examination of early human so-
cieties with emphasis on environmental, technological
and cultural aspects of hunting and gathering as a suc-
cessful prehistoric and contemporary means of adapta-
tion. For non-Western credit.

306 Peoples and Cultures of Island Asia (3:3:0).
Prerequisite: ANTH 114, 60 hours, or permission of in-
structor. Examination of contemporary cultures of the Is-
land 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 articula-
tion of societies in the interplay of ecological and histori-

cal factors. For non-Western credit.

308 Peoples and Cultures of Africa (3:3:0). Prer-
quise: ANTH 114, 60 hours, or permission of instructor. Ex-
amination 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). Prer-
quise: ANTH 114, 60 hours, or permission of instructor.
Examination of social organization, kinship, descent,
and kinship terminologies in mainly non-Western cul-
tures, 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 permi-
sion of instructor. Survey of societies of mainland
Southeast Asia, with emphasis on successive waves of
outside cultural influences and relations between con-
trasting ethnic groups in modern states. Focus on Thai-
land and Malaysia. For non-Western credit.

312 Comparative Political Systems (3:3:0). Prer-
quise: ANTH 114, 60 hours, or permission of instructor. Ex-
amination of political, cultural and ecological contexts of
political structures and competition for power in se-
lected societies; a cross-cultural and comparative ap-

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proach 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 ethnography and analysis of contrasting explanations of cultural data. Several cultures are studied in depth. For non-Western credit and credit for the sociological 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, morphology, comparative ethology, 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 primates 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 9 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. Repeatable for credit.

Art History (ARTH)

Art History

Students taking ARTH courses should expect to participate in field trips or assignments outside the classroom at area museums.

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.

200, 201 Survey of Western Art (3:3:0). The major periods, monuments, and themes of Western art and architecture. Provides an introduction to the D.C. museum collections and a historical framework for further study in Art History. Designed as a two-course sequence, but each part may be taken independently without prerequisite. The first semester covers prehistory, the ancient world, and the Middle Ages; the second covers the art of the Renaissance, Baroque, and modern Europe and the Americas.

311 Design of Cities (3:3:0). Prerequisite 24 hours. Problems in urban design in a particular geographical region or historical period. Approach varies with instructor and may involve archeological or theoretical approaches appropriate to the specific context.

315 Modern Architecture (3:3:0). Prerequisite: 24 hours. Modernism in architecture from the Beaux Arts movement to the present; an investigation of stylistic, structural, and/or theoretical innovations.

319 Art of the Ancient Near East (3:3:0). Prerequisite: 24 hours. Aspects of the art, archaeology, and culture of ancient Near East and Bronze-Age Mediterranean. Depending on instructor, emphasis may be on Mesopotamia, Iran, Egypt, Anatolia, the Levant, or Aegean.

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. Art and culture of the medieval Mediterranean, concentrating on Late Antiquity and the Byzantine Empire. Designed to take advantage of unique local museum resources.

334 Western Medieval Art (3:3:0). Prerequisite: 24 hours. Aspects of art and architecture in Medieval Europe, from the fall of the Roman Empire through the Gothic Period. Specific focus may vary with the instructor.

340 Early Renaissance Art in Italy, 1300-1500 (3:3:0). Prerequisite: 24 hours. Studies in architecture, sculpture, and painting in the age of Giotto, Ghiberti, Masaccio, and Botticelli.

341 Northern Renaissance Art (3:3:0). Prerequisite: 24 hours. Studies in the art of France, Germany, and the Netherlands in the age of Van Dyck and Durer.


344 Baroque Art in Italy, France, and Spain, 1600-1750 (3:3:0). Prerequisite: 24 hours. Architecture, sculpture, and painting in the age of Caravaggio, Bernini, Velazquez, and Poussin.

345 Northern Baroque Art, 1600-1750 (3:3:0). Prerequisite: 24 hours. Studies in architecture, sculpture, and painting in the age of Rubens, Van Dyck, Rembrandt, and Vermeer.

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 Neo-classicism 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, neoexpressionism) and important artists in twentieth century...
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. Studies in 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; art in the Gilded Age.

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, minimalist, conceptual art, feminist art, environmental art, the new figuration, and photorealism will be discussed in a historical and critical context.

380 African Art (3:3:0). Prerequisite: 24 hours. The art of sub-Saharan Africa is examined in terms of styles and aesthetics, materials and techniques, and contexts (geographical, social, cultural, religious).

381 Asian Art (3:3:0). Prerequisite: 24 hours. Aspects of the art of South and East Asia, taking advantage of local museum collections. Focus may be on specific regions (India, China, Japan, Korea, Southeast Asia, or Indonesia) or themes, depending on instructor.

393 Art History Internships (3-6:0:0). Prerequisite: Art History major or minor and permission of instructor. Internship with a professional arts institution, organizations, or individual in the D.C. area. Project to be arranged by student, in consultation with faculty instructor and field supervisor. Recommended for advanced Art History students seeking exposure to professional work in the visual arts. May be taken for three to six hours; or repeated for up to six hours of credit.

394 The Museum (3:3:0). Prerequisite: 24 hours. Examination of the history, theory, practice, ethics, and current problems of collecting and displaying art and artifacts to the public. Emphasis on issues central to the D.C. museums or museums in other locations; specific focus may vary with instructor.

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 Historiography and Methods of Research in Art History (3:3:0). Prerequisite: 2 courses in art history at the 300 level or permission of instructor. Historical investigation of theories, methods, and critiques involved in the discipline of Art History. Approach or focus may vary with instructor.

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. May be repeated for credit.

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., 1500-1525, or concentrated on a particular area, such as Venetian art. May be repeated for credit.

460 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. May be repeated for credit.

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). May be repeated for credit.

490, 491 Independent Study in Art History (3:3:0). Prerequisite: 60 hours, permission of instructor. Independent study 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.

593 Art History Internships (3-6:0:0). Prerequisite: B.A. or equivalent or permission of instructor. Internship with a professional arts institution, organization, or individual in the D.C. area. Project to be arranged by the student, in consultation with faculty instructor and field supervisor. Recommended for advanced Art History students seeking exposure to professional work in the visual arts. May be taken for three to six hours; or repeated for up to six hours of credit.

594 The Museum (3:3:0). Prerequisite: B.A. or equivalent or permission of instructor. Examination of the history, theory, practice, ethics, and current problems of collecting and displaying art and artifacts to the public. Emphasis on issues central to the D.C. museums or museums in other locations; specific focus may vary with instructor.

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.

Arts Institute (ARIN)

Institute of the Arts

101 Arts Pass (1:1:0). Introduction to appreciation of the arts through lecture-demonstration in the following arts: visual art, music, dance, theater, film. Emphasis on aesthetic principles in modern society. Repeatable three times. Satisfactory/unsatisfactory grade.

204 Visual Thinking (3:3:0). Also ARTS 204, DANC 204, and THR 204. Not open to students who have had ARTS 102. An introduction to visual thinking. Topics include information from visual perception, memory, classical and modern art, performance, and dance. Opportunities for student assessment of themselves as visual thinkers.

205 Creative Impulse (3:3:0). Also ARTS 205, DANC 205, and THR 205. A study of the creative process in the arts and sciences through a study of the psychological and arts literature and through biographical analysis of creative persons. Opportunities for student assessment of their own creativity will be presented.

300 Distinctive American Voice (Living Artists) (3:3:0). A course designed to present the multicultural spectrum of American art today. Through attendance at live performances and lectures, as well as participation in small discussion groups led by graduate teaching assistants, completion of a reading list and a project tailored to the individual student's interests and field of study, the student will experience the various genres in a unique and unparalleled manner.

307 Aesthetic Awareness (3:3:0). Also ARTS 307, DANC 307, and THR 307. The presentation of the historical, philosophical, aesthetic traditions of the arts with opportunities for each student to confront their own sense of beauty.

308 Cross-Cultural Arts Appreciation (3:0:0). Also ARTS 308, DANC 308, and THR 308. The course attempts to give students a cumulative arts experience by tying the subject matter of the course to one of the major cultural productions of the Center for the Arts. Subject matter varies each semester.

399 Special Topics in the Arts (3:0:0). In-depth presentation and exploration of topical studies in the arts. Subject matter varies. May be repeated once.

499 Research/Performance/Topics in the Arts (3:0:0). Advanced research, performance, or exploration of topical studies in the arts. May be repeated once.

Art Studio (ARTS)

Institute of the Arts

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, 203, and 310 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.

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.

322, 323 Drawing I, II (4:2:4), (4:2:4). Prerequisite: I: ARTS 202 and 203, or equivalent, or permission of instructor; II: ARTS 322 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: I: ARTS 202 and 203, or equivalent, or permission of instructor; II: ARTS 332 or permission of instructor. Painting taught as a series of lectures with associated studio problems.

342 Screen Printmaking (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 Relief Printmaking (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 pro-
duction of books and portfolios will be emphasized. Taught as a series of lectures with associated studio problems.

344 Intaglio Printmaking (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.

350 Pinhole Photography (4:2:4). Prerequisite: ARTS 202 and 203, or permission of instructor. Beginning photographic design. An introduction to photography using student-built pinhole cameras. Course includes darkroom work in processing and printing paper negatives, and film development.

351 Color Slide Photography (3:0:6). Prerequisite: 24 hours. A study of 35mm photography in terms of camera manipulation, basic optics, and aesthetics of the color slide medium. Students are required to provide a manual 35mm camera (preferably single lens reflex), 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 ARTH, 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.

414 Corporate Image (4:2:4). A combined lecture/studio course in which students simulate a design firm with a number of corporate clients. In consultation with the instructor and other students, each student investigates a specific client, writes a design brief or contract, and produces a style manual which specifies the complete visual identity for the client. Specific elements of the visual identity, such as business stationery, promotional literature, and advertisements are produced full size mock-ups or client comps.

422, 423 Drawing III, IV (4:2:4), (4:2:4). Prerequisite: III: ARTS 322 or 323 or permission of instructor; IV: ARTS 432 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: III: ARTS 332 and 333 or permission of instructor; IV: ARTS 432 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.

443 Advanced Printmaking (4:2:4). Prerequisite: ARTS 342, 343, or 344, or permission of instructor. The process and history of color printmaking in the silk-screen, relief, and/or intaglio methods are further practiced and studied. The expressive and formal use of color are explored via various printmaking 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: I: ARTS 350 or permission of instructor; II: ARTS 452 or permission of instructor. A sequence of advanced darkroom courses which continues photographic design principals and methods. Taught as lecture and studio lab. Includes pinhole photography, conventional and experimental imagery, and darkroom processes, technical photographic craft, and ways of seeing photographically.

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 ad-
Advanced skills and concepts in drawing, painting, sculpture, and other media. May be repeated for credit.

495 Portfolio Preparation (4:2:4). A combined lecture/studio course in which students propose projects related to their own interest as artists, develop them to completion, and explore professional means of presenting these projects. Students will create a personal visual identity, a resume, and a portfolio of work suitable to show potential galleries, clients, and/or employers.

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: V: ARTS 432 or 433 or permission of instructor; VI: ARTS 532 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.

Astronomy (ASTR)

Physics and Astronomy


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 214 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. Emphasis on the connection of astronomy to other disciplines as well as the recent developments in astronomy. Planet 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.

530 Astrophysics (3:3:0); (formerly PHYS 530). Prerequisite: PHYS 303, 305, 361; MATH 214. Survey of contemporary astrophysics; topics include physical concepts, stellar spectra, Hertzsprung-Russell diagram, stellar atmospheres, stellar structure, interstellar matter, stellar evolution, high-energy phenomena, hydrodynamical processes in astrophysics, accretion disk formation, shock formation.


535 Space Instrumentation and Exploration (3:3:0), (formerly PHYS 535). Prerequisite: PHYS 352; MATH 213. Survey of the instruments, devices, and methods used for space and planetary exploration. Remote sensing of earth and other solar system bodies. Planned manned and unmanned missions by the United States and other countries.

Bachelor of Individualized Study (BIS)

Academic Affairs

490 Bachelor of Individualized Study Project (3:3:0). Final course in the BIS degree program. Open only to students in the Bachelor of Individualized Study Program. Topic approved by adviser and BIS office. BIS 490 registration forms must be signed by BIS director.
A grade of C or better is required to graduate with a BIS degree.

**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 animal 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. f,s,summer.

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. f,s,summer.

124 *Human Anatomy and Physiology (4:3:3).* Introduction to structure and function including skeletal, muscular, and neural systems. Open first to nursing and physical education majors. Sequence 124, 125 does not satisfy the natural science requirement in the College of Arts and Sciences. Not available for biology major credit. f,s,summer.

125 *Human Anatomy and Physiology (4:3:3).* Prerequisite: BIOL 124. Second half of sequence including cardiovascular, respiratory, digestive, excretory, and reproductive systems with emphasis on homeostatic mechanisms. Open first to nursing and physical education majors. Not available for biology major credit. f,s,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. f,s,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. f,s,summer.

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. f.

226 *Women's Health Issues (3:3:0).* Female anatomy, physiology, and sexuality, and health issues such as breast and cervical cancers, eating disorders, sexually transmitted diseases including AIDS, the effects of smoking, alcohol, and drugs, and hormone therapies are covered. Not available for biology major credit. f.

228 *Human Anatomy and Physiology (6:4:3).* Prerequisite: BIOL 103 or permission of instructor. Body structure and function. Assumes background in cellular processes. One two-hour recitation period. Does not satisfy the natural science requirement in the College of Arts and Sciences. Open first to nursing and physical education majors. Not available for biology major credit. Cannot be presented with BIOL 124, 125 for graduation.

300 *Analytical and Communication Skills for Biologists (2:1:3).* Prerequisite: biology majors, a C or better in BIOL 103, 104 or BIOL 213. A skills course designed to present students with computer-age tools for pursuing the successful study of biology. Topics include computer literacy, preparation of manuscripts and oral presentations, hypothesis testing, data analysis, use of graphs and tables, literature searching and retrieval, and electronic mail.

302 *Biology of Microorganisms (4:3:3).* Prerequisite: C or better in BIOL 124, 125, or 213, 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. f,s,summer.

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. f

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. f,s,summer.

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. f,s,summer.

309/GEOL 309 *Introduction to Oceanography (3:3:0).* Prerequisite: GEOL 101 or BIOL 103 or BIOL 213, or permission of instructor. Introduction to chemical, biological, and geological aspects of the oceanic environment. f

311 *General Genetics (4:3:3).* Prerequisite: BIOL 303, 304, or permission of instructor. Basic principles of heredity and modern developments in the field. f,s,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. f

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. af

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. s

324 *Introductory Animal Behavior (4:3:3).* Prerequisite: BIOL 303 or permission of instructor. Study of the mechanisms, functions, and evolution of behavior. f

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 inverte-
brate phyla, excluding insects, showing the morphology, phylogeny, and general biology of these groups.

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. sum

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.

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.

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.

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.

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.

375 Population Biology (3:0:0). Prerequisite: 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.

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.

383 Eukaryotic Cell Biology (4:3:3). Prerequisites: BIOL 311, CHEM 313, MATH 110 or 113, and 60 hours. Cellular structure and function. Topics include fine structure, chemistry, metabolism, and regulatory mechanisms.

385 Biotechnology and Genetic Engineering (3:3:0). Prerequisites: BIOL 311, CHEM 211, 212, MATH 110 or 113. Theory and applications are emphasized: significance and societal implications of biotechnology applied to medicine, agriculture, and the environment.

402 Applied Microbiology (3:3:0). Prerequisites: BIOL 213, 302, CHEM 211, 212, or permission of instructor. The biology of microorganisms of ecological and industrial significance. Additional topics include food production, spoilage and preservation, fermentation technology, waste disposal, water purification, biodeterioration, and decomposition.

403 Techniques in Applied Microbiology (1:0:3). Prerequisites: BIOL 213, 302, CHEM 211, 212, or permission of instructor. Laboratory exercises illustrate basic and applied methodologies including isolation of commercially useful strains: production and purification of industrial products.

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.

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 trip(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 biophysical rhythms 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.

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.

465 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.

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.

474 Plant Structure and Function (4:3:3). Prerequisite: BIOL 383 or permission of instructor. Structural and functional aspects of transport phenomena, photosynthesis, growth differentiation, and reproductive processes in plants are discussed. Microscopic techniques and experimental analysis of physiological processes are conducted in the laboratory.

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 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 6 credits.

**498 Special Problems in Biology (1-4:0:0), (1-4:0:0). Prerequisite: Permission of both instructor and chair; 60 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 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). Prerequisite: Permission of instructor.** 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. sum

**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). Prerequisite: Permission of instructor.** 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.

**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 Invertebrate Zoology (1-4:1-3:0:6). Prerequisite: Course in invertebrate 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 (632) 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.

**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. as

**538 Mammary in Gia (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. af

**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. as

**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 (4:3:3). 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 (4:3:3). 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. sum

**547 Terrestrial Plant Ecology (4:3:3). 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. Comprehensive study of immunologic mechanisms as they pertain to immunologic diseases and transplantation.

556 Microbial Physiology and Metabolism (3:3:0). Prerequisite: BIOL 302 or permission of instructor. Comprehensive study of microorganisms covering aspects of growth, nutrition, transport, autotrophic and heterotrophic metabolism, regulation, and differentiation.

560 Biological Ultrastructure (4:2:6). Prerequisite: 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.

561 Comparative Animal Physiology (3:3:0). Prerequisite: BIOL 326 or permission of instructor. Detailed study of selected physiological systems of invertebrates and vertebrates, emphasizing current research.

563 Virology (3:3:0). Prerequisite: BIOL 383 and 311 or permission of instructor. Fundamental concepts of the nature of viruses, virus classification, cultivation, and biochemistry. Bacteriophage and animal viruses emphasized.

564 Techniques in Virology (2:1:3). Corequisite: BIOL 302 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). Prerequisite: 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). Prerequisite: 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.

573 Developmental Genetics (3:3:0). Prerequisite: 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). Prerequisite: BIOL 307 and 311 or permission of instructor. The genetic structure and dynamics of populations, both real and ideal.

575 Selected Topics in Genetics (3:3:0). Prerequisite: 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). Prerequisite: 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 nonpoint source pollutants, atmospheric deposition, stratospheric ozone depletion, and global change.

580 Computer Applications for the Life Sciences (3:3:0). Prerequisite: 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). Prerequisite: 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.

303 Law and Business Organizations (3:3:0). Prerequisite: BULE 301. Law of agency, bailments, business organizations, and property.

304 Real Estate Law (3:3:0) Prerequisite: BULE 301. Basic principles of modern real estate law including classifications of property, types of ownership, acquisition and transfer, leasing, government regulation, and taxation. Emphasis on the real estate sale including the contract of sale.

305 Government Contracting Law (3:3:0). Prerequisite: 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). Prerequisite: 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.

Chemistry (CHEM)

Chemistry

CHEM 211, 212 is prerequisite to all other undergraduate chemistry courses except those numbered below 200.

101 Introduction to Modern Chemistry (3:3:0). Fundamental principles of chemistry. Physical and chemical discoveries and properties of matter presented along with their application and their impact on our way of life. Topics include atomic and molecular structure, nuclear chemistry, chemistry in the earth and atmosphere. No previous knowledge of chemistry assumed or required. Not open to students majoring in chemistry. Credit will not be given for both this course and CHEM 103.

102 Introduction to Organic and Biological Chemistry (3:3:0). Prerequisite: CHEM 101 or 103 or 211. Structure and properties of the major classes of organic compounds with particular reference to organic molecules that occur in nature. Emphasis on biomolecules such as carbohydrates, lipids, proteins, and nucleic acids and on the interrelationships of the various metabolic pathways of living organisms. Primarily intended for those who are interested in the application of the principles of organic chemistry and biochemistry to related areas of science such as genetics, microbiology, physiology, and nutrition. Not open to students majoring in chemistry. This course cannot be used in place of CHEM 313 or 314. Credit will not be given for both this course and CHEM 103.

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 applications of chemistry. Topics include environmental pollution, medicine, synthetics, and earth and marine science. Credit will not be given for both this course and CHEM 211, 212. Not open to students majoring in chemistry.

EVSC 203 Field Techniques in Environmental Geochemistry (2:0:2). This course provides an introduction to field techniques used to observe, measure, sample, and describe surficial geological material related to preliminary environmental site assessments.

EVSC 205 Environmental Science I (4:3:1). Investigations of scientific principles directly related to environmental problems, with emphasis on the causes of environmental mismanagement, development of natural resources, land-use problems, and the interaction of geochemistry and problems of human health.

EVSC 206 Environmental Science II (4:3:1). Investigations of ecosystem chemistry and population dynamics, geochemical resource management, chemistry of water and air pollution, hazardous wastes, and urbanization.

211, 212 General Chemistry (4:3:3), (4:3:3). Chemistry 211 is a prerequisite to Chemistry 212. 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 intending to major in engineering.

313, 314 Organic Chemistry (3:3:0), (3:3:0). 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.

320 Spectroscopic and Qualitative Organic Analysis II (2:1:3).* Prerequisite: CHEM 315; corequisite CHEM 314. Continuation of CHEM 315. Emphasis on separation and identification of organic compounds using both classical and instrumental methods. Arranged to accompany CHEM 314. One hour recitation. Restricted to chemistry majors.

*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). 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: CS 103, 161, or ENGR 110. Study of general and biochemical equilibria in gas-phase, ionic, and heterogeneous systems. Topics include gas reactions, polynuclear 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: MATH 113, 114; pre- 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). Classical topics with emphasis on application to biology and health sciences. Rigorous mathematical approaches to the theory of physical chemical processes are avoided. Topics include gas laws and kinetic theory, structure of solids and liquids, applied thermodynamics, kinetics, and chemical equilibria. Not open to stu-
students who have passed CHEM 331. Credit is not al-

436 Physical Chemistry Lab I (2:1:3). Pre- or 
corequisite: CHEM 331. Quantitative experimental 
study of physicochemical principles. CHEM 336 and 
337 constitute an introduction to the practice and the-
ory of experimental physical chemistry. One hour recita-

337 Physical Chemistry Lab II (2:1:3). Pre- or 
corequisite: CHEM 332. Continuation of CHEM 336. 
One hour recitation.

431 Fundamental Inorganic Chemistry (3:3:0). Pre-
requisite: CHEM 211, 212. Descriptive chemistry includ-
ing chemical properties, reactions, and reaction 
mechanisms of inorganic elements and compounds. Top-
ics include main group and transition elements, or-

ganometallic compounds, and bioinorganic chemistry.

422 Instrumental Analysis (3:3:0). Prerequisite: 
CHEM 314, 321, 332, or permission of instructor. 
Introduction to the theories of analysis by instrumental 
methods. Basic electronics are applied to chemical 
measurements. Introduction to theory of spectroscopy: 
ultraviolet, visible, infrared, and others; electrochemical methods of analysis. Theory of Fourier transform tech-
niques: FT IR and FT NMR. Theory of advanced pulse 
techniques.

423 Instrumental Analysis Laboratory (2:0:6). Lab-

301 Experimental physical analyti-
cal analysis by instrumental tech-
niques. The laboratory highlights 
the practice of atomic and molecular spectroscopy, spec-
trophotometry, chromatography, voltammetry, and 
potentioometry in relation to chemical experimentation.

441 Properties and Bonding of Inorganic Com-
3. Properties of inorganic compounds in terms of 
currently used bonding concepts. Topics include struc-
ture and bonding of ionic compounds; covalent bonding 
including valence-bond, crystal-field, and molecular-or-

445 Inorganic Preparations and Techniques 
3:1:6). Prerequisite: CHEM 321. Application of tech-
niques of inorganic chemistry to preparation and purifi-
cation of selected substances.

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 litera-
ture search, conferences, and lab. Written and oral tech-
nical reports required.

500 Selected Topics in Modern Chemistry (3:3:0). 
Topics of interest in biochemistry and in physical, or-
ganic, inorganic, and analytical chemistry. Recom-
mended for teachers of chemistry and general science.

501 Lab Demonstration Techniques in the Teach-
ing of Chemistry (3:3:0). Lab for developing profi-
cency in conducting lab demonstrations. Recommended for teachers of chemistry and general sci-

502 General Biochemistry (4:3:1). Prerequisite: 
CHEM 313, 314, BIOL 383, or permission of instructor. 
Survey course in general biochemistry for advanced un-
dergraduates and graduate students in chemistry and bi-
ology dealing with the chemical bases of biological 
systems emphasizing structure, regulation, and func-
tions of cellular events.

504 Geochemistry of Environmental Hazards 
(3:3:0). Prerequisite CHEM 313 or permission of in-
structor. Introduction to the origins and reactions of 
hazardous substances in air, water, and soil environ-
ments. Movements of trace organic and inorganic sub-
stances in the geochemical cycle with particular 
reference to transport processes that influence air and 
water quality.

505 Hazardous Materials Waste Management (1-
3:1:3:0). Prerequisite: CHEM 313 or permission of in-
structor. Comprehensive review of those subjects most 
frequently encountered in hazardous chemicals manage-
ment: science, law, and management.

509 Special Topics in Chemistry (1:0:0). Labora-
tory, library, or field studies in chemistry. Students must 
arrange topic and faculty director of investigation prior 
to enrolling in this course.

513 Synthetic and Mechanistic 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 chemis-
ty to consumer products including drugs and agricul-
tural chemicals.

521 Theory of Analytical Processes (3:3:0). Pre-
requisite: CHEM 422 or permission of instructor. Physico-
chemical principles and analytical techniques applicable to the analysis of solutions, including activity 
coefficients, solvation and ionic size, titration-curve the-
ory, 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, experi-
mental procedures, and data interpretation for one or 
two instrumental techniques of analysis and research se-
lected 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 in-
structor. Enrollment may be repeated if different tech-
niques are selected.

Classical Studies (CLAS)

Foreign Languages and Literatures

250 Classical Myths and Legends (3:3:0). Prerequi-
tite: ENGL 101 or equivalent or permission of instructor. 
Myths and legends of Greece and Rome with illustra-
tion of their role in classical and modern literature and 
art. Course work in English. May be taken to fulfill gen-
eral requirement in literature for baccalaureate degree.

260 The Legacy of Greece and Rome (3:3:0). Pre-
requisite: ENGL 101 or equivalent or permission of in-
structor. 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.

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 influences 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 toward fulfillment of the general requirement in literature for baccalaureate degrees.

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 in fulfillment of the general requirement in literature for baccalaureate degrees.

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 toward fulfillment of the general requirement in literature for baccalaureate degrees.

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 toward fulfillment of the general requirement in literature for baccalaureate degrees.

499 Senior Seminar in Classical Studies (3:3:0). Prerequisite: Classical Studies majors with 90 hour and permission of 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 communica-
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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.

250 Introduction to Communication Research (3:3:0). An introduction to the various types of research in the field of communication, with an emphasis on developing library skills and generating research questions and hypotheses. Basic procedures for research and writing about communication will be covered.


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.

301 Foundations of Interpersonal Communication (3:3:0). Prerequisite: 3 hours of 100- or 200-level COMM credit, or 60 hours. Theories and principles of interpersonal communication with emphasis upon models of communication, verbal and nonverbal message systems, and analysis of communicative relationships.

302 Foundations of Mass Communication (3:3:0). Prerequisite: 3 hours of 100- or 200-level COMM credit, or 60 hours. Theories and principles of mass communication with emphasis on effects, the media as institution, and role of society.

305 Foundations of Intercultural Communication (3:3:0). Prerequisite: 3 hours COMM credit or permission of instructor. Analysis of communication variables as they relate to intercultural encounters. Emphasizes the influence of culture upon the communication process, including differences in values, assumptions, and communication rules.

306 Issues in Intercultural Communication (3:3:0). Prerequisite: COMM 305 or permission of instructor. Continuation of COMM 305. Basic principles of intercultural communication are applied to the analysis of specific situations involving cultural differences. A model of intercultural communication analysis is developed and applied to issues dealing with relations between a dominant society and subcultures, social change in developing countries, and international relations.

307 Field Study in Intercultural Communication (3:3:0). Prerequisite: COMM 305 or permission of instructor. A structured communication learning experience centered on one to three weeks of travel in a foreign environment involving another country or a relevant subcultural group in the United States. Students must complete readings relevant to communication in the host society, laboratory assignments that require the student to make observations about intercultural communication, and a personal learning paper in which the student integrates learning from observation and interactions during the travel. Students must also attend seminar sessions and lectures. Intercultural communication concepts and principles are used to analyze the students' observations and communication experiences.


326 Rhetoric of Social Movements and Political Controversy (3:3:0). Prerequisite: 3 hours of COMM credit. Social and political forces of the contemporary era from a communication perspective with emphasis on political leadership, pressures for social/political change, and transformations in the communicative environment.

330 Principles of Public Relations (3:3:0). Prerequisite: 3 hours of COMM credit and 60 hours or permission of instructor. Survey of the nature, history, scope, and practice of public relations in business, trade associations, nonprofit organizations, and educational institutions. Principles and practice of public relations, including topics such as broadcast, publicity, and public service announcements; marketing and research; planning and publicity for special events; house publications; institutional advertising.

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 141 or 60 hours and audition. Intensive work in various types of re-creative forensics events—dramatic duo, mixed interpretation, dramatic pairs, 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 attack, 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 Robert's 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 instructor 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 instructor 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 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, WMU.

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 the student video center. 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.

359 Broadcast Management (3:3:0). Principles and practices of broadcast management from general management to the operation of individual radio and television departments (e.g., news, engineering, program, sales).

361 Advanced Newswriting and Reporting (2:2:2). 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 Promotions (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 publications, 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 reticence. 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.

420 Senior Seminar in Theories of Communicative Interaction (3:3:0). Prerequisite: 105 hours or permission of instructor. Primary theories explaining human communicative behavior. Traditional rhetorical theory, temporary social science theories, and critical theories.

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 Revolu-
tionary 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 (3:0:0). 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 activities 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 (1-3:3:0). 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

One year of high school algebra is required for all computer science courses. A second year is strongly recommended.

100 Navigating the World of Computing I (1:0:1). Introduction to the computer as a tool. Fundamentals of editing and electronic communications. Electronic communities. Desktop and timeshared systems will be used. Ethical and responsible use of computers and networks. Laboratory, f,s

102 Navigating the World of Computing II (2:1:1). Prerequisite: CS 100. Survey of the many uses of computers in contemporary life, with hands-on experience. Topics include networking, spreadsheets, database management systems, and a drawing editor. The ethical and responsible use of computers is addressed throughout the course. Laboratory, f,s

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. f,s

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 com-
puter 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. fs

130 Anatomy of Computing (1:1:1). A brief introduction to how computers actually compute, from electronics to software. Intended for computer science majors. fs

150 Introduction to Programming (4:3:2). Prerequisite: CS 100 or equivalent. An introduction to the practice of problem solving and algorithm development emphasizing program control structures, procedures, functions, data types, data structures, objects, methods, and graphical user interfaces. Specifications of a particular programming language are taught, and several programming assignments are required. fs

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). fs

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. fs

250 Foundations of Computer Science: Software Development (4:4:2). Prerequisite: CS 150, either CS 130 or equivalent. Continued study of abstract data types, algorithms, problem-solving strategies, basic software engineering concepts, and external file processing. Object-oriented program development is reinforced through several large programming projects.

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. fs

330 Formal Methods and Models (3:3:0). Prerequisite: Grade of C or better in CS 211 and MATH 125. Abstract concepts that underlie much advanced work in computer science, with major emphasis on formal languages, models of computation, and logics. fs

332 Object-Oriented Specification and Implementation (3:3:0). Prerequisite: Grade of C or better in 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. fs

363 Comparative Programming Languages (3:3:0). Prerequisite: Grade of C or better in 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. fs

365 Computer Systems Architecture (3:3:0). Prerequisite: Grade of C or better in 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. fs

421 Introduction to Software Engineering (3:3:0). Prerequisite: Grade of C or better in CS 211 and ENGL 302. 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. fs

440 Language Processors and Programming Environments (3:3:0). Prerequisite: Grade of C or better in CS 330 and either CS 265 or CS 365. 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. fs

450 Data Base and Object-Oriented Concepts (3:3:0). Prerequisite: Grade of C or better in CS 365. Data models and data sublanguages 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. fs

451 Computer Graphics and Software Design (3:3:0). Prerequisite: Grade of C or better in MATH 203 and either CS 265 or CS 365. Graphics devices and line generation, 2D computer graphics, graphics packages, raster graphics, and a programming project that includes designing a menu-driven system. fs

455 Computer Networking Systems (3:3:0). Prerequisites: Grade of C or better in CS 365 and either STAT 344 or MATH 351. Data communications networks. Protocols of the seven-layer ISO reference model. Topics include role of various media and software components, local and wide area network protocols, network performance, and emerging advanced commercial technologies. f


480 Introduction to Artificial Intelligence (3:3:0). Prerequisite: CS 330. Principles and methods for knowledge representation, reasoning, learning, problem solving, planning, heuristic search, natural language processing, etc. and their application to building intelli-
gent systems in a variety of domains. LISP, PROLOG, or expert system programming languages. f,s

483 (465) Data Structures and Analysis of Algorithms (3:3:0). Prerequisite: Grade of C or better in CS 330 and MATH 114. Math necessary to properly analyze the computational effort of a given algorithm. Specific algorithms are analyzed and improved. f,s

490 Design Exhibition (3:3:0). Prerequisite: CS 421, CS 483, two other CS 400-level courses, and senior standing. A capstone course focusing on the design and successful implementation of a major software project, encompassing a broad spectrum of knowledge and skills, developed by a team of students. A final exhibition of the result to a faculty/industry panel is required. f,s

498 Independent Study in Computer Science (1-3:3:0). 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. f,s

114 Rhythmic Analysis and Music Resources for Dance (3:3:0). Prerequisite: Dance major or permission of instructor. An introduction to the rhythmic structure, notation, and basic forms of music. Experience with audio equipment in creating simple sound scores. Taught in a lecture/lab format. May not be taken if DANC 313 has been previously credited. af

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. f,s

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.

145 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. f,s

150 Dance Improvisation (3:3:0). Exploration into the creation of spontaneous movement experiences. Emphasis on encouraging freedom of self-expression and creative awareness. s

161 Beginning Tap Dance (3:3:0). Elementary exploration into the rhythms and steps basic to the art form of tap dancing. May be repeated once for credit.

170 Orientation to Dance Production (1:0:1). Prerequisite: permission of the instructor. Introduction to sound, lighting, and stage management elements and terminology as related to dance performance. Taught in an intensive workshop setting emphasizing laboratory experience. f

210 Dynamic Alignment (3:3:0). Prerequisite: Dance major or permission of the instructor. Aspects of anatomy and kinesiology that directly apply to the correct development of dance technique. Emphasis on the use of exercise corrective and imagery to correct insufficient muscle pattern and reduce stress upon the body. May not be taken if DANC 305 has been previously credited. af

225 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 for a total of 12 credit hours. f,s

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.

245 Beginning Intermediate Ballet (3:3:0). Prerequisite: DANC 145 or permission of instructor. Further development of knowledge, skills, and appreciation through the technique, vocabulary, and history of ballet. May be repeated once for credit. f,s

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. f

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 mass pieces. s

270 Dance Production Lab (1-6:0:0) Prerequisite: DANC 170 or permission of instructor. 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. f,s

314 Music Accompaniment for Dance (3:3:0). Prerequisite: DANC 313 or 114 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
rhythm to accompany and enhance a dance technique class.

325 Intermediate Modern Dance (3:3:0). Prerequisite: DANC 225 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.

345 Intermediate Ballet (3:3:0). Prerequisite: DANC 245 or permission of instructor. Continued training at the intermediate level. Emphasis on increasing technical proficiency and aesthetic awareness. May be taken four times.

350 Advanced Dance Improvisation (3:3:0). Prerequisite: DANC 170, 125, 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 252 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 (1-3:3:0). Prerequisite: DANC 252 or permission of instructor. Students learn to choreograph a dance work by auditioning dancers, costume, 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, repertory, and choreography through rehearsal and public performance of university dance concerts or guest artist programs. May be repeated for a maximum of 12 credits.

371 Residency Workshop (1:0:3). Prerequisite: by audition. Rehearsal and performance of either a new or restaged dance by a guest choreographer in an intensive rehearsal setting. May be repeated for a maximum of six credits.

372 Advanced Dance Production (3:2:2). Prerequisite: DANC 170 or permission of the instructor. Methodology and practice of stage make-up, costume design, and lighting as dictated by specific needs of a dance performance.

390 Dance History: Pre-Twentieth Century (3:3:0). History of the social, cultural, and philosophical factors in the development of Western dance as an art form to the twentieth century.

391 Dance History: Twentieth Century (3:3:0). History of the social, cultural, and philosophical factors in the development of Western dance as an art form in the twentieth century.

393 Elementary Labanotation (4:2:2). Prerequisite: Dance major or permission of the instructor. Elementary theory and practice in Labanotation, a method of recording and analyzing movement. Movement analysis skills and the ability to read and write using the elementary symbol set is emphasized.

394 Intermediate Labanotation (2:2:1). Prerequisite: DANC 393. Intermediate theory and practice in Labanotation. Movement analysis skills and the ability to read and write using the intermediate symbol set is emphasized.

399 Independent Study (1-6:0:0) Prerequisite: Permission of the instructor. Individual research or creative project supervised by a faculty member. May be taken for a maximum of 6 credits.

420 Special Topics in Dance (1-3:3:0). 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, cinema dance. Topic depends on instructor. May be taken for a maximum of nine credits.

425 Advanced Modern Dance (3:6:0). Prerequisite: DANC 325 or permission of instructor. Continued training for advanced students. Emphasis on attainment of high-quality technical and performance skills. May be taken eight times.

445 Advanced Ballet (3:3:0). Prerequisite: DANC 345 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.

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 or DANC 210. 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 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.

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). Corequisite: CS 161; prerequisite: MATH 108 (or MATH 113) with a grade of C or better. Frequency distributions, probability, probability distributions, deci-
202 Statistical Analysis for Decision Making II (3:3:0). Prerequisite: CS 161 and a C or better in DESC 200. 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 (3:3:3:0). Prerequisite: Completion of at least 60 semester hours including MATH 108 and DESC 200, 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, work 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: DESC 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 math 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 202. 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. Management science techniques and operations management concepts are applied to solve business problems. Case methodology requires identifying and structuring complex problems and performing appropriate 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 INF 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 inferences 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.

463 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 manag-
ing the operation (production) function are treated. Lecture, discussion, cases, and problems.

491 Seminar in Decision Sciences (3:3:0). Prerequisite: DESC 352 and INFS 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 INFS 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 INFS 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. Examines 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 119 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.

335 Environmental Economics (3:3:0). Prerequisite: ECON 103 and 104. Uses in microeconomic analysis to analyze environmental problems. Topics include an analysis of externalities and market failure; alternative solutions and policies; problems in monitoring and enforcement; economic analysis of the development of legislation and regulation; and applications to current policy issues.

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.

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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.

415 Law and Economics (3:3:0). Prerequisite: ECON 306 or permission of instructor. An economic analysis of the law. Topics include an introduction to legal institutions and legal analysis; application of economic concepts to the law of property, contracts and torts, criminal law, and constitutional law; the economic efficiency of the common law; and a public choice perspective on the evolution of the law.

481 The Development of Economic Thought (3:3:0). Prerequisite: ECON 306 and 311 or permission of instructor. Developments 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 (1-3:0:0). 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. School-based field experience required during the course.

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. School-based field experience required during the course.

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. School-based field experience required during the course.

418 Student Teaching in Music Education (6:6:0). Prerequisite: Completion of requirements for admission to the music education concentration. 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

285 Electric Circuit Analysis I (3:3:0). Prerequisite: CS 112; corequisite: MATH 213 and PHYS 350. Circuit applications of Ohm's and Kirchoff's Laws, superposition, equivalent circuits, power and energy relations,
RLC circuits, and transient and steady-state analysis. f, s, sum

360 Basic Signal and System Analysis (3:3:0). Prerequisite: Grade of C or better in ECE 286, MATH 203, and MATH 214. ECE 361 is normally taken concurrently with ECE 360. Mathematical modeling of signals and systems. Transformation 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. f, s, sum

361 Laboratory for Signal and System Analysis (1:0:2). Prerequisite: ECE 306; corequisite: ECE 360. Computer laboratory for the course ECE 360. Experiments consist of computer simulations of Signals and Systems by using MATLAB language with computer graphics. The experiments include computational work with Fourier series and Fourier transforms, discretization of signals in time domain, filtering of noisy signals, computation of time responses and frequency responses of linear systems, and computational analysis of state-space models of linear systems. f, s

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. f, s

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. f, sum

422 Digital Control Systems (3:3:0). Prerequisite: ECE 421. Introduction to the analysis and design of digital control systems, Z-transform, discrete linear systems, frequency domain, and state variable techniques. Use of microcomputers in control systems. f, s

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. s

430 Principles of Semiconductor Devices (3:3:0). Prerequisite: MATH 214, 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 semiconductor devices. Topics include band theory, doping, p-n junctions, diffusion theory, low frequency circuits, devices including bipolar transistor, MOSFET, CMOS, photo transistors. s

431 Digital Circuit 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, IIL, NMOS, and CMOS technologies; semi-

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. f, s, sum

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. f, s, sum

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 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. f, s, sum

334 Linear Electronics Lab I (1:0:3). Prerequisite: PHYS 351 or permission of instructor; corequisite: ECE 333. Lab associated with ECE 333. f, s, sum

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, multivaritibrators, shift registers, counters, A/D converters, and elementary computer architecture. (Not intended for those majoring in computer and electrical engineering.) f, s

305 Electromagnetic Theory (3:3:0). Prerequisite: PHYS 352 and a grade of C or better in MATH 214. 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 number algebra. f, s

306 Engineering Computing Laboratory (1:0:3). Prerequisite: Fundamentals of engineering computing in the networked environment. Introduction to workstations, servers, X-terminals, and Unix commands. Computing based on MATLAB language: matrix operations, complex number computations, and recurrence formulas; numerical representation of signals by number arrays. Applications of MATLAB to electrical engineering problems: periodic functions and harmonics; modeling of pulses and impulses; operations on functions; modeling of noise; digital filtering algorithms. f, s

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conductor memories; VLSI design principles; and SPICE circuit analysis. f,s

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. f,s

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. f,s

435 Digital Circuit Design Laboratory (1:0:3). Corequisite: ECE 431. Lab experiments for topics covered in ECE 431. f,s

436 Introduction to Photonics (3:3:0). Prerequisite: ECE 305 and 431. Introduction to optical and optoelectronic devices for sensing, communications, storage, processing, and display of information. Topics to be covered are: lasers, detectors and CCD arrays, holograms, fibers and fiber sensors, optical disk storage, and liquid crystal display devices. f


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, hardwired and microprogrammed control, memory-register-register operations, and input-output. f,s,summer

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 microprocessors 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. f

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. f,s

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. f

460 Communication and Information Theory (3:3:0). Prerequisite: A grade of C or better in ECE 360 and MATH 351 or STAT 344, 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. f,s,summer

461 Communication Engineering Laboratory (1:0:3). Prerequisite: ECE 460 and ECE 334. Lab experiments in the analog and digital communication areas covered in ECE 460. f,s,summer

462 Data and Computer Communications (3:3:0). Prerequisite: ECE 460. Introduction to modern data communications and computer networks. Topics include point-to-point communication links and transmission of digital information, modems, and codecs, packet switching, multiplexing and concentrator design, multiaccess and broadcasting, local area networks, wide area networks, and ISDN. The architectures and protocols for computer networks and the concept of OSI reference model. Discussion of the OSI seven layers; physical interfaces and protocols, data link control layer, network layer. Examples of data networks. s

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, baseband 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, optical receiver design, MAP receiver, and probability of error. f,s


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.

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. f,s

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. f,s
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. f, s

498 Independent Study in Electrical and Computer Engineering (1-3:0:0). 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. f, s

499 Special Topics in Electrical Engineering (1-3:0:0). Prerequisites: 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. f

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. f

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. f

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. s

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. s

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 system 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. s

521 Modern Systems Theory (3:3:0). Prerequisite: ECE 360 or equivalent. Introduction to linear systems theory. Review of linear algebra. State variables. State space description of dynamic systems. Analysis of continuous-time and discrete-time linear systems. Controllability and observability of linear systems. Stability theory. Introduction to the design of linear feedback control systems. f, s, sum

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. f, s, sum

535 Digital Signal Processing (3:3:0). Prerequisite: ECE 360 and ECE 528 or permission of instructor. Representation analysis and design of digital signals and systems. Sampling and quantization. Z-transform and Discrete Fourier Transform. Digital filter realizations. Design techniques for recursive (IIR) and nonrecursive (FIR) filters. The Fast Fourier Transform algorithms. Spectrum analysis. Additional topics may include adaptive filtering, homomorphic digital signal processing, digital interpolation and decimation, and VLSI signal processors. s

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. f

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. s

549 Theory and Applications of Artificial Neural Networks (3:3:0). Prerequisite: ECE 360 or equivalent. This course emphasizes a dynamical systems approach to neural networks. Simple tools for neural network analysis—Lyapunov stability, gradient descent minimization techniques, simulated annealing, The perceptron, learning in feedforward and recurrent networks—backpropagation, Boltzmann machines, recurrent backpropagation, adaptive resonance theory, self-organizing feature maps, associative memory, neural networks for optimization, implementation issues. f

563 Introduction to 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. s

564 Modern Optical Engineering (3:3:0). Prerequisite: ECE 305 and ECE 360. Introduction to optical physics from a wave propagation perspective. Topics included are: optical signals and interference, diffraction, polarization, birefringent materials, coherent and incoherent imaging systems, Fourier optics, and holography. s
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.

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 and 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 and 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, functions of the engineer, professionalism, ethics and registration, problem solving and representation of technical information, estimation and approximations, and analysis and design.


183 Engineering Computer Graphics (2:2:3). 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: Structures (3:3:0). Prerequisite: PHYS 250 and MATH 114. 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.

307 Engineering Thermodynamics (3:3:0). Prerequisite: MATH 213 and PHYS 350. 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). Prerequisite: PHYS 352 and MATH 214 or 216 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 the use of computers to aid 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 101 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 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, Dostoevsky, 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 genres. ENGL 205 focuses on selected English and American poetry and drama by such writers as Marlowe, Shakespeare, Shaw, O'Neill, Albee, Keats, Whitman, Dickinson, Frost, Eliot, and Auden. ENGL 206 focuses on selected English and American novels, short stories, and essays by such writers as Lawrence, Hemingway, Faulkner, Melville, Crane, E. Bronte, Fitzgerald, and Woolf.

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, Eliot, 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, Bradstreet, 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, Wharton, 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. Students must attain a minimum grade of C to fulfill degree requirements.

309 Independent Writing (3:3:0). Not to be taken concurrently with ENGL 489. Practice in analyzing and writing such expository forms as the essay, memoir, article, and technical and scientific reports, depending on the needs of the individual student. (Not a remedial course.)

325 Dimensions of Literature (3-6:3:0). 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.


327 Introduction to Cultural Studies (3:3:0). An introduction to the interpretive practices associated with the field of Cultural Studies.
332 Introduction to Film (3:3:0). Introduction to film medium as an art form.

333 American Folklore (3:3:0). Topics include folklore, personal narratives, legends, proverbs, jokes, folksongs, 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). 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.

369 Women and Literature (3:3:0). An exploration of the experience of women as both authors of and subjects in imaginative literature. When subtitle is different, may be repeated once for credit when subtitle is different.

370 Foundations of African American Literature (3:3:0). Beginning with the poetry of Phillis Wheatley and such texts as David Walker's Appeal (1829), this course is a study of significant voices of the nineteenth century in African American literature, such as Frederick Douglass, Harriet Jacobs, Harriet Wilson, William Wells Brown, Charles Chesnutt, Frances Harper, and Paul Laurence Dunbar.

371 African American Literature of the Twentieth Century (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, Baraka, and Bullins.

380 Recent American Fiction (3:3:0). American short story writers and novelists from World War II to the present, with emphasis onMailer, Barth, Hawkes, Cheever, Oates, Gas, 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, Brooks, Rich, Dickey, Lowell, Merwin, Kinnell, and Ammons.

396 Introduction to Creative Writing (3:3:0). Introduction to the theory and practice of creative writing in poetry, fiction, and drama.

397 Poetry Writing (3:3:0). Prerequisite: ENGL 396 or permission of instructor. Workshop course in reading and writing poetry. 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.

398 Fiction Writing (3:3:0). Prerequisite: ENGL 396 or permission of instructor. Workshop course in reading and writing fiction. 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.

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 several of the following: Goldsmith, Sterne, 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: 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). Prerequisite: ENGL 332 and permission of instructor. 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). Prerequisite: ENGL 332 and permission of instructor. Advanced studies of theories about various aspects of the production, distribution, and reception of film-mediated experiences. Topics might include theories of the spectator, semiotics, feminist 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/FR/FLRN 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.

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, Stendhal, Turgenev, Flaubert, Dostoyevski, Tolstoy, and Galdos.

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.

440 English Renaissance Drama (3:3:0). Major dramas and dramatists of the English Renaissance, exclusive of Shakespeare.

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, Wilder, Miller, Williams, and Albee.

448 Modern Drama (3:3:0), (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 re-
peated 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 Advanced 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 registration. A workshop course: intensive practice in creative writing and study of the creative process. 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 Advanced 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 registration. 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.

489 Advanced Nonfiction Writing 
(3:3:0). Theory and practice of advanced nonfiction writing, with emphasis on writing for publication. Occasional special topics sections in such forms as autobiography and scientific writing. Prior credit for ENGL 309 recommended. May not be taken concurrently with ENGL 309.

490 Special Topics in Film 
(3:3:0). Prerequisite: ENGL 332 or permission of instructor. 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 folklife 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 (3:3:0). 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 (3:3:0). 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 baccalaureate 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, Beowulf'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. In-
tensive study of and practice in the formal elements of poetry through the analysis of models and weekly or bi-weekly writing assignments. Intended for students already writing original poetry. Students study rhyme, meter, rhythm, and other musical elements of poetry; lin- eation; stanza pattern; traditional and experimental forms; free verse and open form composition; lyric, narra- tive, and dramatic modes.

566 (565) Form of Fiction (3:3:0). Prerequisite: ENGL 465 or equivalent and permission of instructor. Students must submit a typed manuscript of original fiction 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 formal elements of fiction, through the analysis of models and weekly or bi-weekly writing assignments. Intended for students already writing original fiction. Students study description, narration, plot, dialogue, voice, point of view, style, epiphany, and antifiction 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.

Environmental Science (EVSC)

Biology
203 Field Techniques in Environmental Geochemistry (2:0:2). This course provides an introduction to field techniques used to observe, measure, sample, and describe surficial geological material related to preliminary environmental site assessments.

205 Environmental Science I (4:3:1). Investigations of scientific principles directly related to environmental problems, with emphasis on the causes of environmental mismanagement, development of natural resources, land-use problems, and the interaction of geochemistry and problems of human health.

206 Environmental Science II (4:3:1). Investigations of ecosystem chemistry and population dynamics, geochemical resource management, chemistry of water and air pollution, hazardous wastes, and urbanization.

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 300 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 300 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 300 or permission of instruction. 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 nongrade, 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.) f,s

301 Financial Management (3:3:0). Prerequisite: Completion of at least 60 hours including ECON 103 and 104, ACCT 201, 202, and DESC 200, 202. Introduction to the management of a firm's financial resources given a wealth maximization decision criterion. Includes working capital management, fixed-asset investment, cost of capital, capital structure, and dividend decision analysis. Lecture, problems, and discussion. f,s

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. f,s
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. f,s

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. f,s

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. ir

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. f,s

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. ir

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. ir

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. ir

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. ir

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. f,s

451 Real Estate Finance (3:3:0). Prerequisite: FNAN 301 and 351. Mechanisms of real 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. ir

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 as 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. ir

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. ir

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. ir

492 Field Experience in Finance (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. ir

499 Independent Study (1-3:3:0). Prerequisite: Finance majors with at least 9 upper-level finance credit hours. Research and analysis of selected problems or topics in finance. Must be arranged with an instructor and receive written approval of chair before registration. Written report required. May be repeated to a maximum of six hours if topics vary.

Foreign Language (FRLN)

Foreign Languages and Literatures

431/ENGL 431 and HIST 431 Medieval Intellectual Topics (3:3:0). May be taken for credit by English, history, or area studies majors. A topic in the intellectual history of the Middle Ages. Specific topics vary. Emphasis is literary or historical, depending on the discipline of the instructor. Relevant material drawn from philosophy, theology, and art may be considered.

510 Bibliography and Research Problems in Foreign Languages and Literature (3:3:0). Prerequisite: Graduate standing or permission of department. Use of basic bibliographical tools and methodologies necessary to do scholarly research in French, German, and Spanish. Taught in cooperation with the university library staff. Conducted in English.
525 Literary Translation (3:3:0). Prerequisite: Graduate standing or permission of instructor. Advanced work in literary translation. The critical approach to and analysis of diverse literary texts ranging from poetry, drama, and essay to excerpts from novels.

550, 551 Special Topics (3:3:0). A special topics course for graduate students. Various themes, periods, or genres as announced from semester to semester. The focus will always be on topics that incorporate one or more of the languages taught in the department, but instruction is in English. May be repeated for credit with permission of department.

565 Theory of Translation (3:3:0). Lectures on the nature and function of the translating process. Evaluation of theories of translation with respect to text-typology. Critiques of selected translations from the target languages to English and vice versa.

571 The Role of Grammar in Language Learning and Teaching (3:3:0). Prerequisites: Graduate standing or permission of department; a language teaching methods course or language teaching experience, or permission of instructor. This course explores the pedagogical and theoretical bases for the centuries-old debate about explicit grammar teaching. Readings will focus on current positions and their theoretical grounds will offer a variety of other theories, pedagogical perspectives, and new approaches.

572 Integrating Technology into Language Learning (3:3:0). Prerequisites: Graduate standing or permission of department; language teaching experience, a language methods course, or permission of instructor. This course explores the pedagogical and theoretical basis for integrating interactive technologies into language learning programs, examining their potential for learning, teaching, testing, and research. It includes hands-on analysis and evaluation of materials. Prior experience with technology is not required.

573 Basic Issues in Language Pedagogy (3:3:0). Prerequisites: Graduate standing or permission of department; language teaching experience, a language methods course, or permission of instructor. This course explores in depth a number of major issues that are currently controversial in language pedagogy. Topics include communicative competence as a pedagogical goal, the role of explicit grammar teaching, the proficiency movement, cultural authenticity, student-centered learning, and the use of technology.

590 Internship and Seminar in Translation (3:3:0). Prerequisite: Admission to the translation certificate program. Internships are nonpaying, work-study positions that focus on the practice of translation. Qualified students are placed with area institutions, interest groups, agencies or corporations. Placement depends on availability of positions.

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 102 or 109. 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 majors 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 "Nou-
veaux Theater." 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 degree.

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 (3:3:0), (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 lexicom, 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 precise 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 geophysics, 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 department. Empha-
sis 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). Prerequisite: Graduate standing or permission of department. 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: GEC4553 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: GEC4550 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 Photogrammetry (3:3:0). Prerequisite: GEC4550 or permission of instructor and permission of department. Treatment of photogrammetric problems, including least squares adjustments, image coordination refinements, colinearity equation, resection, relative orientation, and analytic aerotriangulation.

563 Geographic Information Systems Applications (3:3:0). Prerequisite: GEC4553 or permission of instructor and permission of department. This course concentrates on utilization of geographic information systems software and hardware and requires considerable laboratory time to understand the functionality of GIS, its use for various applications, and available digital spatial data.

579 Remote Sensing (3:3:0). Prerequisite: GEC4550 or a course in aerial photography, 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 GEC4579 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: 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 process affecting the global distribution and character of climate, soils, vegetation, hydrology, and landforms; elements of mapping. (Natural Science Credit)

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.

203 Field Mapping Techniques (3:1:4). Basic techniques for collecting and recording spatial field data including the use of topographic maps, compass, transit, alidade, and geographic positioning system.

300 Quantitative Methods for Geographical Analysis (3:3:0). Prerequisite: 30 hours, including GEOG 102 and GEOG 103, or permission of instructor, and permission of department. A comprehensive introduction to quantitative methods employed in spatial analysis, with emphasis on solving geographical research problems. Topics include the nature of spatial data; collecting spatial data; preparing spatial data for mapping, GIS, and statistical analysis; descriptive spatial statistics; areal sampling theory and methods; probability theory and distributions; hypothesis testing; correlation and regression; 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.

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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.

305 Economic Geography (3:3:0). Prerequisite: 30 hours. Analysis of the pattern of distribution of world economic activity, the spatial economics behind this pattern, and the influence of this distribution on other spatial systems.


309 Introduction to Meteorology and Climate (3:3:0). Prerequisite: GEOG 102 or equivalent or permission of instructor. Elements of meteorology; analysis of world distribution of meteorological controls as the bases of regional climatic variations. (Natural Science credit)

310 Cartography I (4:3:2). Prerequisites: Grade of C or better in GEOG 300, and permission of department. Principles and methods of map making. Collection, analysis, and cartographic portrayal of geographic data.

311 Cartography II (4:3:2). Prerequisites: Grade of C or better in GEOG 310, or permission of instructor. Cartographic methods of compilation, construction, and reproduction with emphasis on planning and execution of complex maps.

315 Geography of the United States (3:3:0). Prerequisite: 6 hours of geography and/or American studies or permission of instructor. Diversity of physical and cultural landscapes in the U.S.

316 Geography of Latin America (3:3:0). Prerequisite: 6 hours of geography and/or Latin American studies or permission of instructor. Regional survey of physical resources, populations, cultural characteristics, and economic activities in Latin America.

320 Geography of Europe (3:3:0). Prerequisite: 6 hours of geography and/or European studies or permission of instructor. Environmental, economic, social, and political factors influencing the regional structure of Europe.

325 Geography of North Africa and the Middle East (3:3:0). Prerequisite: 6 hours of geography and/or courses related to Middle East, or permission of instructor. Environmental, economic, and social factors of differentiation of the regional structure and distribution of resources in the North African and Middle Eastern countries.

330 Geography of the Soviet Succession States (3:3:0). Prerequisite: 6 hours of geography and/or Russian studies or permission of instructor. Analysis of the geographic factors involved in the history, economic development, and geopolitical situation of the former Soviet Union.

335 Geography of Canada (3:3:0). Prerequisite: 6 hours of geography and/or Canadian studies, or permission of instructor. Analysis of physical and human geographic factors affecting Canadian history, urban/rural settlement, economics, politics, and culture.

357 Structures in Urban Governance and Planning (3:3:0). Prerequisite: 30 hours. A review of the spatial, policy, and administration principles that guide planning activity in the U.S. Outlines differences between theory and practice and provides a set of tools, methods, and perspectives that are commonly incorporated into 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.

380 Geography of Virginia (3:3:0). Prerequisite: 30 hours. Natural and cultural forces of Virginia. Study of regional makeup and analysis of human and environmental characteristics.

399 Selected Topics in Geography (3:3:0). Prerequisite: 30 hours. Content varies; determined by instructor.

406 Suburban Geography (3:3:0). Prerequisite: 60 hours. Analysis of the spatial aspect of social, economic, and political activities within suburbia. Suburbanization viewed both as an independent force and as a component of the larger urbanization process. Northern Virginia is used as a lab for suburban geographical study and student-initiated fieldwork projects.

411 Introduction to Computer Cartography (3:3:0). Prerequisite: Grade of C or better in GEOG 310 or permission of instructor. Concepts and techniques involved with production and use of computer-generated maps.

412 Aerial Photography Interpretation (3:3:0). Prerequisite: 60 hours and GEOG 102 or 103, or permission of instructor. Introduction to technology of gathering and managing information. Methods and techniques of interpreting and using information contained in aerial photography including applications to various aspects of the physical and cultural landscape.

415 Seminar in Geography (3:3:0). Prerequisite: GEOG 300 and 310. A capstone seminar for geography majors, integrating previous coursework into a disciplinary framework. Students produce and present original research papers.

416 Satellite Image Analysis (3:3:0). Prerequisite: 60 hours and GEOG 412, or permission of instructor. Examination of the methods and techniques of interpreting and using information obtained by non-photographic remote sensing systems, with particular emphasis on space-borne platforms. Includes analysis of imagery for both physical and cultural environments.

420 Physiography of North America (3:3:0). Prerequisite: 60 hours, GEOG 102, 3 additional hours of geography or geology, or permission of instructor. Physiographic features of the North American continent, their spatial distribution and their influence on the cultural, demographic, and economic development of the U.S. and Canada.

480 Internship (3:6:0:0). Prerequisite: Open only to authorized majors with 90 hours. Internships are approved.
study programs with specific employers. Credit is determined by department. Contact department one semester prior to enrollment.

499 Independent Study in Geography (1-3:0:0). Prerequisite: Open only to geography majors with 90 hours and permission of department and instructor. Individual study of a selected area of geography. Directed research paper is required.

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. Lab includes field collection of fossils, their preparation and identification.

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 a particular topic in geology.

301 Structural Geology (4:3:3). Prerequisite: GEOL 101, 102, 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.

308 Igneous and Metamorphic Petrology (4:3:3). 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 213, or permission of instructor. Introduction to physical, chemical, biological, and geological aspects of the oceanic environment. May include field trip.

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 (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.

315 Topics in Geology II (1-3:1-3:0). Prerequisite: GEOL 101, 102. Discussions of a particular topic in geology. 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.

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, 308. Topics include metallic and nonmetallic ore deposits, fossil fuels, alternate energy resources, and methods by which each is used. May include field trips.
0406 Topics in Geology III (1-3:1-3:0). Prerequisite: Geology major with 80 credit hours and permission of chair. Discussions of a particular topic in geology. May include field trips.

0407 Advanced Geological Mapping Techniques (2:0:4). Prerequisite: GEOL 101, 102, 301, 302, 303, 304, and 308. Interpretive geological mapping in igneous, sedimentary, and metamorphic terrains.

0408, 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 Research Proposal Preparation (1:1:0). Prerequisite: Geology or Earth Systems Science major with 80 credit hours and permission of chair. Preparation for research in GEOL 411, to include literature research, initial data collection, and the preparation of a research proposal.

411 Geological Research (3:0:3). Prerequisite: GEOL 410. Geological research including data collection and reduction, interpretation, preparation of a written report, and oral presentation of results.

417 Geophysics (3:3:0). Prerequisite: GEOL 101, MATH 113, one year of physics, or permission of instructor. Basic principles of Geophysics including gravity, magnetism, and seismic reflection/refraction.

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.

German (GERM)

Foreign Languages and Literatures

Placement: See Admission Procedures.

All 300- and 400-level courses in German literature may be taken toward fulfillment of the general requirement in literature for the baccalaureate degree.

101 Elementary German I (3:3:1). Designed for students with no knowledge of German. Introduction to German, including elements of grammar, vocabulary, oral skills, listening comprehension, and reading. Lab work required.

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 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, reading, 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 and institutions: its major aspects, problems, and goals. 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 events and issues. 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. Introduction to principles and techniques of translation. Translation of texts from the natural and social sciences, current events, and contemporary culture. Translations mainly from German into English.

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 subject is different.

365 Readings in Narrative Prose (3:3:0). Prerequisite: GER(M) 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 subject is different.

375 Readings in Drama (3:3:0). Prerequisite: GER(M) 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 subject 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.

422 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.

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 German, 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 (3:0:0), (3:0:0). 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.

580 Contemporary Germany (3:3:0). Prerequisite: Graduate standing or permission of instructor. In-depth study of contemporary Germany in its political, economic, social, and cultural institutions. Special emphasis on post-unification issues and Germany's place in the European community.

Government and Politics (GOVT)

Public and International 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.

149 Global Awareness (3:3:0). Introduction to the study of global systems, with emphasis on basic concepts and ways of thinking about global affairs.

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 policy-making; selected major issues in American foreign policy.

250 Introduction to Political Analysis (3:3:0). 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. 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.


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 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.

319 Issues in Government and Politics (3:3:0). Prerequisite: GOVT 103. Study of special issues relevant to government and politics. Topics announced in advance. This course may be repeated for credit when topic is different and with permission of department. Examples include politics and the arts, ethnic conflict and the political system, gender politics, and changing dynamics in political institutions.

320 Political Values (3:3:0). 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.

329 Issues in Political Theories and Values (3:3:0). Prerequisite: GOVT 103. Study of special issues relevant to theoretical and value aspects of government and politics. Topics to be announced in advance. This course may be repeated for credit when topic is different and with the permission of department. Examples include ethics and politics, ethics and environmental policy, changing perspectives on civil rights and liberties, religion and politics, and changing views of public space.

331 Government and Politics of Latin America (3:3:0). Prerequisite: GOVT 132 or 133. 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 or 133. 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: GOVT 132 or 133. Contemporary democratic political systems of Europe, with emphasis on political processes, institutions, and behavior. Case studies of key European policies. 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: GOVT 132 or 133. Survey of governmental and political systems of Canada, including political par-
ties, parliamentary system, federal system, and specific policy issues of importance to Canadian politics.

336 Political Development and Change (3:3:0). Prerequisite: GOVT 132 or 133. 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 132 or 133. Study of the resurgence of ethnic nationalism in the industrial democracies of Western Europe and North America; the interplay of industrialization 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 or 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 103 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 or 133. 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 or 133. 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 Issues in the Analysis of Global Systems (3:3:0). Prerequisite: GOVT 149 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 systems.

355 Public Personnel Administration (3:3:0). Prerequisite: GOVT 241. 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 layoffs, manpower planning, employee separations, and retirement systems.

356 Public Budgeting and Finance (3:3:0). Prerequisite: GOVT 241. 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: GOVT 241. 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.


365 Public Policy in Metropolitan Areas (3:3:0). 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.


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). 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. 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.

412/COMM 412 Politics and the Mass Media (3:3:0). Prerequisite: GOVT 103. Responsibilities and
freedoms of the mass media in a democracy. Influence of media on citizens' opinions, on elections, and on decisions of public officials.

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 induce conformity and form unified polity. Films and tapes supplement examples of classic political speeches.

420 American Political Thought (3:3:0). Prerequisite: GOVT 103. 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). 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. 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. 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: GOVT 132 or 133. 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 132 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.

444 Issues in International Studies (3:3:0). Prerequisite: GOVT 132 or 133. Major issues in the international system, including international political economy and security.

445 Soviet/Russian Foreign Policy (3:3:0). Prerequisite: GOVT 132 or 133. Survey of Soviet foreign policy focusing on the Cold War and the Gorbachev era. Examination of Moscow's foreign policy options in the post-Soviet period.

446 International Law (3:3:0). Prerequisite: GOVT 132 or 133. 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.


452 Administrative Law and Procedures (3:3:0). Prerequisite: GOVT 241. 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-modeling under risk and uncertainty, high technology development, management and utilization; and sociotechnical systems.

464 Issues in Public Policy and Administration (3:3:0). Prerequisite: GOVT 103 plus 60 hours. In-depth analysis of selected policy issues in administering public policies. Topics announced in advanced. This course may be repeated for credit when topic is different and with permission of department. Examples include environmental policy, government regulation, federal mandates, state policy, and regional policy.

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). Contact the department one semester before enrollment. Internships are approved work-study programs with specific employers. Credit is determined by the department.

490 Seminar (1-3:3:0). Prerequisite: Open to public affairs majors with 60 hours. May be repeated for elective credit. Course can be 1, 2, or 3 credits. Subject varies. Readings, individual or group projects, and discussions of seminar papers comprise the content and format.

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.
Health Education (HEAL)
College of Nursing and Health Science

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. fs

111 Advanced First Aid & Emergency Care (3:3:0). Identification, care, and treatment of various medical emergencies. fs

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. fs

220 Dimensions of Mental Health (3:3:0). Integration of behavioral and sociocultural factors in the study of mental health. fs

305 Teaching Methods in Health Education (K-12) (3:3:0). Content, methodology, and resource materials in teaching health education for physical education teaching majors. fs

310 Drugs and Health (3:3:0). Analysis of drug use, with emphasis on its positive aspects; alternatives to drug misuse and abuse. s

323 Community Health Education Programs (3:3:0). Organization and principles in planning, developing, implementing, and evaluating community health education programs. s

325 Health Aspects of Human Sexuality (3:3:0). Biological, behavioral, and sociocultural factors in human sexual behavior, apparently related to sexual problems. f

330 Nutrition (3:3:0). Assessment of dietary habits and patterns in relation to nutrient requirements. Emphasis on weight control, diet and fitness, and current nutritional controversies. fs

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. f

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. s

460 Internship (15:0:0). Directed experience to observe and participate in health promotion and exercise science activities at community agencies, health care centers, and private sector organizations. fs

480 Special Topics (1-3:3:0). Selected health issues and/or problems are presented for each specific "Special Topics" course. Application of information to education programs receives special attention.

499 Independent Study in Health Education (1-3:3:0). 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.

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 eras 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, 262 Survey of African Civilization (3:3:0), (3:3:0). HIST 261 is a survey of African history from earliest times to the decline of Western Sudanic states in the sixteenth century. HIST 262 is a survey of African history from the beginnings of interaction with Europe in the fifteenth century to the recent emergence of new states.


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. Introduction to historical writing, research techniques, and critical evaluation of primary and secondary sources. Topics will vary according to instructor. A grade of C or better is required to graduate with a B.A. in History.

301 Classical Greece (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Political, social, eco-

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onomic, 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 welfare 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 1865 (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 transplantation on certain African cultural survivals in the New World. Examination of genesis of American slavery and prejudice, colonial heritage, revolutionary legacy, colonization, abolitionist 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 the 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 eco-
nomic, 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 People's Republic of China. Emphasis on the coming of the West and the various stages of Chinese reaction.

356 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.

363 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.

386 Topics in History (3:3:0). Study of historical topics of special interest. Topics announced in advance. This course may be repeated for credit when topic is different and with permission of department.

387 Topics in Global History (3:3:0). Study of historical topics or periods of special interest in global, Latin American, African, Asian, or Middle Eastern history. Topics announced in advance. This course may be repeated for credit when topic is different and with permission of department.

388 Topics in European 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.

389 Topics in U.S. 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, and 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, Realadjustors 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 department. 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 of history 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 of history 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 Medieval Intellectual Topics (3:3:0). Prerequisite: 6 hours of history or permission of instructor. Selected 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 South 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.

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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 Macedonia, 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. Research on a specialized historical topic culminating in a seminar paper. Subject determined by instructor. A student may present not more than 3 hours for graduation credit.

Information Systems (INFS)

Information and Software Systems Engineering

310 Program Structure and Design Using COBOL (3:3:0). Primarily for business students. Programming using the COBOL language to focus on fundamental concepts of software design and software development methodologies for database management. Computing lab. fs

311 Database Management (3:3:0). Prerequisite: INFS 310 or CS 211. 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. fs

312 Computer Architecture and Operating Systems (3:3:0). Prerequisite: INFS 310 or CS 211. 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. s

315 High-Level Programming Languages (3:3:0). Prerequisite: INFS 310 or CS 211. 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. Credit for this course does not count toward the requirements for a major in Computer Science.

316 Software Systems Engineering (3:3:0). Prerequisite: INFS 310 or CS 211. 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 selected 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.

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.

309 Intensive Japanese III (6:0:0). Prerequisites: IAPA 202 or 209 or equivalent. Study of complex grammatical structure and spoken fluency, familiarity with written Japanese. Lab work required.

310 Intensive Japanese IV (6:0:0). Prerequisites: IAPA 309 or equivalent. Application of more advanced grammatical structure and spoken fluency and increased knowledge of written Japanese. Lab work required.

391 Japanese for the Business World I (3:3:0). Prerequisite: IAPA 310 or permission of instructor. Development of advanced-level fluency in spoken and written skills in Japanese through applications in business environment including facility in use of the complex polite systems as well as some specialized business vocabulary.

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.

109 Intensive Elementary Latin (6:6:2). Equivalent to LATN 101 and 102 and taught in a single semester. Recommended for majors in Classical Studies and for students who want an intensive introduction to Latin. May not be taken for credit in combination with LATN 101 or 102.

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; 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 program chair. 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, ancient literary theories, 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 better 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, 101,130, or 260. 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 process; the philosophy of unionism; the use of bargaining techniques for nonwage issues; the legal context 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.

391 Special Topics in Management (3:3:0). To offer coherent and organized coverage of important contemporary topics. Specific topics will be announced when course is scheduled.


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.

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 (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 formation 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) 215

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.

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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: A grade of C or better in CS 161 and DESC 202. 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, systems 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.

480 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 200, 202 and ECON 103, 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 lifestyle, 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, 3 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 (1-3:0:0). 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.

Mathematical Sciences (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 operations, equations and graphing. A study of the properties of polynomial, logarithmic, exponential, trigonometric functions.

105 Precalculus Mathematics (3:3:0). Prerequisite: High school Algebra I, Algebra II, and Geometry. Completion of Mathematics Placement Test given by the Testing Center. A review of mathematics skills essential to the study 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 Mathematics 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, maximum and minimum problems, the integral, conic sections.

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 SITIE 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.

311 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.


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 hemostasis 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 (4-6:0:0). 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.

Military Science (MLSC)

U.S. Army Reserve Officer Training Corps (ROTC) Program

100 Leadership Skills I (0:2:2). This course introduces the student to the organization, missions, customs, and traditions of the National Defense Establishment. The course includes a laboratory in practical leadership applications, military drill, and physical fitness.

101 Leadership Skills II (0:2:2). This course introduces the student to military topographic analysis and land navigation. Terrain analysis will be introduced and taught through the use of practical application and team projects. This course includes a laboratory in practical leadership, application, military drill, and physical fitness.

200 Leadership Skills III (0:2:2). This course is designed to develop the fundamental leadership skills required of newly commissioned second lieutenants serving as platoon leaders. Case studies of real life platoon leader experiences provide a framework for examining management, counseling and human relations theories and techniques. This course includes a laboratory in leadership application and physical fitness.

201 Leadership Skills IV (0:2:2). This course is designed to familiarize the student in the area of first aid. Students will analyze various injuries and examine preventive measures, first aid, field sanitation, and hygiene. In addition, a block of instruction will be given leading to a certification in cardiopulmonary resuscitation. This course includes a laboratory in practical leadership application and physical fitness.
300 Applied Leadership I (0:2:2). Prerequisite: MLSC 100, 101, 200, 201, or permission of instructor. This course begins with a study of the fundamentals and principles of military leadership and then covers the composition, equipment, and tactics of the infantry squad. The technical skills required of the squad's members and leaders are examined, to include Field Training Exercise (FTX) on map reading and rifle marksmanship. The course includes a laboratory in practical leadership training and physical fitness training, f

301 Applied Leadership II (0:2:2). Prerequisite: MLSC 100, 101, 200, 201, 300, or permission of instructor. This course will prepare cadets to participate in and successfully complete the six-week Advanced Camp the following summer, the single most important training and evaluation vehicle in the ROTC officer selection process. The course will include rifle marksmanship, land navigation fundamentals, selected "battlefield" tasks and skills, and light infantry squad/platoon battle drills. Cadets will attend two to three weekend field training exercises, bi-weekly physical fitness training sessions, and weekly performance-oriented leadership laboratories, s

400 Military Management (0:2:2). This course examines various managerial theories and how they are applied to personnel, training, and logistics management. The course is writing intensive to include one major research paper, a book review, and two short papers. Students will be required to present short briefings on selected writings. The course includes a laboratory in leadership application and physical fitness training, f

401 Military Law and Ethics (0:2:2). Prerequisite: MLSC 300, 301, 400, or permission of instructor. This course examines the ethics of the military environment, including customs, ethical codes, constraints, and appeals to moral principles. In the second part of the course, the American Judicial System is examined, with emphasis on the Uniform Code of Military Justice. The course includes a laboratory in practical leadership application and physical fitness training, s

561/562 Senior Advanced Military Studies (SAMS) I and II (0:2:2). Prerequisite: MLSC 400, 401, and completion or enrollment in a PME history course. The SAMS courses are an intense study in the Army's leadership and staff functions in strategic, operational, and tactical operations. These courses examine war as a national undertaking and apply lessons of military history to contemporary military problems. Students may be required to take a part-time internship with one of the agencies of the Department of Defense. Each semester's requirements are writing-intensive to include a major research thesis. Students will be required to present two military briefings each semester on their research activities. The course includes a laboratory in practical leadership application and physical fitness training. The SAMS courses are one or two semesters in length and requirements are tailored to students with extended commitments to the ROTC program, f, s

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). Introduction to music appreciation through formal and aesthetic principles. The elements of music are examined separately and combined in various musical forms. Can be taken by music majors as a free elective only. f, s

103 Folk and Traditional Music of the World (3:3:0). 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. Can be taken by music majors as a free elective only.

104 Introduction to Twentieth-Century Music (3:3:0). Survey of various styles found in twentieth-century music. Tonal, atonal, serial, and experimental music. Can be taken by music majors as a free elective only.

105 Music in the United States (3:3:0). 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. Can be taken by music majors as a free elective only.

106 Latin American Music (3:3:0). 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. Can be taken by music majors as a free elective only.

107 The Development of Jazz (3:3:0). Historical, analytical, and aural survey of jazz from inception to present day. Trends resulting from synthesis of jazz with other musical idioms. Can be taken by music majors as a free elective only.

113 Sight Singing and Ear Training I (2:3:0). Prerequisite: MUSI 115 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, f, s

114 Sight Singing and Ear Training II (2:3:0). Prerequisite: MUSI 113 or permission of instructor. Continuation of Sight Singing and Ear Training I. Modulation, various modes. Melodic and harmonic dictation. f, s

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. f

116 Harmony II (3:3:0). Prerequisite: MUSI 115 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. s

151 Class Strings: Violin and Viola (1:0:4). 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. Three clock hours per week will be spent studying violin and viola. One clock hour per week will be spent in Laboratory Ensemble. a
152 Class Strings: Cello and String Bass (1:0:4). 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. Three clock hours per week will be spent studying cello and string bass. One clock hour per week will be spent in Laboratory Ensemble. ay

153 Class Woodwinds: Flute and Clarinet (1:0:4). 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. Three clock hours per week will be spent studying flute and clarinet. One clock hour per week will be spent in Laboratory Ensemble. ay

154 Class Woodwinds: Oboe and Bassoon (1:0:4). 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. Three clock hours per week will be spent studying oboe and bassoon. One clock hour per week will be spent in Laboratory Ensemble. ay

155 Class Brass (1:0:4). 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. Three clock hours per week will be spent studying brass instruments. One clock hour per week will be spent in Laboratory Ensemble. ay

156 Class Percussion (1:0:4). 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. Three clock hours per week will be spent studying percussion instruments. One clock hour per week will be spent in Laboratory Ensemble. ay

157 Class Guitar (1:0:4). Prerequisite: Nonmusic majors must have permission of instructor. Study of techniques of playing and teaching the guitar. Survey of instructional materials and instrument selection. Three clock hours per week will be spent studying guitar. One clock hour per week will be spent in Laboratory Ensemble. ay

158 Class Voice (1:0:4). Prerequisite: Nonmusic majors must have permission of instructor. Study of the human voice in artistic singing. Practical application of basic principles is emphasized. Three clock hours per week will be spent studying voice. One clock hour per week will be spent in Laboratory Ensemble. ay

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. f

172 Class Piano II (1:0:3). Prerequisite: MUSI 171 or permission of instructor. Study of piano keyboard as it is related to intermediate song and combined in various music forms. s

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. f,s

183, 383 Symphonic Band (1:0:3). Prerequisite: Audition. Performance of work 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. f,s

184, 384 Symphonic Chorus (1:0:3). Prerequisite: Audition. Performance of works from the symphony orchestra 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. f,s

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. f,s

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. f,s

192, 392 University Gospel Choir (1:0:3). Prerequisite: Audition. Provides practical experience in performance of gospel music. Participation in rehearsals, performances, and special presentations is expected. Public concerts will be given. Four credits must be earned at the 192 level before taking the 392 level. May be taken eight times. f,s

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. f

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. s

218 Keyboard Harmony (1:0:3). Prerequisite: MUSI 172 and 215. For music majors only. Study of techniques of harmonization at the piano keyboard. s

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. s

285, 485 Chamber Ensembles (1:0:3). Prerequisite: Audition. Performance of works from the chamber music repertoire. Public performances are given. May be taken for credit eight times. f,s

301 Music in Motion Pictures (3:3:0). Prerequisite: 30 credit hours. An intensive study and analysis of the use of music tracks in motion pictures to introduce the picture, set a scene, create moods, or for musical numbers. From the silent film scores of the twenties to the present (including electronic music).

302 American Musical Theater (3:3:0). Prerequisite: 30 credit hours. An intensive study of the musical elements in the American musical theater from its European and later African roots to its evolution between the wars into a native form, and its continual assimilation of external influences such as new forms of jazz and rock to the eclectic form of the present day.
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.

325, 326 Performance Seminar for Singers and Accompanists I, II (2:3:0). Prerequisite: Audition. Seminar for vocal performance and piano majors, designed to develop and improve artistic and performance skills through a master class format. Courses emphasize dictation, style, song preparation and execution, interpretation, phrasing, and overall stage presence. Each course may be taken three times for credit.

335 Historical, Theoretical and Analytical Study of Music I (1:3:0). 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.

352 Vocal Pedagogy (2:2:0). Prerequisite: Junior standing in applied voice or permission of instructor. Instruction in the teaching of voice for all levels through the study of vocal physiology and pedagogical methods.

353 Instrumental Pedagogy and Literature (3:3:0). Prerequisite: Junior standing in instrumental private music instruction or permission of instructor. Instruction in the teaching of instrumental music techniques for all levels through the study of pedagogical methods, standard literature, and musical instruments produced by present-day manufacturers.

371, 372 Techniques of Accompanying I, II (1:0:3). Prerequisite: Successful audition on a keyboard instrument for admission to a music degree program, or 4 credits in undergraduate private music instruction on a keyboard instrument, or permission of instructor. The development of accompanying skills through collaboration with solo singers, instrumentalists, and small ensembles. Students perform for each other, observe lecture/demonstrations and performances by professionals, and participate in master classes. Each course may be taken two times for credit.

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 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 theatre 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.

415 Introduction to Electronic Music (3:3:0). Prerequisite: MUSI 218, 319, or permission of instructor. This course is designed to give the student a working knowledge of electronic music production with emphasis on the synthesizer as a computer interacting with other computers. Topics include a brief history of electronic sound production; acoustics of sound; the principles of musical instrument digital interface (MIDI) and its applications; the various kinds of synthesis; sound processing; and musical composition using both tape recorder and computer. Principles learned in class to be applied via student projects realized at the GMU MIDI Facility.

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. f

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. s

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. 437 Choral Literature

438 Operatic Literature (3:3:0). Prerequisite: MUSI 216 or permission of instructor. Opera from seventeen century to present, with emphasis on historical and stylistic development. Important works in the operatic repertory. 438 Operatic Literature

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 choral prelude, suite, sonata, theme and variations, and character piece in a historical context. 439 Keyboard Literature

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. 440 Orchestral Literature

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. f

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. s

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. f

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. 465 Selected Topics in Music Education

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. s

492 Selected Topics in Music (1-3:1-3:0). Prerequisite: 90 hours in a music degree program or permission of instructor. Topics of practical interest to music majors, especially those in the composition, history and literature, and performance concentrations. May be repeated for credit. 492 Selected Topics in Music

496 Internship (3-6:0:0). Prerequisite: Open to music majors with 90 hours. Contact the department one semester before enrollment. Internships are approved work-study programs with specific employers or agencies. Credit is determined by the department. 496 Internship

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. 497, 498 Independent Study

511 Analytical Techniques (3:3:0). Prerequisite: Baccalaureate 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. s

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. s

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. 513 Advanced Topics in Music Theory

515 Introduction to Electronic Music (3:3:0). Prerequisite: Baccalaureate degree in music or permission of instructor. This course is designed to give the graduate student a working knowledge of electronic music production with emphasis on the synthesizer as a computer interacting with other computers. Topics include a brief history of electronic sound production; acoustics of sound; the principles of musical instrument digital interface (MIDI) and its applications; the various kinds of synthesis; sound processing; and musical composition using both the tape recorder and computer. Principles learned in class to be applied via student projects realized at the GMU MIDI facility. 515 Introduction to Electronic Music
224 Course Descriptions

525, 526 Performance Seminar for Singers and Accompanists I, II (2:3:0). Prerequisite: Audition. Seminar for vocal performance and accompanying/piano majors designed to develop and improve artistic and performance skills through a master class format. Course emphasizes diction, style, song preparation and execution, interpretation, phrasing, and overall stage presence. Each course may be repeated once for credit. f,s

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 concepts which produced the concerto form and its extensive literature, from the seventeenth through the twentieth centuries.

552 Vocal Pedagogy (2:2:0). Prerequisite: Graduate status in applied voice or permission of instructor. Instruction in the teaching of voice for all levels through the study of vocal physiology and pedagogical methods.

553 Instrumental Pedagogy and Literature (3:3:0). Prerequisite: Baccalaureate degree in music or permission of instructor. Instruction in the teaching of instrumental music techniques for all levels through the study of pedagogical methods, standard literature, and musical instruments produced by present-day manufacturers.

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.

571, 572 Techniques of Accompanying I, II (1:0:3). Prerequisite: Admission to graduate-level private music instruction in a keyboard instrument or permission of the instructor. The development of accompanying skills through collaboration with solo singers, instrumentalists, and small ensembles. Students perform for each other, observe lecture/demonstrations and performances by professionals, and participate in master classes. Each course may be taken two times for credit. ay

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 four times for credit. f,s

581 Graduate Choral Ensembles (1:0:3). Prerequisite: Audition. Performance of works from the choral repertoire. Public concerts are given. May be taken four times for credit. f,s

583 Symphonic Band (1:0:3). Prerequisite: Audition. Performance of works from the band repertoire. Public concerts are given. May be taken four times for credit. f,s

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. f,s

587 Symphony Orchestra (1:0:3). Prerequisite: Audition. Performance of works from the symphony orchestra repertoire. Public concerts are given. May be taken four times for credit. f,s

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 four times for credit. f,s

592 Advanced Topics in Music (1:3-1:3-0). Prerequisite: Baccalaureate degree in music or permission of instructor. Intensive study of specific areas of concern to musicians engaged in performance, composition, and conducting. Individual research, group discussions, and participation in related activities. May be repeated for credit.

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.

Non-major 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 (1-3:0:0.5-1).** 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 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**

330 *Nursing as a Process for Health (4:0:0).** Prerequisite: Anatomy and Physiology and junior standing; Co-requisite: NURS 331. This course introduces the student to the nursing process and to communication skills as the foundation for beginning health assessment and fundamental nursing care for culturally diverse individuals throughout the life span. f

331 *Nursing as a Process for Health Practicum (4:0:12).** Prerequisite: Anatomy and Physiology and junior standing; corequisite NURS 330. This course gives the student the opportunity to practice health assessment and fundamental nursing technologies while utilizing communication skills with culturally diverse and vulnerable populations in a variety of settings. f

332 *Nursing as a Health Discipline (3:3:0).** Prerequisite: Junior standing. This course introduces the student to the concepts of epidemiology, health promotion, and disease prevention, and their impact upon the health status of culturally diverse and vulnerable individuals, families, small groups, and communities. Focus is upon health problems and potential interventions throughout the life span, and incorporates the principles of teaching/learning and the process of critical thinking as they apply to the art and science of nursing. f

333 *Nursing as a Health Profession (3:3:0).** Prerequisite: Junior standing. This course introduces the student to nursing as a dynamic and caring health profession. Includes historical perspectives on current ethical, legal, political, social, and cultural issues including health care policy. Introduces the student to nursing as a collaborative process. f

334 *Nursing as a Health Profession and Discipline (3:3:0).** Prerequisite: Open only to R.N.s and L.P.N.s. This course introduces the student to nursing as a dynamic and caring health profession, the impact of epidemiology, health promotion, and disease prevention on the health status of culturally diverse and vulnerable individuals, families, small groups, and communities throughout the life span. It incorporates the nursing process and the process of critical thinking as they apply to the art and science of nursing. Includes historical perspectives on current ethical, legal, political, and social issues. f, s

340 *Nursing as a Health Science I (3:3:0).** Prerequisite: Successful completion of NURS 330, 331, 332, 333, or permission of director. This course introduces students to the changing health needs of culturally diverse and vulnerable populations throughout the life span. The focus is on nursing care, pathophysiological, psychological, socio-cultural, and risk reduction implications of frequently experienced health problems. f, s

341 *Nursing as a Health Service I (5:0:15).** Prerequisite: Successful completion of NURS 330, 331, 332, 333; corequisite NURS 342. This course gives the student an opportunity to provide collaborative nursing care to culturally diverse and vulnerable populations experiencing frequently occurring physiological, psychological, and social health problems in a variety of settings throughout the life span. f, s

342 *Nursing as a Health Service I Seminar (1:1:0).** Prerequisite: Successful completion of NURS 330, 331, 332, 333; corequisite NURS 341. Meets every other week for two hours. This course provides an opportunity for students to integrate nursing care related to the health care needs of culturally diverse and vulnerable populations throughout the life span. f, s

343 *Pharmacology (3:3:0).** Prerequisite: Successful completion of NURS 330, 331, 332, 333; or permission of director. This course provides the student with the opportunity to study the actions and interactions of selected pharmacologic agents, pharmacokinetics, pharmacotherapeutics, and nursing responsibilities related to drug administration to individuals throughout the life span. s

345 *Nursing as a Health Service II (5:0:15).** Prerequisite: Successful completion of fall and spring junior nursing courses including NURS 330, 331. This concentrated clinical course in an acute care setting gives the student the opportunity to provide culturally diverse adults experiencing acute or chronic health problems with collaborative nursing care. sum

346 *Nursing as a Health Service II Seminar (1:1:0).** Corequisite: NURS 345. Meets every week for two hours. This course explores in-depth nursing care related to culturally diverse adults experiencing acute and chronic health problems. Case presentations dealing
with adult family members with health problems are utilized. sum

410 Nursing as a Health Science II (3:3:0). Prerequisite: Junior year. This course encompasses complex health problems of culturally diverse and vulnerable populations throughout the life span. Focuses on nursing care needs and pathophysiological, psychological, and socio-cultural implications of complicated health problems. f

425 Comprehensive Health Assessment (3:2:2). Prerequisite: Open only to R.N.s and L.P.N.s. This course introduces the student to systematic health assessment across the life span and expands that knowledge base to include knowledge and skills necessary to perform comprehensive health assessments with culturally diverse and vulnerable populations. f

436 Managerial Processes in Nursing (3:3:0). This course provides an introduction to the managerial principles and processes of the health care delivery systems including the concepts of interdisciplinary team management, collaboration, and case management. f,s

440 Nursing for Communities (3:3:0). This course addresses population-focused health care. Emphasis is on promoting the health of communities through primary, secondary, and tertiary prevention of health problems. Concepts of community and health policy affecting culturally diverse and vulnerable populations throughout the life span are examined. f,s

441 Nursing as a Health Service III (5:0:15). Corequisite: NURS 440. Clinical experience with a focus on collaborative nursing care with individuals, families, and large groups in the community. Emphasis is on health promotion and disease prevention for well populations and community-based care for individuals and families with acute and chronic illnesses. f,s

442 Nursing as a Health Service III Seminar (1:1:0). Corequisite: NURS 441. Meets every other week for two hours. This seminar examines nursing care related to acute and chronic illness with individuals, families, and large groups in the community and population-focused care with emphasis on health promotion and disease prevention, and on policy, ethical, and legal implications. f,s

451 Nursing as a Health Service IV (5:0:15). This course gives the student an opportunity to provide complex, collaborative nursing care to culturally diverse and vulnerable populations. Concentrated clinicals are available in selected institutional settings. f,s

452 Nursing as a Health Service IV Seminar (1:1:0). Corequisite: NURS 451. Meets every other week for two hours. This course provides an opportunity for students to integrate complex nursing care related to culturally diverse and vulnerable populations. f,s

453 Research in Nursing (3:3:0). This research course presents basic concepts and methods of nursing research. The research process is examined as a foundation for nursing practice and scholarship. Emphasis is placed on critique of current nursing research. f,s

454 Complex Health Assessment (1:0:2). Refinement and integration of knowledge and skills to conduct a comprehensive health assessment for individuals with complex health problems. f,s

465 Professional Transition and Role Integration (3:3:0). This capstone seminar assists the student to synthesize the professional role as a provider and coordinator of care and a member of the profession. Emphasis is placed on collegiality, professional role transition, and responsible membership within the organization and larger society. f,s

480 Health Maintenance and Health Aspects of Aging (3:3:0). Study of physiological and psychological factors that 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. f,s

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, sociological issues, funding, communication, and self-care/independent living. f,s

530 Nurses as Writers (3:3:0) Seminar focused on theories and practices related to writing in nursing. Researching, composing, revising, and editing are practiced in a variety of writing styles. f,s

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. f,s

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. f,s

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. f,s

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 physiological integrity at the cellular level. Focus on man as a whole, open system. Complex health programs from the perspective of maintaining homeodynamics. f,s

565 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. f,s
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.

571 HIV/AIDS: Concepts, Principles, and Interventions (3:3:0). This interdisciplinary course provides an overview of all aspects of HIV disease to include retrospective and current concepts and analyses of the epidemic, global and societal impact, and cutting-edge research. Development of therapeutic tools and skills to educate, reduce risks, control infection, and affect care and healing of client, family, and community. Examines issues of increasing dilemmas for health care professionals.

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 Engineering

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 203 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. Students who have taken OR/MATH 440 will not receive credit.


451/DESC 451 Optimization Models (3:3:0). Prerequisite: DESC 352 or equivalent. 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 213 or 215; and MATH 203 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 (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. May be repeated for a maximum of 6 credits if the topics are substantially different.

499 Special Topics in Operations Research (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 203 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 role in modern society.

121 Reading Cultural Signs (3:3:0). Uses methods introduced from cultural studies and communication as well as sociology, economics, and psychology. Explores ways in which contemporary arts, mass media (including advertising), and cultural events, as well as social institutions, reflect and shape personal and social values.

122 Reading the Arts (3:3:0). Uses methods developed in PAGE 121 and introduced from literary study and fine arts. In fostering appreciation, explores the relationship of the parts to the whole in a work of art, con-
nections among different art forms, and links between art and its historical context.

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)

College of Nursing and Health Science


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 and Fitness Program Design and Evaluation (3:3:0). Research for marketing decisions through environmental scan and needs assessment. Design and marketing of leisure services in profit and nonprofit settings for individual and community wellness satisfaction and growth. Program evaluation.

316 Outdoor Recreation and 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 Social Psychology of Play and Recreation (3:3:0). Prerequisite: PRLS 210 or permission of instructor. Explores theories of play and recreation behavior with emphasis on learning, effectance, and arousal theories. Empirical research evidence of antecedents to and consequences of play and recreation involvements, motivation for and satisfaction from play and recreation activity.

402 Human Behavior in Natural Environments (3:3:0). Prerequisite: PRLS 210 or permission of instructor and 60 hours. Application of social and behavioral theories to management of recreation users of land and water resources. Deterioration and pollution of land and water, noise, crowding, and conflicts among users are examined. Strategies for mitigation of deleterious impacts and deprecative behaviors, as well as attitudes toward resource conservation, preservation, and use are discussed.

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 Administration of Service Organizations (3:3:0). Prerequisite: 60 hours. A comprehensive course addressing the day-to-day problems in the operation and management of human service organizations. Discussions include: management and leadership theories and techniques; problem solving and decision making; motivation; design of organizational structures, service quality assessment, communications, marketing, and evaluation research.


450 Research Methods (3:3:0). Prerequisite: 60 hours. Development of empirical research designs for both practical and theoretical problems in health, fitness, and recreation resources management. Literature review of hypothesized relationships and formulation of research proposals.
460 Sport and Recreation Law (3:3:0). Prerequisite: 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 (15:0:0). 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. sum

499 Independent Study (1-3:3:0). Individual study of topic area in leisure research, theory, or practice under the direction of faculty.

501 Introduction to Natural Resources Law (3:3:0). Prerequisite: PRLS 460 or graduate status or permission of instructor. Through case studies of recent court decisions, this course examines selected contemporary issues involving conflicting use and preservation demands on our nation's limited natural resource base, particularly those involving public lands, open space, and recreation resources.

526 Environmental Education and Resource Interpretation (3:3:0). Prerequisite: PRLS 402 or permission of instructor and 60 hours. Concepts, and techniques for communication and dissemination of information pertaining to preservation and conservation, use of recreation resources. Design and implementation of programs to enhance understanding and appreciation of cultural, historical, and natural resources.

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.

155 Issues in Environmental Ethics (3:3:0). A philosophical examination of a variety of issues in environmental ethics, such as the moral status of animals, the moral significance of nature, our duties to protect wilderness areas, the moral status of economic reasoning, and morally acceptable population policies.

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.

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.

305 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, 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 contemporaneous empirical philosophy.

315 Philosophy of History (3:3:0). Prerequisite: 3 hours of philosophy or permission of instructor. Investigat-
tion 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: 3 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?

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.

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, and Nietzsche mount a revolt against the rationalism and scientism 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 into question. Recognizing the historical context of this issue, the ways in which the structures of patriarchy situate women as the other and determine the meanings of sexuality, subjectivity, the body, and language will be examined. One over-riding theme of this course will be the relationship between the "woman" question and other central issues of contemporary philosophy.

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 basic 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 calculi, 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 (3:0:0), (3:0:0). 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 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 following are central questions of the course: What constitutes a just distribution of property? How is the right to individual freedom to be weighted against the right to receive basic human necessities?

555 Environmental Ethics (3:3:0). Prerequisite: 90 hours or 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)

College of Nursing of Health Science

300 Kinesiology (3:3:0). Prerequisite: BIOL 124 and 125; or BIOL 228. Anatomical and mechanical study of human movement. f,s

303 Professional Dimensions of Health, Recreation, and Physical Education (3:3:0). Introduction to the professional practice of health, recreation, and physical education. f,s

304 Sport, Culture, and Society (3:3:0). Prerequisite: PHED 303 or permission of instructor. Sport and fitness viewed from historical, political, economic, and cultural perspectives. s

306 Psychomotor Learning (3:3:0). Prerequisite: Permission of instructor. Learning theory, processes, and conditions as they affect movement. Field experience required. f,s

330 Prevention and Care of Athletic Injuries (3:3:0). Prerequisite: BIOL 124 and 125 or BIOL 228. Preventive, rehabilitative, and medical management of athletic injuries. f

331 Advanced Techniques of Athletic Training (3:1:2). Prerequisite: PHED 330. Injury evaluation and treatment modalities in athletic training. s

365 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. f,s
373 Individual Sports in Physical Education (3:0:3). Formerly PHED 106, 302, 380, 381, 384, 385, and 386. For physical education majors to improve their skills and knowledge through in-depth study of basic skill progressions and drills for teaching tennis, golf, and other individual sport activities. Includes skill analysis and peer group teaching. f,s

375 Team Sports in Physical Education (3:0:3). Formerly PHED 382, 383, 387, 388, and 389. For physical education major to improve their skills and knowledge through in-depth study of basic skill progressions and drills for teaching basketball, soccer, and other team sport activities. Includes skill analysis and peer group teaching. f,s

403 Curricular Experiences in School Physical Education (3:3:0). Prerequisite: PHED 303. Curricular experiences and methods for K-12 physical education. Requires 12 to 15 hours of field experience. f,s

410 Social/Psychological Aspects of Health and Fitness (3:3:0). Research, trends, and techniques in the study of health and fitness. f

415 Student Teaching in Physical Education (15:0:0). Prerequisite: Completion of all courses in the approved 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. f,s

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. f,s

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. f,s

450 Physiology of Exercise (3:3:0). Prerequisite: BIOL 124 and 125 or BIOL 228, and PHED 300. Human physiological response to environmental changes and exercise. f,s

499 Independent Study in Physical Education and Fitness (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.

Physics (PHYS)

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). 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 45 hours of physics courses required for the 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 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 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.

305/ECE 305 Electromagnetic Theory (3:3:0). Prerequisite: PHYS 352, 353 and MATH 214. Interaction of static charges, interaction of stationary currents, electromagnetic induction, Maxwell’s equations.

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, 303, 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), (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 45 hours of physics courses required for the B.S. degree or within the 31 hours of physics courses required for the B.A. degree. 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 (1:0:2), (1:0:2). Corequisite: 343 (for 344) and 345 (for 346). Laboratory portion of two-semester basic physics course.

350 University Physics II (3:3:0). (One-hour recitation) Prerequisite: PHYS 25; Corequisite: MATH 213. Waves, thermal physics, and electricity.


361 Modern Physics with Applications (3:3:0). Prerequisite: MATH 214 and PHYS 352, and PHYS 303 or 305. Study of modern physics with emphasis on applications for scientists and engineers. Topics include modern, optical, 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.

390 Topics in Physics (1:4:0:0). Selected topics in physics not covered in fixed content courses. May not be included for credit by physics majors within the 45 hours of physics courses required for the B.S. degree or within the 31 hours of physics courses required for the B.A. degree.

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: 21 credits of physics courses. 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, Mössbauer Effect.

408 Senior Research (2-3:0:0). Prerequisite: 21 credits of physics courses. The student works under the guidance of a faculty member on a research project in experimental or theoretical physics. May be taken twice with permission of the Physics Department.

416 Special Topics in Modern Physics (1:2:0). Prerequisite: 21 credits of physics courses. Topics of major current interest in modern physics with emphasis on the breadth of physical understanding needed to approach many of today's problems.

417/GEOL 417 Geophysics (3:3:0). Prerequisite: GEOL 101, 102, 201, 301; MATH 113, 114; and PHYS 250. Corequisite: MATH 213; 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 quan-
tum 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.

540 Nuclear and Particle Physics (3:3:0). Prerequisite: PHYS 402 or 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.


575 Atmospheric Physics I (3:3:0). Prerequisites: PHYS 305, 352, and 350 or equivalent. Introduction to basic physical and chemical processes that operate in the earth's atmosphere. Emphasis on those concepts that provide a global description of the current atmospheric state and those processes that relate to global change and atmospheric evolution. Topics include equilibrium structure, radiative transfer models, thermodynamics of various atmospheric states, and the various processes defining these layers.

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.

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 (1-3:0:0). Prerequisite: 6 hours of psychology or permission of instructor. 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 culminates in a paper describing techniques learned. No more than six credits in PSYC 260, 350, and 460 can be used toward 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 course work, or permission of instructor. 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 instructor. Principles of animal learning, including such topics as classical and operant conditioning, discrimination learning, and animal cognition. Laboratory projects require working with animal subjects.

305 Memory and Cognition (4:3:2). Prerequisite: PSYC 300 (grade of C or better) or permission of instructor. Experimental methodology within the context of cognition, discrimination, concept formation, verbal learning, psycholinguistics, and memory.

309 Sensation, Perception, and Information Processing (4:3:2). Prerequisite: PSYC 300 (grade of C or better) or permission of instructor. Principles of perception, including topics such as psychophysics, perceptual organization, perceptual learning, and perceptual constancies. Laboratory projects demonstrate and investigate perceptual phenomena.

313 Child Psychology (3:3:0). Prerequisite: 6 hours of psychology including PSYC 100, or permission of instructor. Study of human psychological development from conception to adolescence including such topics as genetic factors, emotional and intellectual growth, and environmental 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 development.

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320 Psychological Tests and Measurements (4:3:2). Prerequisite: PSYC 300 (grade of C or better) or permission of instructor. Examination and application of principles underlying the theory, interpretation, and administration of psychological tests; including a study of tests of intelligence, achievement, and ability.

321 Counseling Psychology (3:3:0). Prerequisite: PSYC 325 or permission of instructor. Review of the theories and methods in psychological counseling.

322 Behavior Modification (3:3:0). Prerequisite: PSYC 220 or permission of instructor. Examination of experimental principles of human and animal learning within the theoretical framework of applied behavior analysis, including the design, implementation, and evaluation of operant intervention programs across a wide variety of human situations.

323 Clinical and Social Psychology Research Techniques (4:3:2). Prerequisite: PSYC 300 (grade of C or better) or permission of instructor. Review and application of some research techniques including interviewing, survey analysis, and process analysis.

324 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.

325 Abnormal Psychology (3:3:0). Prerequisite: PSYC 100 and one of PSYC 211, 231, or 324; or permission of instructor. Study of development of abnormal behavior patterns, including such topics as methods of diagnosis and prevention of serious mental disorders such as psychosomatic disorders, psychoses, character disorders, and mental retardation.

326 Therapeutic Communication Skills (3:3:0). Prerequisite: PSYC 325 or permission of instructor. Introduction 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 permission of instructor. Nature of effective and faulty patterns of adjustment. Factors in healthy and unhealthy personality development, unique motivation patterns of individuals, and influence of personally significant groups on adjustment. Resources for personal growth and application of contemporary psychological principles to achievement of increased intellectual, emotional, and social competence. PSYC 330 cannot be taken for credit by psychology majors.

350 Directed Reading and Research in Psychology (1-3:0:0). Prerequisite: PSYC 100, 300, permission of instructor and department. Library research in psychology, culminating in a substantial formal paper; individualized sections by arrangement with faculty. No more than six hours in PSYC 260, 350, and 460 can be used toward psychology major.

362 Psychology of Women (3:3:0). Prerequisite: PSYC 100 and BIOL 103, 104, or permission of instructor. Behavior and attitudes of women; influence of sex chromosomes and sex hormones on behavior; influence of culture on sex role differentiation; theories of sex role development.

372 Physiological Psychology (3:3:0). Prerequisite: PSYC 100 (grade of C or better) and BIOL 103-104, or permission of instructor. Survey of neuroscience, including basic neuroanatomy, neural and synaptic transmission, neural mechanisms underlying normal and abnormal behavior, and biological mechanisms of drug action.

373 Physiological Psychology Laboratory (1:0:2). Pre- or corequisites: PSYC 372 or permission of instructor. Functional anatomy and physiology of the brain, including dissection of brain and eye, demonstration and practice in research methods for studying physiological mechanisms underlying behavior.

410 Motivation and Emotion (3:3:0). Prerequisite: PSYC 100 and 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). Prerequisite: 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). Prerequisite: PSYC 100 or permission of instructor. Examination of the sensory, perceptual, intellectual, and personality changes that occur in older people. Common adjustment problems as well as more serious adjustment difficulties are discussed. Applications of various personality theories of aging.

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, psychosal 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 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). Prerequisite: 18 hours of psychology including PSYC 305 (grade of C or better), 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: See course description in Schedule of Classes. Selected topics reflecting interest in specialized areas. Announced in advance.

465 History and Systems in Psychology (3:3:0). Prerequisite: 18 hours in psychology including PSYC 305 (grade of C or better), or permission of instructor. 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). Prerequisite: PSYC 372 or permission of instructor. Rotating topics. Physiological mechanisms underlying behavior. Selected topics include neuronal bases of learning and memory, and biological bases of reinforcement and addiction. May be repeated once with approval of instructor.

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 or permission of instructor. 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 or permission of instructor. 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 636 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 permission of instructor. Introduction to theory, method, and practice of survey research; students complete a survey research project.

548, 549 Practicum in Gerontology (3:0:0), (3:0:0). Prerequisite: Completion of three of the required courses in the gerontology certificate program or permission of instructor. 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 graduate 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 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). Prerequisite: PSYC 231 or permission of instructor. 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). Prerequisite: 6 hours of child psychology and a course in experimental psychology, or permission of instructor. 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). Prerequisite: 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). Prerequisite: See course description in Schedule of Classes. Special topics reflecting interest in specialized areas. Topic announced in advance.
Public Administration (PUAD)  
Public and International Affairs  
502 Theory and Practice of Public Administration (3:3:0). Prerequisite: 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.

504 Theory and Practice of International Relations (3:3:0). Prerequisite: Acceptance in MPA program or permission of department. Theoretical and empirical examination of the international system which both affects and is affected by the decisions, behaviors, and subsystems of state and nonstate (organizational) actors.

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; interrelationships of religions and socio-political life.


271 Contemporary Religious Ethics (3:3:0). Prerequisite: 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). Prerequisite: 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). Prerequisite: 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). Prerequisite: 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). Prerequisite: RELI 231 or permission of instructor. Development of American political religion, or religious nationalism/Americanism; 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). Prerequisite: RELI 231 or permission of instructor. Churches' involvement in social thought and action during the nineteenth and twentieth centuries.

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). (3:3:0). Prerequisite: 3 hours in philosophy or religion or permission of instructor. Selected topics from a philosophically 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. 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 (1-3:3:0). Prerequisite: HIST 328 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 lectures 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.

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 Post-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.

470 Topics in (Post) Soviet Film (3:3:0). Prerequisite: 60 hours or permission of instructor. Russian, Soviet, and post-Soviet films selected by type, period, or director with emphasis varying from year to year. Required viewings, student discussion, and written critiques. May be repeated once with permission of the department or film studies adviser.

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.

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Social and Organizational Learning (LRNG) 239

Social and Organizational Learning (LRNG)

Program on Social and Organizational Learning

492, 592 Special Topics in Social and Organizational Learning (1-3:3:0). Topics in social or organizational change seen from economic, historical, philosophical, literary, organizational, and/or information technology perspectives. New courses that will first appear under this heading include Information and Organizational Intelligence, and Teleculture. Consult Program office for descriptions. May be repeated for credit.

520 Experts and Expert Status (3:3:0). Examines how we decide whom to regard as an expert when we do not understand completely what we hear. Focus on the resources that experts, and the people they talk to, bring to their conversations. Explores assumptions about experts, conventions of conversation, and issues of status. Students analyze traditional negotiations of expert status and develop alternatives.

551 Economics of Discourse (3:3:0). The application of economic and literary theory to the process of verbal communication, whether spoken, written, or otherwise. The transformation of literary criticism from the New Criticism toward post-structuralism is examined with the use of theories from literary criticism itself, as well as from the field of economics. Examines the possible effects of changing technological conditions of production, or of changing composition of market demand conditions, or other economic circumstances, in the supply and demand of literary texts.

572 Taming the Electronic Frontier (3:3:0). This course examines the history of major revolutions of the
past from the viewpoint of economics and other social sciences, to extrapolate beyond the established paradigms of telecommunications, computer science, and software engineering to examine how the information revolution may unfold in the future. This broadly interdisciplinary course aims to establish, in a classroom setting, a productive dialogue between producers and consumers of information-age goods.

582 Risk, Mistakes, and Responsibility (3:3:0). An examination of how we come to label certain actions as mistakes, define risks in terms of those "mistakes," and assign responsibility. Consideration of personal responsibility, and risk in different arenas. Relationship between organizational learning and alternative views of mistakes.

583 The Future of Meetings (3:3:0). What is it about meetings; they excite and frustrate. Course looks for common elements among perspectives on group behavior, verbal and electronic communication, subjective understanding and learning, identity and status, and childhood experiences. Draws on theoretical literature and "how to" books, students' ethnographic observations, videotape, and fiction. Connects meetings with nonmeeting activity.

590 Global Financial Markets and Technological Change (3:3:0). An examination of the changes occurring in international trade, international finance, and the monetary systems of the contemporary world, occasioned by the revolution in electronic technologies. The ability investors now have of transacting in alternative currencies, and of moving capital around the globe in response to government regulation, are changing the very nature of the world's monetary systems. Alternative schemes for conducting monetary policy to take into account the impact of telecommunication technologies are examined.

596 Independent Study (1-12:3:0). Research, analysis, and/or implementation within the realm of social and organizational learning. Work with a member of the Program faculty. May be repeated for credit.

Social Work (SOCW)

College of Nursing and Health Science

301 Laboratory in Interpersonal Communication (3:3:0). Prerequisite: SCI 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. f,s

323 Human Behavior in the Social Environment I (3:3:0). Prerequisite: SCI 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. f

324 Human Behavior in the Social Environment II (3:3:0). Prerequisite: SOCW 323 with a minimum grade of C or permission of instructor. Examination of social systems theories as they pertain to the study of macro systems. Focus of study involves families, the social group, the formal organization, and the community. Student will apply theoretical concepts to contemporary social problems. s

351 Social Welfare Policy and Services (3:3:0). Prerequisite: SCI 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. f

352 Social Welfare Policy and Service II (3:3:0). Prerequisite: SOCW 351 with a minimum grade of C 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. s

357 Methods of Social Work Intervention I (3:3:0). Prerequisite: SCI 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. f

358 Methods of Social Work Intervention II (4:3:0). Prerequisite: SOCW 301, 357, with a minimum grade of C in both courses 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. s

410 Alcohol and Substance Abuse: Policies and Programs (3:3:0). Primary issues related to alcoholism and drug abuse including key concepts, theories, policies, and research regarding the use and abuse of alcohol and other drugs. Emphasis on the impact of the policies and programs on the well-being of ethnic minority and disadvantaged service populations. sum

423 Social Work with Adolescents (3:3:0). Prerequisite: 60 hours or 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. Analyzes both individual and group approaches to counseling and treatment.

425 Planning and Organizing for Community Change (3:3:0). Prerequisite: 60 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: SOCW 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: SOCW 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: SOCW 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 in 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: SOC/101 or PSYC 300, senior standing, or permission of instructor. Must be completed with a minimum grade of C. 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: child welfare, legal and ethical issues, individual disabilities, and family and societal problems.

483 Selected Approaches to Social Work Intervention (3:3:0). Prerequisite: 60 hours or permission of instructor. Taken simultaneously with SOCW 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. Topics vary: prevention approaches for at-risk families and children, and social work with the aged.

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.

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, sociolegal 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: SOC/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: SOC/101 or permission of instructor. Various theories on living together, within a systems framework. Love, communication, sexuality, mate selection, parenting, socialization, conflict and crises, and family management.

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: SOC/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: SOC/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: SOC/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: SOC/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: SOC/101 or permission of instructor. Causes and meaning of crime, with emphasis on adults. Patterns of criminal behavior, including property crimes, violent crimes, organized crime, white-collar crime, and victimless crime. Critical assessment of criminal justice system as a response to crime.
302 Sociology of Delinquency (3:3:0). Prerequisite: SOCI 101 or permission of instructor. Theories of juvenile delinquency and societal reactions to delinquency. Gender differences in rates and types, historical overview emphasizing origins and development of juvenile justice system. Critical assessment of juvenile justice and its alternatives.

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. Types of collective action, theories of social movements and their roles in social change.

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 the African American experience.

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 relation to the changing social structure in which it takes place.

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, guerrilla 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 class conflict, social consensus, elite analysis, 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. Theories explaining forms of punishment systems, punishment and corrections as a product of historical, cultural, and political changes, differences by race and gender in punishment and corrections. Problems of social control and violence in prisons, alternative rehabilitation, and community prevention strategies.

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-adoption, and planned change.

499 Independent Research in Sociology (1-3:3:0). 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; intrafamily 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 social, political, and 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 purview 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 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 105. Lab work required.

141, 142 Applied Spanish for the Social Services (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 Services (4:4:2). Prerequisite: SPAN 142 or equivalent. Continuation of SPAN 142.

300 Reading Skills Development (3:3:0). Prerequisite: SPAN 202 or 209; appropriate placement score; or permission of instructor. Students are guided to discover and explore different ways in which a reader can create sense out of a text. Readings include selections from newspapers and magazines, mystery novels, contemporary literary works, and others.

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: SPAN 300 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 (1-3:6:0). 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 general 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 the 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: SPAN 300 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: SPAN 300 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 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 Latin American Civilization and Culture (3:3:0). Prerequisite: 15 hours of Spanish or permission of instructor. Introduction to the study of Latin American civilization and culture, from the pre-Columbian era to the twentieth century.

480, 481 Special Topics in Hispanic Literature (3:3:0), (3:3:0). Prerequisite: SPAN 311 or permission of instructor. Study in depth of a selected theme, topic, period, or genre. May be repeated for credit with permission of department.

483, 484 (471) The Literature of Spain I, II (3:3:0). Prerequisite: SPAN 311 or permission of instructor. SPAN 483 examines the main periods, trends, genres, and most representative works of the Spanish peninsular literature from its beginnings to the end of the Golden Age. SPAN 484 studies Spanish literature from 1700 to the present.

485, 486 (472) The Literature of Spanish America I, II (3:3:0). Prerequisite: SPAN 311 or permission of instructor. This course is the first part of a two-semester survey of the literature of Spanish America. In SPAN 485, the texts that are representative of the colonial, romantic, and modernista periods in Spanish American literature are studied. SPAN 486 is the second of the two-semester survey on the literature of Spanish America. In this course, the post-modernista period and contemporary writers are studied.

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 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 Spanish faculty. In the second semester, independent research and completion of an honors essay under the supervision of a member of the Spanish faculty.

500 History of the Spanish Language (3:3:0). Scientific study of the evolution of the Spanish language from its origin in 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)

Applied and Engineering 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. f, s, sum

344 Applied Probability for Engineers and Scientists (3:3:0). Prerequisite: MATH 114. Introduction to probability with applications to the computer, information, engineering, physical, and biological sciences. Probability laws, discrete and continuous random variables, joint probability distributions, conditional distributions, independence, expectations, variable transformations, system reliability, and sampling distributions. f, s, sum

350 Introductory Statistics II (3:3:0). Prerequisite: STAT 250. Emphasis on applications in social sciences. Topics include analysis of variance, multiple regression, and nonparametric inference. Statistical computer package used for data analysis. f

354 Statistical Methods for Engineers and Scientists (3:3:0). Prerequisite: STAT 344. Introduction to statistical methods with applications to the computer, information, engineering, physical, and biological sciences. Descriptive statistics, point and interval estimation, tests of hypotheses, 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. f,s

363 Introduction to Survey Sampling (3:3:0). Prerequisite: STAT 344. Introduction to the design and analysis of sample surveys. Sample designs covered 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, and non-sampling error adjustment. Applications are to the decision, information, and social sciences, and engineering. Class project involves an actual survey.

381 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^n 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. as

457 Applied Nonparametric Statistics (3:3:0). Prerequisite: STAT 350, STAT 354, DESC 353, or equiva-
lent. 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, and 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 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.

498 Independent Study in Statistics (1-3:0:0). Prerequisite: 60 hours of undergraduate credit; must be arranged with instructor and approved by the department chair before registering. Directed self-study of special topics of current interest in statistics. May be repeated for a maximum of six credits if topics are substantially different.

499 Special Topics in Statistics (3:3:0). Prerequisite: 60 hours of undergraduate credit 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 six credits if the topics are substantially different.

Study of the Americas (STAM)

Study of the Americas

201 News Media in the Americas (3:3:0). Examination of the operation and impact of news media in the Americas. Topics include the institutions of news production and distribution, the generation and formation of news, the ideological nature and impact of news, the relationships between the news media and the economic, political, and cultural structures and practices of the various regions of the Americas.

202 Popular Culture in the Americas (3:3:0). Examination of the popular cultures of the Americas. Topics include the institutions for the production and distribution of popular culture, the generation and formation of popular culture forms, the ideological nature and impact of popular culture forms, and the relationships between the institutions and practices of popular culture and the economic, political, and broader cultural structures and practices of the various regions of the Americas.

303 Introduction to the Study of the Americas I (3:3:0). The first course in a two-semester introduction to the study of the diverse yet related regions, societies, cultures, and peoples of the Americas. With a focus on selected topics up to 1800, the course introduces students to the various methodologies involved in the study of the histories and cultures of the Americas. Students majoring in the Study of the Americas should try to take this two-course sequence in order, and before all other courses in the major. Preference in enrollment is given to majors in the Study of the Americas. Enrollment is limited to thirty.

304 Introduction to the Study of the Americas II (3:3:0). The second course in a two-semester introduction to the study of the diverse yet related regions, societies, cultures, and peoples of the Americas. With a focus on selected topics since 1800, the course introduces students to the various methodologies involved in the study of the histories and cultures of the Americas. Students majoring in the Study of the Americas should take this two-course sequence in order, and before all other courses in the major. Preference in enrollment is given to majors in the Study of the Americas. Enrollment is limited to thirty.

310 Places and the Study of the Americas (3:3:0). Prerequisite: 45 hours. Examination of the relationships between natural and social space and the various societies and cultures of the Americas in the overall historical context of their economic, political, and ideological structures and practices. Particular subtitles—often drawn from the fields of anthropology, art, history, and sociology—will be announced. The course may be repeated when the subtitle is different.

320 Peoples and the Study of the Americas (3:3:0). Prerequisite: 45 hours. Examination of the relationships between and among the various peoples of the Americas in the overall historical context of their economic, political, and ideological structures and practices. Particular subtitles—often drawn from the fields of anthropology, art, history, and sociology—will be announced. The course may be repeated when the subtitle is different.

330 Eras and the Study of the Americas (3:3:0). Prerequisite: 45 hours. Examination of the relationships between specific historic eras and the various societies and cultures of the Americas in the overall historical context of their economic, political, and ideological structures and practices. Particular subtitles—often drawn from the fields of art history and history—will be announced. The course may be repeated when the subtitle is different.

340 Institutions and the Study of the Americas (3:3:0). Prerequisite: 45 hours. Examination of the relationships between specific institutions and the various societies and cultures of the Americas in the overall historical context of their economic, political, and ideological structures and practices. Particular subtitles—often drawn from the fields of anthropology, communication, public affairs, and sociology—will be announced. The course may be repeated when the subtitle is different.

401 Thematic Approaches to the Study of the Americas (3:3:0). Prerequisite: 60 hours. Intensive study of a significant theme, problem, question, conflict, or possibility that furthers our understanding of the societies and cultures of the Americas. Particular subtitles will be announced. The course may be repeated when the subtitle is different. Preference enrollment is given to majors in the Study of the Americas.

410 Senior Seminar in the Study of the Americas (3:3:0). Prerequisite: majors in the Study of the Americas with 90 hours. Senior majors in the program will carry out a significant project related to their area of interest in their regional concentration with an American Studies faculty mentor who has been chosen in consultation with the faculty advisor or program director. The re-
search topic will be chosen in consultation with the mentor, and the project will result in a major essay of 25-30 pages.

490 Internship in the Study of the Americas (3-12:0:0). Prerequisite: 60 hours and permission of the director of the program. Internships are nonpaying, work-study positions in organizations concerned with the Americas. Internships are available with organizations such as government agencies, non-government agencies, public interest groups, labor unions, political parties, political activist groups, publications, religious groups, businesses. Three credits are the usual load, but an internship semester is also possible. Opportunities and requirements for an internship can be discussed with the director of the program. Specific arrangements must be made with, and approved by, the faculty adviser and the director of the program. Placement depends upon availability of positions, and preference is given to majors in the Study of the Americas.

499 Independent Research in the Study of the Americas (1-6:0:0). Prerequisite: majors in the Study of the Americas with 75 hours, and permission of instructor and director of the program. Intensive investigation of a particular question or problem related to the study of the Americas. The project is proposed by an individual student and carried out in consultation with a member of the center faculty.

502 Problems in the Study of the Americas (3:3:0). Prerequisite: majors in the Study of the Americas with at least 15 hours of SYST courses above 300; or senior standing and permission of the instructor; or possession of the baccalaureate degree. Examination of a particular aspect or problem or question in the study of the Americas. Particular subtitles will be announced. The course may be repeated when the subtitle is different.

Systems Engineering (SYST)

Systems Engineering

201 Systems Modeling I (3:3:0). Prerequisite: MATH 114. Introduction to the modeling of dynamic systems with examples from many fields in engineering, science, and social sciences: mechanical, electrical, computer, biological, economic, urban, and social systems. Linear and nonlinear systems and linearization. A discrete time system formulation is used to study the properties and behavior of such systems.


301 Systems Methodology and Design I (3:3:0). Prerequisite: SYST 202, 203, or permission of instructor. Systems engineering design and integration process, the development of functional, physical, and operational architectures. Emphasis on requirements engineering, functional modeling for design, formulation and analysis of physical design alternatives. Methods and software tools for systems engineering design are introduced.

302 Systems Methodology and Design II (3:3:0). Prerequisite: SYST 301 or permission of instructor. Analysis methods of systems engineering design and management. Decision analysis, economic and life cycle cost analysis, resource allocation, queuing theory, management control techniques, reliability and maintainability analysis, and test and evaluation techniques.

419 Engineering of Large-Scale Systems (3:3:0). Corequisites: 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, SYST 419, corequisite 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/EC/21 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.

430 Integration of Hardware and Software (3:3:0). Prerequisite: CS 211 and 60 hours, or permission of instructor. Introduction to hardware and software components of computer systems. Study of hardware and software interchangeability. Understanding and analysis of factors that impact the effectiveness and efficiency of hardware and software integration. Topics include engineering fundamentals for computer design, hardware and software components, tradeoff between hardware and software, analysis of data representations and addressing, impact of the operation design and flow control design on the performance of computer systems, global control, operating system, memory management, input/output characteristics, bus systems, and efficiency analysis.

442 Decision Support Systems 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. The course emphasizes that a DSS is the end-product of the design process, and it is this process that is key to successful integration of a DSS into an organization. A systems engineering approach to DSS design is taken, in
which the implications of the research on human information processing for development of DSS is considered.

451 Knowledge-Based Systems Design and Engineering (3:3:0). Prerequisite: CS 211 and 60 hours, or permission of instructor. Introduction to the design of expert systems. Fundamentals of expert systems development, including knowledge acquisition and representation, inference, system components, and system design. Introduction to knowledge engineering tools and programming of case study examples using an expert system shell.

470 Human Factors Engineering (3:3:0). Prerequisite: SYST 302, PSYC 100, or permission of instruction. 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.

490 Senior Design Project I (3:2:1). Prerequisite: SYST 419 or permission of instructor. This is the first part of a “capstone” course in the systems engineering program. The first portion of this course includes introductions to current areas of work in systems engineering as exemplified by work in SITE laboratories and centers. Demonstrations and instruction in the various systems engineering software packages at GMU is given. Instruction in formal technical documentation is also given. Students are required to associate themselves with one of the labs and formulate a design project. A formal project proposal and progress report are completed. 

495 Senior Design Project II (3:1:2). Prerequisite: SYST 490. This is the second part of the “capstone” course in the systems engineering program. The design project plans formulated in SYST 490 are reviewed and modified. Additional instruction on documentation and on project management is given. The design project is completed, and a formal report is prepared, presented, and evaluated.

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)

Institute of the Arts

101 Theatrical Medium (3:3:0). Designed to introduce the student to the medium of theatrical performance, its role 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), (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 director. 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. f

301 Voice and Speech for the Performer (3:3:0). Integration of text and performance problems with voice and speech fundamentals begun in THR 300. Advanced work in vocal production and character-specific sounds. s

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. f

304 Movement for the Actor II (3:3:0). Advanced work in the techniques established in THR 303. s

310 Acting I (3:3:0). Extends the principles begun in THR 210 through scene study, audition technique, and work in analysis, characterization, and relationships. f,s

320, 321 Acting Ensemble I, II (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. f,s

322 Alexander Technique/Stage Combat (3:3:0). Offered during the Acting Ensemble time block but open to all theater majors. s

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. as

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. s

350 Script Analysis (3:3:0). Principles and practice of critical analysis of dramatic literature as preparation for production and performance. f,s

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. as

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. f,s

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. f

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. f,s

381 Playwriting II (3:3:0). An intensive continuation of the work begun in THR 380. s

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. f,s

422 Stage Make-up/Stage Clothing (3:3:0). Introduces the actor to the challenges of working with makeup and costume as a stylistic enhancement of the performance task. Questions of period style and behavior are also considered. f

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. s

440 Advanced Studies in Directing/Dramaturgy (3:3:0). A course in the collaborative development of production ideas by director/dramaturg teams. Students conceive ideas and present work in the classical and contemporary repertoire, supported by full dramaturgical apparatus. af

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. s

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. f,s

491 Major's Seminar on the Profession (3:3:0). Designed to acquaint upper division majors with the realities of living and working in the theater. Features guest speakers from the profession and intensive development of students' portfolio materials specific to the demands of their field.

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 theater and design, playwriting, or theater history and criticism. This course may be repeated once, provided the suffix citing specific course content is different.
Urban Systems Engineering (USE) 251

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 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, and continued social segregation in metropolitan areas. Students analyze contemporary predictions about the future of metropolitan life in America and explore how alternative public policies can shape that future. Students work on research projects on metropolitan life and form in Northern Virginia and other parts of the Washington metropolitan area.

490 Internship (3:0:0). Prerequisite: Open only to authorized students with 12 hours of USE; see USST coordinator. Internships are approved work-study programs that focus on urban and suburban issues with an approved agency or firm. Placement depends on the student's qualifications and the availability of positions. Students work with an on-site supervisor and the Coordinator of Urban and Suburban Studies.

Urban Systems Engineering (USE)

Systems Engineering

199, 299, 399 Industrial Internship I, II, III (1:1:0). Supervised 10-week summer work experience in urban systems engineering positions with land development, architecture/engineering, and construction firms or government. Written report and presentation.

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 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.

301 Planning, Analysis, and Control Models in Urban Systems Engineering (3:3:0). Prerequisite: USE 300 or permission of instructor. The study of planning, analysis, and control models applicable to the life cycle of the physical urban infrastructure. Introduction to the infrastructure design process and the application of quantitative models. Applications of model building for decision making, forecasting, resource scheduling and allocation, estimating, work measurement, and materials, quality, and process control in water, transportation, energy, telecommunications infrastructure systems, and the built environment.

310 Hydraulics (3:3:0). Prerequisite: ENGR 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 (3:3:0). Prerequisite: USE 310. Analytic methods and computer models for the design and evaluation of such water resource projects as 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: USE 310, 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; federal, state, and local government laws and regulations related to public water systems.

400 Urban Systems Planning and Management II (3:3:0). Prerequisite: USE 300, 301. 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/efficiency analysis. Contemporary theories of urban design. Physical relationships between development, land use, transportation, energy, communications, and water. Policies 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 (3:3:0). Prerequisite: USE 310, 340. 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 wastewater collection, treatment, and disposal.


463 Construction Systems (3:3:0). Prerequisite: USE 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: USE 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 or equivalent. 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.


490, 495 Senior Design Project I, II (3:3:0), (3:3:0). Prerequisite: USE 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

132 Development of Scientific Thought (3:3:0). Course provides an understanding of scientific principles that underlie significant issues that face our society (i.e., environment, energy, health, and new technologies). Integrates concepts of physics, chemistry, geology, and biology; emphasizes the role that these concepts play in everyday life.

190 Freshman Seminar (3:3:0). Broad interdisciplinary subjects taught by 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 non-science majors and uses little mathematics.

390 University 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.

441 AIDS: Its Impact in Our Society (3:3:0). Course is designed to give students an in-depth understanding of the medical and social matters surrounding HIV disease. Topics include progression of the disease, epidemiology, global AIDS, economic/financial consequences, and end-of-life issues. Students are provided with current information and presentations from university faculty and community experts working in HIV services.

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.

400 Internship (3:3:0). Prerequisite: WMST 200 and 54 hours. Internships are approved work-study programs with specific employers. Credit is determined by the Women's Studies Program.
General Policies
General Policies

Statement on Equal Opportunity and Affirmative Action
George Mason University is an equal opportunity and 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, veteran status, disability, sexual orientation, sex, or age (except where sex or age is a bona fide occupational qualification).

George Mason shall maintain a continuing affirmative program to promote equal opportunity and to identify and eliminate discriminatory practices in every phase of university operations. Furthermore, affirmative action will be taken to ensure that opportunities afforded by the university are fully available to persons with disabilities, women, disabled and Vietnam veterans, and minorities. The university will make every reasonable accommodation to enable students or employees with disabilities to undertake work or study for which they qualify.

As required by the Civil Rights Act of 1964, as amended, the university is committed to the broad application of Title IX of the Education Amendments of 1972, Title VI of the Civil Rights Act of 1964, the American Disabilities Act of 1990, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975.

Students and employees should bring problems or questions regarding EO/AA/Sexual Harassment policies to the attention of the supervisor, department chair, the dean of Student Services, an academic dean, the director of Human Resources, the university ombudsman, a trusted faculty or staff member, the Women's Studies Research and Resource Center, or the vice president and university equity officer, Mason Hall, Suite D105, 993-8730. Students with disabilities can contact Disability Support Services at Finley Building, Room 119, 993-2474.

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 23-9.2:3) 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 (FERPA) 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 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 the Registrar

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keeps a copy of the policy and also maintains a Directory of Records listing all education records maintained on students by this institution.

George Mason routinely complies with requests from the State Council of Higher Education for Virginia (SCHEV) for personally identifiable information on enrolled students. This information is for research purposes, and as a condition of accepting the data, SCHEV has agreed to protect it from further disclosure, except as aggregate data.

Questions concerning the Family Education Rights and Privacy Act may be referred to the Office of the Registrar.

**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 nonlicensed 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. It is illegal to serve alcohol from an unregistered keg (common container holding four gallons or more). Only University Dining Services or authorized entity may serve alcohol from kegs.

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 organizations will be conducted in accordance with the George Mason University Judicial System for Student Conduct; civil proceedings may occur in certain situations. University sanctions are intended not to punish individuals but to provide education and rehabilitation services. Sanctions vary with severity of violation and range from written warnings to expulsion from the university. Included in most sanctions for students is an evaluation by the director of the Drug Education Center to ascertain severity of alcohol and other drug problems and a referral to arrange community service hours. Employees found in violation may be subject to action by their appropriate administrative office.

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 grounds 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

Community resource liaison/referral
The Counseling Center – Charlotte Stannard, M.Ed., LPC, 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) 804-786-6741
A. Call to make an appointment

Alcoholics Anonymous – for campus meetings
0 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 Systems.

Policy for Acceptable Use of Computing

This policy applies to all of the George Mason University community including students, faculty, administrators, staff, contract employees, and those who may be granted a guest computer account on a request basis by a system administrator. For purposes of this policy, computer systems include all computers and software owned by the university, any communications hardware and software provided by the university for the purpose of accessing its computers, and any computer network governed in part or whole by the university.

Computer systems at GMU support students, faculty, and staff as they carry out the educational mission of the university. The institution encourages and promotes uses of computing and network resources by the university community that are in keeping with this mission. Computing activities that do not support instruction, research, or administration are subject to regulation and restriction to ensure that they do not interfere with this legitimate work.

Access to any university computer system is provided with the understanding that the recipient is personally responsible for proper use of the resources, thereby respecting the work of others. The only way to ensure that limited resources are utilized fairly and that privacy is protected is to rely on the integrity of each computer user. Improper use of computer or network resources is not acceptable.

Examples of improper computer use include (but are not limited to):

- Accessing, modifying, or attempting to access or modify any computer system, network, or program you are not authorized to use. (Authorization must be provided by the system administrator.) This includes using anyone else's user ID.
- Attempting to provide or providing computer or network resources to unauthorized users inside or outside the university community. (Authorization must be provided by the system administrator.) This includes allowing/enabling anyone else to use your user ID.
- Using or attempting to use the computer to harass, threaten, or abuse others or to transmit obscene or fraudulent messages.
- Attempting to access or accessing data without explicit permission from the owner.
- Attempting to use or using university computer or network resources for personal or commercial profit, except as provided under the university’s research policy.
- Tampering with, stealing, disabling, or destroying university hardware or software, or attempting to do any of these.
- Violating software license agreements, copyrights, or intellectual property rights. This includes copying software without permission from the copyright holder or continuing to operate software for which the license has expired.

Each computer system administrator (in the case of the central academic and administrative computer systems and the campuswide network, the designated staff of University Computing and Information Systems) is obligated to protect the sys-
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and its users from injury or damage. A system administrator may temporarily suspend access privileges if necessary to maintain the integrity of the computer system or network. The UCIS directors (CNS, CSO, and CSS), and only they, can authorize the inspection of private data or monitoring of messages (including electronic mail) when there is reasonable cause to suspect improper use of computer or network resources.

A system administrator must obtain approval from a UCIS director to investigate reported or suspected improper use. Once approval is granted to conduct an investigation, the director must notify the university's Computer Security Review Panel within 24 hours that an investigation has been authorized. After the investigation has been approved by the director, the system administrator may take whatever action is needed to gather relevant evidence. If evidence of improper use is detected, it is reported to the Computer Security Review Panel, who may forward the information to appropriate authorities within or outside the university.

The university is committed to promoting ethical and responsible use of computer and network resources, and will not tolerate their misuse. Improper use may lead to one or more of the following consequences: loss of access privileges; requirement to reimburse GMU or the commonwealth of Virginia for misappropriated computer or network resources; disciplinary action under faculty standards, employee policies, or student judicial or honor codes; and/or prosecution under civil or criminal laws.

Motor Vehicles Policy

All faculty, staff, students, visitors, and guests who park in areas owned or operated by George Mason University must display a valid decal or day pass, park in the Parking Deck, or park at a meter. Decal and day pass enforcement runs from 7 a.m. to 8 p.m., Monday through Thursday, and until 5 p.m. on Friday. Metered areas are enforced from 7 a.m. until 11 p.m. seven days a week.

Three types of parking decals are available: yearly, semester, and summer. Day passes cost $2 per day for faculty, staff, and students with valid ID; $3 for visitors and guests. Decals and multiple day passes may be purchased at the Parking Services Sales Office located in Room 201 off the main lobby of Student Union Building I. The hours of operation are 9 a.m. to 7 p.m., Monday through Thursday, and until noon on Friday when classes are in session.

Single day passes may be purchased at the information booths located in front of Finley Building and in Lot K off Roanoke Lane. The information booths are open from 7 a.m. until 8 p.m., Monday through Thursday, and until 5 p.m. on Friday.

Handicapped parking is available at a number of convenient locations at George Mason University facilities. A decal or day pass must be displayed along with valid handicapped identification in order to avoid citation. Parking in or blocking access to a handicapped space carries a fine of $100. Parking in the 615-space Parking Deck costs $1 per hour or $5 per day. Semester subscriptions are also available.

Some parking lots and some spaces have special designations. Please read all signs at entrances to lots. For additional parking information, call 993-2710.

Sexual Assault Policy

The following policy applies to all members of the George Mason University community: students, faculty, administrators, staff, contract employees, and visitors.

The university is committed to providing an institutional environment where all persons may pursue their studies, careers, duties, and activities in an atmosphere free of the threat of unwelcome and unwanted sexual actions. It strongly condemns sexual offenses and will not tolerate sexual offenders.

Rape and sexual assault are serious violations of the university's student judicial code, faculty standards, and university employee policies. They are crimes under state law and are punishable by fines and/or imprisonment. In addition, these actions are subject to civil suit for damages.

The university will respond promptly, fairly, and decisively to all reports of sexual assault and rape. Members of the university community accused of these actions will be subject to university disciplinary procedures when the alleged incident has occurred on campus or when the action has occurred off campus and materially affects the learning environment or operations of the university.

Sexual assault is defined as the attempt or act of rape, forced sodomy (anal intercourse), forced oral copulation (oral-genital contact), or forced penetration by a foreign object including a finger. Sexual assault also includes the act of touching of an unwilling person's intimate parts such as genitalia, groin, breast, or buttocks or the clothing covering these parts, or forcing an unwilling person to touch another's intimate parts. Intoxication of the assailant shall not diminish the assailant's responsibility for sexual assault.

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Rape is defined as unwanted sexual intercourse. Unwanted sexual intercourse is defined as sexual intercourse committed against a person's will as evidenced by refusal of consent or the use of force, threat, or intimidation. Sexual intercourse committed with a person who, by virtue of mental incapacity or physical helplessness, is unable to give or withhold consent is also defined as rape. This definition of rape includes, but is not limited to, incapacity or helplessness caused by alcohol or other drugs. Intoxication of the assailant shall not diminish the assailant's responsibility for rape. The above acts constitute sexual assault when they are committed through force, threat, or intimidation; when the perpetrator has been informed that his/her actions are unwanted; and through the use of the victim's mental or physical helplessness of which the accused was aware or should have been aware. The degree of impairment of the victim's ability to give or withhold consent may be introduced as pertinent information at any university disciplinary hearing.

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 are 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. Areas in the student union buildings and other university buildings have been set aside for this purpose.

Bicycles/Skateboards
Bike racks are provided at various on-campus locations 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 the 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
Joseph A. Heastie, Rector; Vienna, VA
Hector Alcade, Arlington, VA
Bette G. Clements, Arlington, VA
Sheila B. Coates, Secretary; Chantilly, VA
Mary T. Flynn, Vienna, VA
B. Mark Fried, McLean, VA
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Margo E. Homer, Arlington, VA
Dianne G. Kay, McLean, VA
D. Mark Keene, Student Representative
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George C. Rawlings, Jr., Lorton, VA
Lilla Richards, McLean, VA
Abe J. Spero, Fairfax, VA
James C. Tso, Oakton, VA

Membership of the Board of Visitors is as of July 1993.

Administration
University President: George W. Johnson, Ph.D.

Executive Vice Presidents
Provost and Executive Vice President for Academic Affairs: Frederick A. Rossini, Ph.D.
Executive Vice President for Finance and Planning: Maurice W. Scherrrens, J.D., Ed.D.
Executive Vice President for Administration: H. Randall Edwards, Ph.D.
President, GMU Foundation: F. Duke Perry, M.S.
Vice President and University Equity Officer: Earl G. Ingram, M.S.
Vice President for University Relations: Helen J. Ackerman, M.A.

Academic Services
Vice Provost for Academic Support: Suzanne Swope, Ph.D.
Associate Provost and Dean for Undergraduate Studies: James J. Fletcher, Ph.D.
Assistant Provost for Research and Graduate Studies: Deborah Boehm-Davis, Ph.D.
Assistant Dean for Undergraduate Studies and Summer Term (University Scholars Program): Donna B. Fafundo, M.Ed.
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 Libraries: Charlene S. Hurt, M.L.S.
Registrar: Richard Bayer, M.A.
Director of Minority Student Affairs: Charles Nathaniel Smith, Ph.D.
Director of Student Financial Aid: Jennifer Douglas, B.A.

Student Services
Associate Vice President and Dean for Student Services: Kenneth E. Bumgarner, M.A.
Associate Dean for Student Services: Girard Mulherin, Licentiate
Assistant Dean for Student Services: Lori Tiller, M.S.
Director, Drug Education Center: Nancy Schulte, L.C.S.W.
Director, Center for New Students: Noreen McGuire, M.Ed.
Director, Transfer Center: Paula Antonovich, M.S.
Director, The Volunteer Center: Nicole West, M.Ed.
Director, University Unions and Student Activities: Michael Ellis, M.Ed.
Director, International Student Services: Kathy Dawson, B.A.
Director, Student Leadership Center: Adrienne Hillery, M.Ed.
Director, Student Health Center: Ellen Dawson, R.N., C.S., M.S.N.
Director, Women's Studies Research and Resource Center: Rose Pascarell, M.S.

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**Faculty 1993-94**

The faculty list below covers the 1993-94 academic year, and reflects appointments as of the end of the fall 1993 semester.

**Abdalla**, Wagida, Medical Director, Student Health Center. 1972, Alexandria University, Egypt; Diplomate of the American Board of Pediatrics, 1982.

**Ackerman**, Helen J., Vice President for University Relations. B.A. 1968, University of Western Australia; M.A. 1986, George Mason University.


**Adamkewicz**, 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, Adjunct Professor of Information Systems and Systems Engineering. B.S. 1981, M.S. 1984, Virginia Commonwealth University; Ph.D. 1989, George Mason University.


**Akaynov**, Vassily P., Robinson Professor of Russian Literature and Writing. M.D. 1956, Pavlov First Leningrad Medical Institute.

**Akwule**, Raymond U., Associate 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.


**Allen**, Judy, Head, Division of Dance; Professor of Dance. B.F.A. 1969, University of Oklahoma; M.F.A. 1972, University of North Carolina at Greensboro.


**Allen**, Melissa, Core Faculty Member, English Language Institute. B.A. 1975, M.A. 1979, San Francisco 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, Bonita, Assistant Director, Office of Teacher Education. B.S. 1967, Bridgewater College; M.Ed. 1985, George Mason University.

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, 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.S. 1980, Johns Hopkins University; M.S. 1981, Duke University; Ph.D. 1987, University of Virginia.

Austin, Clayton, Assistant Professor of Theater, Technical Director. B.A. 1973, Brandeis University; M.F.A. 1986, Yale School of Drama.

Avruch, Kevin Andrew, 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; D.Phil. 1972, Oxford University.

Balinger, Victoria J., Assistant Professor; Counseling Psychologist, Counseling Center. B.S. 1986, James Madison University; M.A. 1989, University of Maryland.

Baraniecki, Anna, Associate Professor of Electrical and Computer Engineering. M.Sc. 1970, Warsaw Technical University, Poland; Ph.D. 1980, University of Windsor, Canada.

Barna, Adrienne M., Assistant Professor; Assistant Director for Clinical Services, Counseling Center. A.B. 1970, Drew University; Ed.M. 1972, Rutgers University; M.A. 1976, Ph.D. 1980, University of Maryland.

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M.A. 1965, Tufts University; Ph.D. 1970, Harvard University.

Wagner, Maria Luise, Lecturer in History. Universities of Vienna, Freiburg, and Bonn; M.A. 1978, Ph.D. 1986, Georgetown University.

Wahl, Otto E., Associate Professor of Psychology. B.A. 1969, Wesleyan University; Ph.D. 1974, University of Pennsylvania.

Wakefield, Mary Katherine, Adjunct Associate Professor of Nursing. B.S.N. 1976, Mary College; M.S.N. 1978, Ph.D. 1985, University of Texas, Austin.

Walbridge, Mark R., Assistant Professor of Biology. B.A. 1973, M.S. 1982, West Virginia University; Ph.D. 1986, University of North Carolina.

Walker, Alta, Adjunct Professor of Geology. B.A. 1964, Syracuse University; M.S. 1971, University of Minnesota; Ph.D. 1977, Rice University.

Walker, Dorothy Jean, Professor of Nursing. B.S.N.E. 1957, Louisiana State University School of Medicine; M.S.N.E. 1960, Ph.D. 1966, Saint Louis University; J.D. 1979, Boston College Law School.

Wallace, Gerald, Professor of Special Education. B.S. 1962, Central Connecticut State University; M.Ed. 1963, University of Arizona; Ed.D. 1969, University of Oregon.

Wallace, Nancy, Assistant Director, Career Development Center. B.A. 1977, Western Connecticut State University; M.Ed. 1984, Virginia Polytechnic Institute and State University.

Wallin, John Frederick, Associate Professor of Computational Sciences and Space Sciences. B.S. 1984, Mankato State University; Ph.D. 1989, Iowa State University.


Walsh, John C., Assistant Head of Collection Development, Humanities Reference/Liaison Librarian.

Walters, Lawrence, Instructor in English as a Second Language, English Language Institute. B.A. 1964, University of Kentucky; M.A. 1980, University of South Florida.


Wang, Xiaoyang, Visiting Assistant Professor of Information Systems and Systems Engineering. Ph.D. 1992, University of Southern California.


Wanschura, Patricia B., Visiting Assistant Professor of Psychology. B.A. 1969, St. Mary's College; M.A. 1973, Ph.D. 1974, University of Notre Dame.

Warfield, John N., University Professor; Director of the Institute for Advanced Study in the Integrative Sciences. A.B. 1948, B.S.E.E. 1948, M.S.E.E. 1949, University of Missouri, Columbia; Ph.D. 1952, Purdue University.

Warner, Keith Q., Professor of French; Chair, Department of Foreign Languages and Literatures. Doctorat de l'Universite 1969, Caen.

Webb, E. Penelope, Director of Undergraduate Student Support Services, School of Business Administration. B.A. 1985, Queens College; M.A. 1987, The George Washington University.

Webster, Dennis Wayne, Assistant Professor; Associate Director, Counseling Center. B.A. 1974, Seton Hall University; M.A. 1977, Ph.D. 1982, University of Maryland.

Wechsler, Harry, Professor of Computer Science. B.S. 1971, Tel Aviv University, Israel; M.S. 1973, Weizmann Institute of Science, Israel; Ph.D. 1975, University of California, Irvine.

Wegman, Edward J., Dunn Professor of Information Technology and Applied Statistics. B.S. 1965, St. Louis University; M.S., Ph.D. 1968, University of Iowa.

Wehrle, Walter E., Assistant Professor of Philosophy. B.A. 1969, University of Texas, Austin; M.A. 1976, Ph.D. 1988, Florida State University, Tallahassee.


Weinberger, Steven H., Assistant Professor of English. B.A. 1978, University of Pittsburgh; Ph.D. 1988, University of Washington.


Wheeler, Douglas J., Affiliate Assistant Professor of Geographic and Cartographic Sciences. B.S. 1977, M.S. 1980, Brigham Young University; Ph.D. 1985, University of Utah.


White, E. Bernard, Associate Professor of Systems Engineering; Assistant Dean, School of Information Technology and Engineering. B.S. 1966, Mississippi Industrial College; M.S. 1970, University of Illinois; M.S. 1973, Howard University; Ph.D. 1984, University of Virginia.

White, Louise Gieseey, Professor of Government and Politics; Chair, Department of Public Affairs. A.B. 1954, Smith College; M.A. 1972, Ph.D. 1974, The American University.

White, Mary, Adviser, Academic Advising Center. B.A. 1964, University of Dayton; M.Ed. 1981, George Mason University.

Whitney, Scott C., Professor of Law. A.B. 1949, University of Nevada; J.D. 1952, Harvard University.


Wiggins, David K., Professor of Physical Education. B.A. 1974, M.A. 1975, San Diego State University; Ph.D. 1979, University of Maryland.


Wilkins, Roger, Robinson Professor of History and American Culture. A.B. 1953, University of Michigan; LL.B. 1956, University of Michigan Law School.

Willett, James D., Professor of Biology. A.B. 1959, University of California, Berkeley; Ph.D. 1965, Massachusetts Institute of Technology.

Williams, Ashley, Lecturer in English. A.B.J. 1968, University of Georgia; M.A. 1987, George Mason University.

Williams, Charles K., Professor of English. B.A. 1959, University of Pennsylvania.


Williams, Herma, Professor of Education. B.S. 1968, M.S. 1969, Southern Illinois University; Ph.D. 1976, Iowa State University.

Williams, Joyce Knowles, Assistant Professor of Nursing. B.S. 1960, Brown University, Rhode Island Hospital School of Nursing; M.S. 1963, C.A.G.S. 1965, Boston University.

Williams, Noriko Kurosawa, Assistant Professor of Japanese. B.A. 1970, Keio University; M.S. 1982, Ph.D. 1990, Georgetown University.


Williams, Thomas Rhys, Professor of Anthropology. B.A. 1951, Miami University; M.A. 1956, University of Arizona; Ph.D. 1956, Syracuse University.

Williams, Walter E., John M. Olin Distinguished Professor of Economics. B.A. 1965, California State University; M.A. 1966, Ph.D. 1972, University of California, Los Angeles.

Wilson, John William, III, Associate Professor of Biology. B.A. 1966, Amherst College; Ph.D. 1972, University of Chicago.

Winkler, Martin M., Associate Professor of Classics, M.A. 1977, West Virginia University; Ph.D. 1982, University of Southern California.

Wood, Joseph S., Associate Professor of Geography; Chairman, Department of Geography and Earth Systems Science; Coordinator, Urban and Suburban Studies. A.B. 1968, Middlebury College; M.A. 1973, University of Vermont; Ph.D. 1978, Pennsylvania State University.

Wong, David, Assistant Professor of Geography. B.A. 1984, Hong Kong Baptist College; M.A. 1985, Ph.D. 1990, State University of New York, Buffalo.

Wright, Brett A., Associate Professor of Parks, Recreation, and Leisure Studies. B.A. 1975, M.A. 1976, Morehead State University; Ph.D. 1985, Texas A&M University.


Wu, Chien-Yen, Assistant Professor of Nursing. B.S. 1973, Villanova University; M.S. 1982, D.N.Sc. 1989, George Mason University.

Yau, Jot K., Assistant Professor of Finance. B.S. 1980, University of Hong Kong; M.B.A. 1984, University of Toledo; Ph.D. 1988, University of Massachusetts, Amherst.

Yocom, Margaret Rose, Associate Professor of English; Associate Professor of American Studies. B.A. 1970, Pennsylvania State University; M.A. 1972, Ph.D. 1980, University of Massachusetts.

Young, James C., Assistant Professor of Accounting. B.S. 1975, Ferris State University; M.B.A. 1979, Ph.D. 1988, Michigan State University; CPA.


Zaccaro, Stephen J., Associate Professor of Psychology. B.A. 1979, Fairfield University; M.A. 1980, Ph.D. 1981, University of Connecticut.

Zambrama, Ruth E., Professor of Nursing. B.A. 1969, Queens College of City University of New York; M.S.W 1971, University of Pennsylvania; Ph.D. Boston University.

Zaphiriou, George A., Professor of Law. LL.B. 1940, University of Athens, Greece; I.L.M. 1950, University of London.


Zhang, Xiaobo, Instructor in History. B.A. 1977, Nanjing Teacher's University, China; Certificate of Graduate Studies 1987, Johns Hopkins University, Nanjing Center for Chinese and American Studies; M.A. 1989,
Miami University, Oxford, Ohio; M.Phil. 1992, Columbia University.

Zinn, Jeffrey A., Adjunct Professor of Geography. B.A. 1967, University of Vermont; M.A. 1970, University of Rhode Island; Ph.D. 1972, Oregon State University.

Zoltek, Stanley Michael, Associate Professor of Mathematics. B.S. 1970, St. John's University; M.A. 1973, Ph.D. 1976, State University of New York, Stony Brook.
Campus Map and Telephone Directory
# Telephone Directory

The general information number for George Mason University is (703) 993-1000, 993-1002 (TDD). The university exchange is “993” except where indicated.

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http://catalog.gmu.edu
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